

ภาคผนวก ณ
สัญญาการซื้อขายน้ำ



Minute of Tambol Talong's Community Meeting.

Subject : Public Pond
Venue : Community Hall
Dated/time : 09:00-10:00hrs. / 24 July 2010
Attendee's : See Attached.

09:00hrs, 24 July 2010 - Welcome & an introduction 53 peoples in attendance to this meeting at Community Hall by Mr. Suthep Tangpeetong, Village Headman of Moo 9, Tambol Talong.

The objectives were to inform the community about Pan Orient Resources (Thailand) Limited has requested The Village Council to supply water from public pond which in Moo 9, Tambol Talong, Amphur Wichianburi, Petchaboon and company will pay lump sum Baht 15,000 per month into the village fund.

The village councils have agreed and sign agreed as attached.

Mr. Suthep Tangpeetong
Village Headman of Moo 9, Tambol Talong, Amphur Wichianburi.



Pan Orient Energy (Thailand) Ltd.
Pan Orient Resources (Thailand) Ltd.

Pan Orient Energy (Thailand) Ltd. and Pan Orient Resources (Thailand) Ltd. hereby requests Mr. Manop Nimpia, the Headman of Ban Sompotkrung 200 Pee Village in agreement with village council as attached, to supply water from Public Pond which in Moo 10, Tambol Nasanoon, Amphur Srihep, Petchaboon.

The request is to provide water to support Oil Drilling Operations in concession L44/43 area Amphur Wichianburi-Srihep, Petchaboon Province.

According to the agreement Mr. Manop Nimpia, and the village council will charge for water is lump sum 15,000 baht per month. (Prorated cost, if not complete monthly), paid into the village fund.

Both parties have agreed to the above mentioned and sign hereby agreed.

This agreement shall be terminated by notification up on cessation of drilling requirement.

[Redacted signature]

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2010

Date: 1st June

Attending Committees Name List

at the Village Headman's Office Moo 10, Na Sarun Sub-District, Sri Thep District

No.	Name	Position
1		Chairman
2		Vice - Chairman
3		Committee
4		Committee
5		Committee
6		Committee
7		Committee
8		Committee
9		Committee

Dated on 1st June 2010 at 9.30 a.m.

The 1st Agenda, informing by the chairman:

Due to Pan Orient Resources (Thailand) Ltd. asked for using water from the pond in the Som Poch Krung Village by paying 15,000 baht per month with unlimited trip per day. Then, the chairman asked the committees for a meeting to acknowledge this subject. The chairman will be the charger from Pan Orient Resources (Thailand) Ltd. on the beginning of every month (by date the 3rd of every month).

The 2nd - 4th Agenda are not related to Pan Orient.

The meeting finished at 11.30 a.m.

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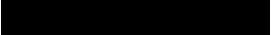
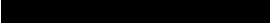


ภาคผนวก ญ
เอกสารข้อมูลความปลอดภัยของวัตถุอันตราย
และสารเคมีภัณฑ์ (MSDS)



ระยะดำเนินการขุดเจาะ



SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifiers**
Product name : Barium sulfate
Barium sulfate
Product Number : B8675
Brand : Sigma-Aldrich
REACH No. : 01-2119491274-35-XXXX
CAS-No. : 7727-43-7
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
Identified uses : Laboratory chemicals, Manufacture of substances
- 1.3 Details of the supplier of the safety data sheet**
Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE
Telephone : 
Fax : 
E-mail address : 
- 1.4 Emergency telephone**
Emergency Phone # 

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture**
Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.
- 2.2 Label elements**
Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.
- 2.3 Other hazards**
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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Page 1 of 8

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For personal protection see section 8.

- 6.2 Environmental precautions**
No special environmental precautions required.
- 6.3 Methods and materials for containment and cleaning up**
Sweep up and shovel. Keep in suitable, closed containers for disposal.
- 6.4 Reference to other sections**
For disposal see section 13.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling**
Advice on protection against fire and explosion
Provide appropriate exhaust ventilation at places where dust is formed.
Hygiene measures
General industrial hygiene practice.
For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**
Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Store in cool place.
Storage class
Storage class (TRGS 510): 13: Non Combustible Solids
- 7.3 Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

- 8.1 Control parameters**
Ingredients with workplace control parameters
- 8.2 Exposure controls**
Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body Protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

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Page 3 of 8

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SECTION 3: Composition/information on ingredients

- 3.1 Substances**
Synonyms : Baryte
Formula : BaO₄S
Molecular weight : 233,39 g/mol
CAS-No. : 7727-43-7
EC-No. : 231-784-4

No components need to be disclosed according to the applicable regulations.

SECTION 4: First aid measures

- 4.1 Description of first-aid measures**
If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration.
In case of skin contact
Wash off with soap and plenty of water.
In case of eye contact
Flush eyes with water as a precaution.
If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water.
- 4.2 Most important symptoms and effects, both acute and delayed**
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
- 4.3 Indication of any immediate medical attention and special treatment needed**
No data available

SECTION 5: Firefighting measures

- 5.1 Extinguishing media**
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- 5.2 Special hazards arising from the substance or mixture**
Sulfur oxides
Barium oxide
- 5.3 Advice for firefighters**
Wear self-contained breathing apparatus for firefighting if necessary.
- 5.4 Further information**
No data available

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures**
Avoid dust formation. Avoid breathing vapors, mist or gas.

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Page 2 of 8

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Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure

No special environmental precautions required.

SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties**
- | | |
|---|--|
| a) Physical state | powder |
| b) Color | white |
| c) Odor | No data available |
| d) Melting point/freezing point | Melting point/range: 1.580 °C |
| e) Initial boiling point and boiling range | 1.600 °C at 1013 hPa |
| f) Flammability (solid, gas) | No data available |
| g) Upper/lower flammability or explosive limits | No data available |
| h) Flash point | Not applicable |
| i) Autoignition temperature | No data available |
| j) Decomposition temperature | No data available |
| k) pH | 7 |
| l) Viscosity | Viscosity, kinematic: No data available
Viscosity, dynamic: No data available |
| m) Water solubility | insoluble |
| n) Partition coefficient: n-octanol/water | No data available |
| o) Vapor pressure | No data available |
| p) Density | 4,400 g/cm ³ at 20 °C |
| q) Relative density | No data available |
| r) Relative vapor density | No data available |
| s) Particle characteristics | No data available |
| s) Explosive properties | No data available |

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Page 4 of 8

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t) Oxidizing properties No data available

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

No data available

10.5 Incompatible materials

Aluminum, Phosphorus

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 307.000 mg/kg

(OECD Test Guideline 401)

Inhalation: No data available

Dermal: No data available

Skin corrosion/irritation

Skin - In vitro study

Result: negative

(OECD Test Guideline 439)

Remarks: The value is given in analogy to the following substances: Barium chloride dihydrate

Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation

(OECD Test Guideline 405)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

Remarks: The value is given in analogy to the following substances: Barium chloride dihydrate

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

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Page 5 of 8

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Result: negative

Remarks: The value is given in analogy to the following substances: Barium chloride dihydrateTest Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Chinese hamster ovary cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

Result: negative

Remarks: The value is given in analogy to the following substances: Barium chloride dihydrateTest Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Remarks: The value is given in analogy to the following substances: Barium chloride dihydrate**Carcinogenicity**

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

RTECS: CR0600000

Prolonged inhalation of dust may cause baritosis, a benign pneumoconiosis. If ingested, the presence of soluble barium salts as impurities may cause toxic reactions due to bioaccumulation., Damage to the lungs., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Since the substance is poorly absorbed, no hazardous properties are to be anticipated.

Inhalation of the dusts should be avoided as even inert dusts may impair respiratory organ functions.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish static test LC50 - Danio rerio (zebra fish) - > 174 mg/l - 96 h (OECD Test Guideline 203)
Remarks: The value is given in analogy to the following substances: Barium chloride dihydrate

Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata (green algae) - > 100 mg/l - 72 h

Sigma-Aldrich- B8675

Page 6 of 8

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(OECD Test Guideline 201)

Remarks: The value is given in analogy to the following substances:

Barium chloride dihydrate

(barium sulphate)

static test NOEC - Pseudokirchneriella subcapitata (green algae) - > =

100 mg/l - 72 h

(OECD Test Guideline 201)

Remarks: The value is given in analogy to the following substances:

Barium chloride dihydrate

(barium sulphate)

Toxicity to bacteria Remarks: The value is given in analogy to the following substances: Barium chloride dihydrate (barium sulphate)

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No ecological problems are to be expected when the product is handled and used with due care and attention.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

Contaminated packaging

Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR/RID: -

IMDG: -

IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

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Page 7 of 8

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14.3 Transport hazard class(es)

ADR/RID: -

IMDG: -

IATA: -

14.4 Packaging group

ADR/RID: -

IMDG: -

IATA: -

14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

14.6 Special precautions for user

Further information

Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Page 8 of 8

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SAFETY DATA SHEET	
<div><div></div><div>DRILLING SPECIALTIES COMPANY</div></div>	
Well-Seal™ LCM (Fine, Medium, Coarse)	
Version 2.2	Revision Date 2019-12-09
SECTION 1: Identification of the substance/mixture and of the company/undertaking	
<p>Product information</p> <p>Product Name : Well-Seal™ LCM (Fine, Medium, Coarse) Material : 1105216, 1105215</p> <p>Company : Chevron Phillips Chemical Company LP Drilling Specialties Company LLC 10001 Six Pines Drive The Woodlands, TX 77380</p> <p>Emergency telephone:</p> <p>Health: 866.442.9628 (North America) 1.832.813.4984 (International) Transport: CHEMTREC 800.424.9300 or 703.527.3887(int'l) Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090 EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax) Mexico CHEMTREC 01-800-681-9531 (24 hours) South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600 Argentina: +(54)-1159839431</p> <p>Responsible Department : Product Safety and Toxicology Group E-mail address : SDS@CPChem.com Website : www.CPChem.com</p>	
SECTION 2: Hazards identification	
<p>Classification of the substance or mixture This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.</p> <p>Classification : Combustible dust</p> <p>Labeling</p> <p>Signal Word : Warning</p>	
SDS Number:100000068697	1/10

SAFETY DATA SHEET	
Well-Seal™ LCM (Fine, Medium, Coarse)	
Version 2.2	Revision Date 2019-12-09
<p>Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.</p> <p>Further information : Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.</p> <p>Fire and explosion protection : Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.</p>	
SECTION 6: Accidental release measures	
<p>Personal precautions : Avoid dust formation.</p> <p>Environmental precautions : No special environmental precautions required.</p> <p>Methods for cleaning up : Pick up and arrange disposal without creating dust. Clean up promptly by sweeping or vacuum. Keep in suitable, closed containers for disposal.</p> <p>Additional advice : Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).</p>	
SECTION 7: Handling and storage	
<p>Handling</p> <p>Advice on safe handling : For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient.</p> <p>Advice on protection against fire and explosion : Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Provide appropriate exhaust ventilation at places where dust is formed.</p> <p>Storage</p> <p>Requirements for storage areas and containers : Electrical installations / working materials must comply with the technological safety standards.</p> <p>Advice on common storage : No materials to be especially mentioned.</p>	
SECTION 8: Exposure controls/personal protection	
<p>Ingredients with workplace control parameters</p>	
SDS Number:100000068697	3/10

SAFETY DATA SHEET							
Well-Seal™ LCM (Fine, Medium, Coarse)							
Version 2.2	Revision Date 2019-12-09						
<p>Hazard Statements : May form combustible dust concentrations in air.</p> <p>Potential Health Effects</p> <p>Physical Hazards : Mechanical processing may form combustible dust concentrations in air and thermal processing at elevated temperatures may generate simple hydrocarbons and carbon oxides.</p> <p>Carcinogenicity:</p> <p>IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.</p> <p>NTP : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.</p> <p>ACGIH : No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.</p>							
SECTION 3: Composition/information on ingredients							
<table><tr><td>Component</td><td>CAS-No.</td><td>Weight %</td></tr><tr><td>Powdered organic material</td><td>Proprietary</td><td>100</td></tr></table>		Component	CAS-No.	Weight %	Powdered organic material	Proprietary	100
Component	CAS-No.	Weight %					
Powdered organic material	Proprietary	100					
SECTION 4: First aid measures							
<p>General advice : No hazards which require special first aid measures.</p> <p>If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.</p> <p>In case of eye contact : Remove contact lenses. Protect unharmed eye. If eye irritation persists, consult a specialist.</p> <p>If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician.</p>							
SECTION 5: Firefighting measures							
<p>Flash point : Not applicable</p> <p>Autoignition temperature : No data available</p> <p>Specific hazards during fire fighting : Risks of ignition followed by flame propagation or secondary explosions can be caused by the accumulation of dust, e.g. on floors and ledges.</p>							
SDS Number:100000068697	2/10						

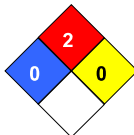
SAFETY DATA SHEET	
Well-Seal™ LCM (Fine, Medium, Coarse)	
Version 2.2	Revision Date 2019-12-09
<p>Engineering measures</p> <p>Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.</p> <p>Personal protective equipment</p> <p>Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.</p> <p>Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.</p> <p>Eye protection : Eye wash bottle with pure water. Safety glasses.</p> <p>Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate. Protective suit. Safety shoes.</p> <p>Hygiene measures : General industrial hygiene practice.</p>	
SECTION 9: Physical and chemical properties	
<p>Information on basic physical and chemical properties</p> <p>Appearance</p> <p>Form : Solid Physical state : Solid Color : Light brown Odor : Mild, earthy Odor Threshold : No data available</p> <p>Safety data</p> <p>Flash point : Not applicable</p>	
SDS Number:100000068697	4/10

Well-Seal TM LCM (Fine, Medium, Coarse)		SAFETY DATA SHEET
Version 2.2	Revision Date 2019-12-09	
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Oxidizing properties	:	No
Autoignition temperature	:	No data available
Thermal decomposition	:	No data available
Molecular weight	:	Not applicable
pH	:	Not applicable
Freezing point	:	Not applicable
Pour point	:	Not applicable
Boiling point/boiling range	:	Not applicable
Vapor pressure	:	Not applicable
Relative density	:	1.2 - 1.4
Water solubility	:	Insoluble
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	Not applicable
Relative vapor density	:	Not applicable
Evaporation rate	:	Not applicable
SECTION 10: Stability and reactivity		
Chemical stability	:	This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
Possibility of hazardous reactions	:	
Hazardous reactions	:	Further information: Stable under recommended storage conditions., No hazards to be specially mentioned.
Conditions to avoid	:	Generation of Dusts.
Thermal decomposition	:	No data available
SDS Number:100000068697	5/10	

Well-Seal™ LCM (Fine, Medium, Coarse)		SAFETY DATA SHEET
Version 2.2	Revision Date 2019-12-09	
SECTION 13: Disposal considerations		
<p>The information in this SDS pertains only to the product as shipped.</p> <p>Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.</p>		
Contaminated packaging	:	Empty containers should be taken to an approved waste handling site for recycling or disposal.
SECTION 14: Transport information		
<p>The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).</p> <p>Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.). Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.</p>		
US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION) NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.		
IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS) NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.		
IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION) NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.		
ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE)) NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.		
RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE)) NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.		
ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS) NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.		
SDS Number:100000068697		7/10

Well-Seal TM LCM (Fine, Medium, Coarse)		SAFETY DATA SHEET
Version 2.2	Revision Date 2019-12-09	
Other data	:	No decomposition if stored and applied as directed.
SECTION 11: Toxicological information		
Well-Seal TM LCM (Fine, Medium, Coarse)		
Skin irritation	:	No skin irritation
Well-Seal TM LCM (Fine, Medium, Coarse)		
Eye irritation	:	No eye irritation
Well-Seal TM LCM (Fine, Medium, Coarse)		
Further information	:	The product contains no substances classified as hazardous to health in concentrations which should be taken into account. Product dust may be irritating to eyes, skin and respiratory system.
SECTION 12: Ecological information		
Ecotoxicity effects		
Toxicity to fish	:	This material is not expected to be harmful to aquatic organisms.
Toxicity to daphnia and other aquatic invertebrates	:	This material is not expected to be harmful to aquatic organisms.
Toxicity to algae	:	This material is not expected to be harmful to aquatic organisms.
Biodegradability	:	Expected to be biodegradable
Elimination information (persistence and degradability)		
Bioaccumulation	:	This material is not expected to bioaccumulate.
Mobility	:	No data available
Additional ecological information	:	This material is not expected to be harmful to aquatic organisms.
Ecotoxicology Assessment		
Short-term (acute) aquatic hazard	:	This material is not expected to be harmful to aquatic organisms.
Long-term (chronic) aquatic hazard	:	This material is not expected to be harmful to aquatic organisms.
SDS Number:100000068697	6/10	

Well-Seal™ LCM (Fine, Medium, Coarse)		SAFETY DATA SHEET
Version 2.2		Revision Date 2019-12-09
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code		
SECTION 15: Regulatory information		
National legislation		
SARA 311/312 Hazards	:	Combustible dust
CERCLA Reportable Quantity	:	This material does not contain any components with a CERCLA RQ.
SARA 302 Reportable Quantity	:	This material does not contain any components with a SARA 302 RQ.
SARA 302 Threshold Planning Quantity	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 304 Reportable Quantity	:	This material does not contain any components with a section 304 EHS RQ.
SARA 313 Components	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
Clean Air Act		
Ozone-Depletion Potential	:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).
This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).		
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).		
This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489).		
US State Regulations		
SDS Number:100000068697		8/10

Well-Seal™ LCM (Fine, Medium, Coarse)		SAFETY DATA SHEET	
Version 2.2		Revision Date 2019-12-09	
<hr/>			
Pennsylvania Right To Know	:	No components are subject to the Pennsylvania Right to Know Act.	
New Jersey Right To Know	:	No components are subject to the New Jersey Right to Know Act.	
California Prop. 65 Components	:	This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.	
<hr/>			
Notification status			
Europe REACH	:	Exemptions from the obligation to register	
United States of America (USA) TSCA	:	Exemptions from the obligation to register	
Canada DSL	:	Exemptions from the obligation to register	
Australia AICS	:	Exemptions from the obligation to register	
New Zealand NZIoC	:	Exemptions from the obligation to register	
Japan ENCS	:	Exemptions from the obligation to register	
Korea KECI	:	Exemptions from the obligation to register	
Philippines PICCS	:	Exemptions from the obligation to register	
China IECSC	:	Exemptions from the obligation to register	
Taiwan TCSI	:	Exemptions from the obligation to register	
<hr/>			
SECTION 16: Other information			
<hr/>			
NFPA Classification	:	Health Hazard: 0 Fire Hazard: 2 Reactivity Hazard: 0	
			
<hr/>			
Further information			
Legacy SDS Number	:	CPC00575	
<hr/>			
Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.			
The information in this SDS pertains only to the product as shipped.			
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the			
<hr/>			
SDS Number:100000068697		9/10	

SAFETY DATA SHEET

Well-Seal™ LCM (Fine, Medium, Coarse)

Version 2.2

Revision Date 2019-12-09

specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

SDS Number:100000068697

10/10



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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006


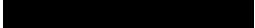

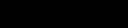
Version 8.0

Revision Date 22.02.2021

Print Date 07.01.2023

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

- 1.1 Product identifiers**
- Product name : Carboxymethylcellulose sodium salt
- Product Number : C5678
- Brand : Sigma
- REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
- CAS-No. : 9004-32-4
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
- Identified uses : Laboratory chemicals, Manufacture of substances
- 1.3 Details of the supplier of the safety data sheet**
- Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE
- Telephone : 
- Fax : 
- E-mail address : 
- 1.4 Emergency telephone**
- Emergency Phone # : 

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture**
- Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.
- 2.2 Label elements**
- Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.
- 2.3 Other hazards**
- This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.



SECTION 3: Composition/information on ingredients

- 3.1 Substances**
- Synonyms : Sodium carboxymethylcellulose
- CAS-No. : 9004-32-4
- No components need to be disclosed according to the applicable regulations.

SECTION 4: First aid measures

- 4.1 Description of first-aid measures**
- General advice**
- Consult a physician. Show this material safety data sheet to the doctor in attendance.
- If inhaled**
- If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
- In case of skin contact**
- Wash off with soap and plenty of water. Consult a physician.
- In case of eye contact**
- Flush eyes with water as a precaution.
- If swallowed**
- Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.
- 4.2 Most important symptoms and effects, both acute and delayed**
- The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
- 4.3 Indication of any immediate medical attention and special treatment needed**
- No data available

SECTION 5: Firefighting measures

- 5.1 Extinguishing media**
- Suitable extinguishing media**
- Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
- 5.2 Special hazards arising from the substance or mixture**
- Carbon oxides
- Sodium oxides
- 5.3 Advice for firefighters**
- Wear self-contained breathing apparatus for firefighting if necessary.
- 5.4 Further information**
- No data available



SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures**
Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Avoid breathing dust.
For personal protection see section 8.
- 6.2 Environmental precautions**
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
- 6.3 Methods and materials for containment and cleaning up**
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.
- 6.4 Reference to other sections**
For disposal see section 13.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling**
Advice on protection against fire and explosion
Provide appropriate exhaust ventilation at places where dust is formed.
Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**
Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Store in cool place.
- 7.3 Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

- 8.1 Control parameters**
Ingredients with workplace control parameters
- 8.2 Exposure controls**

Personal protective equipment

- Eye/face protection**
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
- Skin protection**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

- | | | |
|----|--|--|
| h) | Evaporation rate | No data available |
| i) | Flammability (solid, gas) | No data available |
| j) | Upper/lower flammability or explosive limits | No data available |
| k) | Vapor pressure | No data available |
| l) | Vapor density | No data available |
| m) | Relative density | 1.59 |
| n) | Water solubility | soluble |
| o) | Partition coefficient: n-octanol/water | No data available |
| p) | Autoignition temperature | No data available |
| q) | Decomposition temperature | No data available |
| r) | Viscosity | Viscosity, kinematic: No data available
Viscosity, dynamic: No data available |
| s) | Explosive properties | No data available |
| t) | Oxidizing properties | No data available |
- 9.2 Other safety information**
No data available

SECTION 10: Stability and reactivity

- 10.1 Reactivity**
No data available
- 10.2 Chemical stability**
Stable under recommended storage conditions.
- 10.3 Possibility of hazardous reactions**
No data available
- 10.4 Conditions to avoid**
No data available
- 10.5 Incompatible materials**
Strong oxidizing agents
- 10.6 Hazardous decomposition products**
In the event of fire: see section 5

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place., The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties**
- | | | |
|----|---|------------------------------|
| a) | Appearance | Form: powder
Color: beige |
| b) | Odor | odorless |
| c) | Odor Threshold | No data available |
| d) | pH | 6.5 - 8.5 |
| e) | Melting point/freezing point | No data available |
| f) | Initial boiling point and boiling range | No data available |
| g) | Flash point | Not applicable |

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects**
Acute toxicity
LD50 Oral - Rat - > 2,000 mg/kg
(OECD Test Guideline 401)
LC50 Inhalation - Rat - 4 h - > 5.8 mg/l
LD50 Dermal - Rabbit - > 2,000 mg/kg
- Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation
(OECD Test Guideline 404)
- Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)
- Respiratory or skin sensitization**
Germ cell mutagenicity
No data available
- Carcinogenicity**
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- Reproductive toxicity**
No data available
- Specific target organ toxicity - single exposure**
No data available
- Specific target organ toxicity - repeated exposure**
No data available
- Aspiration hazard**
No data available
- 11.2 Additional Information**
Not available
- To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

- 12.1 Toxicity**
Toxicity to fish LC50 - Danio rerio (zebra fish) - > 500 mg/l - 96 h
(OECD Test Guideline 203)
- Toxicity to bacteria
- 12.2 Persistence and degradability**

Biodegradability	(OECD Test Guideline 302B)		
12.3 Bioaccumulative potential	No data available		
12.4 Mobility in soil	No data available		
12.5 Results of PBT and vPvB assessment	This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.		
12.6 Other adverse effects	Harmful to aquatic life. No data available		
<hr/>			
SECTION 13: Disposal considerations			
13.1 Waste treatment methods			
Product Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.			
Contaminated packaging Dispose of as unused product.			
<hr/>			
SECTION 14: Transport information			
14.1 UN number	ADR/RID: -	IMDG: -	IATA: -
14.2 UN proper shipping name	ADR/RID: Not dangerous goods IMDG: Not dangerous goods IATA: Not dangerous goods		
14.3 Transport hazard class(es)	ADR/RID: -	IMDG: -	IATA: -
14.4 Packaging group	ADR/RID: -	IMDG: -	IATA: -
14.5 Environmental hazards	ADR/RID: no	IMDG Marine pollutant: no	IATA: no
14.6 Special precautions for user	Further information Not classified as dangerous in the meaning of transport regulations.		

Sigma- C5678

Page 7 of 8

The life science business of Merck operates as MilliporeSigma in the US and Canada



REVISION DATE: 23-09-05

Mi SWACO

SAFETY DATA SHEET BENTONITE

1 IDENTIFICATION OF THE SUBSTANCE/Preparation AND COMPANY/Undertaking

PRODUCT NAME
APPLICATION
SUPPLIER



EMERGENCY TELEPHONE

2 COMPOSITION/INFORMATION ON INGREDIENTS

Name	EC No.	CAS-No.	Content	Classification
BENTONITE	215-108-5	1302-78-9	80 - 95%	-
QUARTZ, CRYSTALLINE SILICA	238-878-4	14808-60-7	2 - 15%	Xn,R20.

The Full Text for all R-Phrases are Displayed in Section 16

COMPOSITION COMMENTS

This material is a naturally occurring mineral. The Data Shown is in accordance with the latest EC Directives. This product contains a small quantity of quartz, crystalline silica. Prolonged and repeated exposure to concentrations of crystalline silica exceeding the maximum exposure limit may lead to chronic lung disease such as silicosis.

3 HAZARDS IDENTIFICATION

Not regarded as a health or environmental hazard under current legislation.

HUMAN HEALTH

This product contains a small quantity of quartz. IARC Monographs, Vol.68, 1997, concludes that there is sufficient evidence that inhaled crystalline silica in the form of quartz or cristobalite from occupational sources causes cancer in humans. IARC classification Group 1.

4 FIRST-AID MEASURES

INHALATION

Move the exposed person to fresh air at once. Get medical attention if any discomfort continues.

INGESTION

First aid is not normally required. Rinse mouth thoroughly. Drink plenty of water.

SKIN CONTACT

Wash skin thoroughly with soap and water. Remove contaminated clothing. Get medical attention if any discomfort continues.

EYE CONTACT

Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

5 FIRE-FIGHTING MEASURES

EXTINGUISHING MEDIA

The product is non-combustible. Use fire-extinguishing media appropriate for surrounding materials.

UNUSUAL FIRE & EXPLOSION HAZARDS

No unusual fire or explosion hazards noted.

PROTECTIVE MEASURES IN FIRE

Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6 ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Wear protective clothing as described in Section 8 of this safety data sheet.

ENVIRONMENTAL PRECAUTIONS

Do not allow to enter drains, sewers or watercourses.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : Not applicable

: Not applicable

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Further information

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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Sigma- C5678

Page 8 of 8

The life science business of Merck operates as MilliporeSigma in the US and Canada



REVISION DATE: 23-09-05

BENTONITE

SPILL CLEAN UP METHODS

Shovel into dry containers. Cover and move the containers. Flush the area with water. May be slippery when wet.

7 HANDLING AND STORAGE

USAGE PRECAUTIONS

Avoid handling which leads to dust formation. Provide good ventilation. Mechanical ventilation or local exhaust ventilation may be required.

STORAGE PRECAUTIONS

Store at moderate temperatures in dry, well ventilated area.

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	Std	LT - ppm	LT - mg/m3	ST - ppm	ST - mg/m3
QUARTZ, CRYSTALLINE SILICA	WEL		0.3 mg/m3 resp. dust		
BENTONITE			4 mg/m3 resp. dust		

INGREDIENT COMMENTS

WEL = Workplace Exposure Limits * OSHA PELs for Mineral Dusts containing crystalline silica are 10 mg/m3 ((%SiO2+2) for quartz and 1/2 the calculated quartz value for cristobalite and tridymite. NUI = Nuisance Dust. WEL TWA 4mg/m3 respirable dust. 10mg/m3 total dust.

PROTECTIVE EQUIPMENT



ENGINEERING MEASURES

Provide adequate general and local exhaust ventilation.

RESPIRATORY EQUIPMENT

Respiratory protection must be used if air contamination exceeds acceptable level. Dust filter P3 (for especially fine dust/powder).

HAND PROTECTION

No specific hand protection noted, but gloves may still be advisable. For prolonged or repeated skin contact use suitable protective gloves.
• Rubber or plastic.

EYE PROTECTION

Wear dust resistant safety goggles where there is danger of eye contact.

OTHER PROTECTION

Wear appropriate clothing to prevent repeated or prolonged skin contact. Provide eyewash station.

9 PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Powder, dust		
COLOUR	Cream to Grey		
ODOUR	Odourless		
SOLUBILITY	Insoluble in water		
RELATIVE DENSITY	2.3 - 2.6 20	BULK DENSITY	769 - 833 kg/m3
pH-VALUE, CONC. SOLUTION	9 - 10		

10 STABILITY AND REACTIVITY

STABILITY

Stable under normal temperature conditions.

CONDITIONS TO AVOID

Avoid wet and humid conditions.

MATERIALS TO AVOID

No incompatible materials noted.

HAZARDOUS DECOMPOSITION PRODUCTS

No specific hazardous decomposition products noted.

11 TOXICOLOGICAL INFORMATION

INHALATION

Dust may irritate respiratory system or lungs. Harmful: danger of serious damage to health by prolonged exposure through inhalation.

INGESTION

May cause discomfort if swallowed.

BENTONITE

SKIN CONTACT
Powder may irritate skin.

EYE CONTACT
Particulates in the eyes may cause irritation and smarting.

HEALTH WARNINGS
This product contains small quantities of quartz. Prolonged inhalation of high concentrations may damage respiratory system. Because of quantity and composition, the health hazard is small.

12 ECOLOGICAL INFORMATION

ECOTOXICITY
Not regarded as dangerous for the environment. Contact M-I Swaco's QHSE Department for ecological information.

13 DISPOSAL CONSIDERATIONS

DISPOSAL METHODS
Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

14 TRANSPORT INFORMATION

GENERAL
The product is not covered by international regulation on the transport of dangerous goods (IMDG, IATA, ADR/RID).

15 REGULATORY INFORMATION

RISK PHRASES
NC Not classified.

SAFETY PHRASES
NC Not classified.

UK REGULATORY REFERENCES
The Control of Substances Hazardous to Health Regulations 1988, Chemicals (Hazard Information & Packaging) Regulations. IARC Monographs, Vol.68, 1997.

EU DIRECTIVES
Dangerous Substance Directive 67/548/EEC, Dangerous Preparations Directive 1998/45/EEC.

GUIDANCE NOTES
Workplace Exposure Limits EH40.

16 OTHER INFORMATION

GENERAL INFORMATION
HMIS Health - 1 HMIS Flammability - 1 HMIS Physical Hazard - 0 E - Safety glasses, Gloves, Dust Respirator

INFORMATION SOURCES
Material Safety Data Sheet, Misc. manufacturers, Transport of Dangerous Goods, Model Regulations, Tenth Revised Edition, United Nations.

REVISION COMMENTS
The following sections have been revised: 5, 6, 7, 8, 13, 14, 15 and 16. Revised by Bill Cameron

ISSUED BY
Sam Hoskin

REVISION DATE
23-09-05

REV. NO./REPL. SDS GENERATED
2

SDS NO.
10609

RISK PHRASES IN FULL
R20 Harmful by inhalation.

DISCLAIMER


MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We cannot make any assertions as to its reliability or completeness; therefore, user may rely only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user; however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

3 / 3

Hazard statement(s)
H319 Causes serious eye irritation.

Precautionary statement(s)
P264 Wash skin thoroughly after handling.
P280 Wear eye protection/ face protection.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337 + P313 If eye irritation persists: Get medical advice/ attention.

Supplemental Hazard Statements
none

Reduced Labeling (<= 125 ml)
Pictogram 

Signal word
Warning

Hazard statement(s)
none

Precautionary statement(s)
none

Supplemental Hazard Statements
none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Formula
CaCl₂

Molecular weight
110,98 g/mol

CAS-No.
10043-52-4

EC-No.
233-140-8

Index-No.
017-013-00-2

Component	Classification	Concentration
calcium chloride		
CAS-No.	10043-52-4	Eye Irrit. 2; H319
EC-No.	233-140-8	
Index-No.	017-013-00-2	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

Sigma-Aldrich.

www.sigmaaldrich.com

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 6.3
Revision Date 29.04.2021
Print Date 07.01.2023
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name
Calcium chloride

Product Number
C4901

Brand
SIGALD

Index-No.
017-013-00-2

REACH No.
01-2119494219-28-XXXX

CAS-No.
10043-52-4

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company
Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE

Telephone

Fax

E-mail address

1.4 Emergency telephone

Emergency Phone #

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Eye Irritation (Category 2), H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal word

Warning

SIGALD- C4901

Page 1 of 9

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SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Hydrogen chloride gas
Calcium oxide
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.

5.4 Further information

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SIGALD- C4901

Page 2 of 9

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SIGALD- C4901

Page 3 of 9

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SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.
- 6.2 Environmental precautions**
Do not let product enter drains.
- 6.3 Methods and materials for containment and cleaning up**
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.
- 6.4 Reference to other sections**
For disposal see section 13.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling**
For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**
Storage conditions
Tightly closed. Dry.
Moisture sensitive.
- 7.3 Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

- 8.1 Control parameters**
Ingredients with workplace control parameters
- 8.2 Exposure controls**

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min

SIGALD- C4901

Page 4 of 9

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Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P2

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- | | |
|---|------------------------------------|
| a) Appearance | Form: powder
Color: white |
| b) Odor | odorless |
| c) Odor Threshold | Not applicable |
| d) pH | No data available |
| e) Melting point/freezing point | Melting point: 775 °C at 1.013 hPa |
| f) Initial boiling point and boiling range | 1.935 °C at 1.013 hPa |
| g) Flash point | No data available |
| h) Evaporation rate | No data available |
| i) Flammability (solid, gas) | The product is not flammable. |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapor pressure | 0,01 hPa at 20 °C |
| l) Vapor density | No data available |

SIGALD- C4901

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- | | |
|---|--|
| m) Relative density | No data available |
| n) Water solubility | 81,3 g/l at 25 °C - completely soluble |
| o) Partition coefficient: n-octanol/water | Not applicable for inorganic substances |
| p) Autoignition temperature | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity | Viscosity, kinematic: No data available
Viscosity, dynamic: No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | No data available |

- 9.2 Other safety information**
No data available

SECTION 10: Stability and reactivity

- 10.1 Reactivity**
No data available
- 10.2 Chemical stability**
The product is chemically stable under standard ambient conditions (room temperature) .
- 10.3 Possibility of hazardous reactions**
Exothermic reaction with:
boron trifluoride
vinylmethyl ether
Generates dangerous gases or fumes in contact with:
Metals
Zinc
(generation of hydrogen)
- 10.4 Conditions to avoid**
Exposure to moisture may affect product quality.
no information available
- 10.5 Incompatible materials**
No data available
- 10.6 Hazardous decomposition products**
In the event of fire: see section 5

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects**
Acute toxicity
LD50 Oral - Rabbit - male - 500 - 1.000 mg/kg
(OECD Test Guideline 401)
Symptoms: After uptake of large quantities:, Stomach/intestinal disorders, Nausea

SIGALD- C4901

Page 6 of 9

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Symptoms: Possible damages:, mucosal irritations

LD50 Dermal - Rabbit - male and female - > 5.000 mg/kg
Remarks: (ECHA)

Skin corrosion/irritation

Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit
Result: Moderate eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster fibroblasts
Metabolic activation: without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Ames test
Test system: S. typhimurium
Metabolic activation: Metabolic activation
Method: OECD Test Guideline 471
Result: negative
Remarks: (Lit.)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

- 11.2 Additional Information**
RTECS: EV9800000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	static test LC50 - Pimephales promelas (fathead minnow) - 4.630 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 2.400 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	EC50 - Pseudokirchneriella subcapitata - 2.900 mg/l - 72 h (OECD Test Guideline 201)

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

SIGALD- C4801

Page 8 of 9

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14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

Further information

Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : Not applicable

Other regulations

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H319 Causes serious eye irritation.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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SIGALD- C4801

Page 9 of 9

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 8.0
Revision Date 19.10.2022
Print Date 07.01.2023
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Calcium carbonate

Product Number : C4830
Brand : Sigma-Aldrich
REACH No. : 01-2119486795-18-xxxx
CAS-No. : 471-34-1

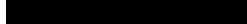
1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE

Telephone : 
Fax : 

E-mail address : 

1.4 Emergency telephone

Emergency Phone # : 

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

2.2 Label elements

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Sigma-Aldrich- C4830

Page 1 of 10

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Sigma-Aldrich- C4830

Page 2 of 10

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SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures**
Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.
- 6.2 Environmental precautions**
No special precautionary measures necessary.
- 6.3 Methods and materials for containment and cleaning up**
Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.
- 6.4 Reference to other sections**
For disposal see section 13.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling**
For precautions see section 2.2.
- 7.2 Conditions for safe storage, including any incompatibilities**
Storage conditions
Tightly closed. Dry.
hygroscopic
Storage class
Storage class (TRGS 510): 13: Non Combustible Solids
- 7.3 Specific end use(s)**
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

- 8.1 Control parameters**
Ingredients with workplace control parameters
- 8.2 Exposure controls**
Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

Sigma-Aldrich- C4830

Page 3 of 10

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This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested: KCL 741 Dermatril® L

Respiratory protection

required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P1

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure

No special precautionary measures necessary.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- | | |
|---|--|
| a) Physical state | powder |
| b) Color | white |
| c) Odor | No data available |
| d) Melting point/freezing point | Melting point/freezing point: 800 °C - Decomposes on heating. |
| e) Initial boiling point and boiling range | 800 °C |
| f) Flammability (solid, gas) | The product is not flammable. - Test N.1: Test method for readily combustible solids |
| g) Upper/lower flammability or explosive limits | No data available |
| h) Flash point | Not applicable |
| i) Autoignition temperature | not auto-flammable |
| j) Decomposition temperature | No data available |
| k) pH | 8.0 |
| l) Viscosity | Viscosity, kinematic: No data available
Viscosity, dynamic: No data available |

Sigma-Aldrich- C4830

Page 4 of 10

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- | | |
|---|--|
| m) Water solubility | 0.017 g/l at 20 °C - OECD Test Guideline 105- slightly soluble |
| n) Partition coefficient: n-octanol/water | Not applicable for inorganic substances |
| o) Vapor pressure | No data available |
| p) Density | 2.93 g/cm ³ at 25 °C - lit. |
| Relative density | No data available |
| q) Relative vapor density | No data available |
| r) Particle characteristics | No data available |
| s) Explosive properties | No data available |
| t) Oxidizing properties | none |

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

- 10.1 Reactivity**
No data available
- 10.2 Chemical stability**
The product is chemically stable under standard ambient conditions (room temperature) .
- 10.3 Possibility of hazardous reactions**
Generates dangerous gases or fumes in contact with:
acids
carbon dioxide
ammonium compounds
acidic
salts
acidic
Exothermic reaction with:
Fluorine
Aluminum
magnesium
- 10.4 Conditions to avoid**
Exposure to moisture may affect product quality.
no information available
- 10.5 Incompatible materials**
No data available
- 10.6 Hazardous decomposition products**
In the event of fire: see section 5

Sigma-Aldrich- C4830

Page 5 of 10

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - female - > 2,000 mg/kg
(OECD Test Guideline 420)
LC50 Inhalation - Rat - male and female - 4 h - > 3 mg/l - aerosol

(OECD Test Guideline 403)
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation

Skin - reconstructed human epidermis (RhE)
Result: No skin irritation - 15 min
(OECD Test Guideline 439)

Serious eye damage/eye irritation

Eyes - Bovine cornea
Result: No eye irritation - 4 h
(OECD Test Guideline 437)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse
Result: negative
(OECD Test Guideline 429)

Germ cell mutagenicity

Test Type: Ames test
Test system: Escherichia coli/Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

Sigma-Aldrich- C4830

Page 6 of 10

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11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - 48 Days - NOAEL (No observed adverse effect level) - 1,000 mg/kg

RTECS: FF9335000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	semi-static test LC50 - Oncorhynchus mykiss (rainbow trout) - > 100 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Desmodesmus subspicatus (green algae) - 14 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)

12.2 Persistence and degradability

Biodegradability aerobic - Exposure time 28 d
Result: 90 % - Readily biodegradable.
(OECD Test Guideline 301B)

12.3 Bioaccumulative potential

Bioaccumulation is unlikely.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Sigma-Aldrich- C4830

Page 7 of 10

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12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No ecological problems are to be expected when the product is handled and used with due care and attention.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

No data available

SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

Further information

Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

Sigma-Aldrich- C4830

Page 8 of 10

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SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Sigma-Aldrich- C4830

Page 9 of 10

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Sigma-Aldrich- C4830

Page 10 of 10

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SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Calcium oxide

Product Number : 248568
Brand : SIGALD
REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No. : 1305-78-8

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE

Telephone :
Fax :
E-mail address :

1.4 Emergency telephone

Emergency Phone # :

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Skin irritation (Category 2), H315
Serious eye damage (Category 1), H318
Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

SIGALD- 248568

Page 1 of 10

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calcium oxide			
CAS-No.	1305-78-8	Skin Irrit. 2; Eye Dam. 1; STOT SE 3; H315, H318, H335	<= 100 %
EC-No.	215-138-9	Concentration limits: 20 %: STOT SE 3, H335;	

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Nature of decomposition products not known.
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

SIGALD- 248568

Page 3 of 10

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Pictogram



Signal word

Danger

Hazard statement(s)

H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Precautionary statement(s)

P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P302 + P352 IF ON SKIN: Wash with plenty of water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements

none

Reduced Labeling (<= 125 ml)

Pictogram



Signal word

Danger

Hazard statement(s)

H318 Causes serious eye damage.

Precautionary statement(s)

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements

none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Quicklime
Lime

Formula : CaO
Molecular weight : 56,08 g/mol
CAS-No. : 1305-78-8
EC-No. : 215-138-9

Component	Classification	Concentration
-----------	----------------	---------------

SIGALD- 248568

Page 2 of 10

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5.4 Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Dry.

Store under inert gas. Moisture sensitive.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact

SIGALD- 248568

Page 4 of 10

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with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min
Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0,11 mm
Break through time: 480 min
Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection
protective clothing

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P2

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Form: powder Color: beige
b) Odor	odorless
c) Odor Threshold	Not applicable
d) pH	12,6 at 20 °C (saturated solution)
e) Melting point/freezing point	Melting point/range: > 450 °C - Regulation (EC) No. 440/2008, Annex, A.1

SIGALD- 248568

Page 5 of 10

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sugars

10.4 Conditions to avoid

Avoid moisture.
no information available

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - female - > 2.000 mg/kg
(OECD Test Guideline 425)
LC50 Inhalation - Rat - male and female - 4 h - > 6,04 mg/l
(OECD Test Guideline 436)

Skin corrosion/irritation

Skin - Rabbit
Result: Severe skin irritation
(OECD Test Guideline 404)

Serious eye damage/eye irritation

Eyes - Rabbit
Result: Risk of serious damage to eyes.
(OECD Test Guideline 405)

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Ames test
Escherichia coli/Salmonella typhimurium
Result: negative

Carcinogenicity

IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

Inhalation - May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

RTECS: EW3100000

SIGALD- 248568

Page 7 of 10

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f) Initial boiling point and boiling range	2.850 °C - lit.
g) Flash point	Not applicable
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapor pressure	No data available
l) Vapor density	No data available
m) Relative density	3,31 at 22 °C - Regulation (EC) No. 440/2008, Annex, A.3
n) Water solubility	1,3376 g/l at 20 °C - Regulation (EC) No. 440/2008, Annex, A.6
o) Partition coefficient: n-octanol/water	Not applicable for inorganic substances
p) Autoignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: Not applicable
s) Explosive properties	No data available
t) Oxidizing properties	No data available

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

10.3 Possibility of hazardous reactions

Risk of explosion with:
Hydrogen halides
Water
Risk of ignition or formation of inflammable gases or vapours with:
Alcohols
Hydrogen fluoride
hydrogen sulphide
Exothermic reaction with:
halogen-halogen compounds
Fluorine
Hydrazine hydrate
Glycerine
Acids

SIGALD- 248568

Page 6 of 10

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Cough, Shortness of breath, Headache, Nausea, Vomiting
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	static test LC50 - Oncorhynchus mykiss (rainbow trout) - 50,6 mg/l - 96 h (OECD Test Guideline 203)
Toxicity to daphnia and other aquatic invertebrates	static test EC50 - Daphnia magna (Water flea) - 49,1 mg/l - 48 h (OECD Test Guideline 202)
Toxicity to algae	static test ErC50 - Pseudokirchneriella subcapitata - 184,57 mg/l - 72 h (OECD Test Guideline 201)
Toxicity to bacteria	static test EC50 - activated sludge - 300,4 mg/l - 3 h (OECD Test Guideline 209)

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: 1910

SIGALD- 248568

Page 8 of 10

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14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Calcium oxide

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: 8

14.4 Packaging group

ADR/RID: - IMDG: - IATA: III

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Not applicable

National legislation

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : Not applicable

Other regulations

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to

SIGALD- 248568

Page 9 of 10

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SIGALD- 248568

Page 10 of 10

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 8.1
Revision Date 15.12.2021
Print Date 07.01.2023
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Silicone Antifoam

Product Number : 85390
Brand : Aldrich

UFI : 32XY-E5EE-599X-NU0P

REACH No. : This product is a mixture. REACH Registration Number see section 3.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances
Uses advised against : This product is not intended for consumer use.

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE

Telephone :

Fax :

E-mail address :

1.4 Emergency telephone

Emergency Phone #

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008
Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

Aldrich- 85390

Page 1 of 11

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Pictogram



Signal word

Danger

Hazard statement(s)
H318

Causes serious eye damage.

Precautionary statement(s)
P280
P305 + P351 + P338

Wear eye protection/ face protection.
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard
Statements

none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Component	Classification	Concentration
α-Octadecyl-ω-hydroxy-poly(oxy-1,2-ethanediyl)		
CAS-No. 9005-00-9 EC-No. 500-017-8	Acute Tox. 4; H302	>= 1 - < 10 %
*		
polymer of ethyleneglycol and tridecylalcohol (ramified)		
CAS-No. 69011-36-5	Acute Tox. 4; Eye Dam. 1; H302, H318	>= 3 - < 10 %
*		

*A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air.

Aldrich- 85390

Page 2 of 11

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In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water Foam Carbon dioxide (CO₂) Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

Mixture with combustible ingredients.

Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.

5.4 Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

Aldrich- 85390

Page 3 of 11

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If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection

protective clothing

Respiratory protection

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Form: liquid Color: white
b) Odor	No data available
c) Odor Threshold	No data available
d) pH	6.5 - 7.5
e) Melting point/freezing point	-1 °C
f) Initial boiling point and boiling range	100 °C at 1,013 hPa
g) Flash point	No data available
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapor pressure	23 hPa at 20 °C
l) Vapor density	No data available
m) Density	0.999 g/cm ³
Relative density	No data available
n) Water solubility	completely soluble at 20 °C soluble

Aldrich- 85390

Page 5 of 11

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6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed.

Protect from frost, heat and sunlight.

Storage class

Storage class (TRGS 510): 10: Combustible liquids

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

Aldrich- 85390

Page 4 of 11

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o) Partition coefficient: n-octanol/water	No data available
p) Autoignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
s) Explosive properties	Not classified as explosive.
t) Oxidizing properties	none

9.2 Other safety information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions

Violent reactions possible with:
The generally known reaction partners of water.

10.4 Conditions to avoid

no information available

10.5 Incompatible materials

Strong oxidizing agents

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Mixture

Acute toxicity

LD50 Oral - Rat - > 5,000 mg/kg

Symptoms: Possible symptoms: mucosal irritations

LD50 Dermal - Rat - > 2,000 mg/kg

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

Mixture causes serious eye damage.

Respiratory or skin sensitization

- Guinea pig

Aldrich- 85390

Page 6 of 11

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Does not cause skin sensitization.
(Tested according to Annex V of Directive 67/548/EEC.)

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Components

α -Octadecyl- ω -hydroxy-poly(oxy-1,2-ethanediyl)

Acute toxicity
LD50 Oral - Rat - 1,900 mg/kg
Inhalation: No data available
Dermal: No data available

Skin corrosion/irritation
No data available

Serious eye damage/eye irritation
No data available

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
No data available

Carcinogenicity
No data available

Aldrich- 85390

Page 7 of 11

The life science business of Merck operates as MilliporeSigma in the US and Canada



Reproductive toxicity

No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

polymer of ethylenglycol and tridecylalcohol (ramified)

Acute toxicity

LD50 Oral - Rat - > 200 - 2,000 mg/kg
Symptoms: Vomiting, Diarrhea
Remarks: (External MSDS)
Oral: absorption
Symptoms: slight mucosal irritations
LD50 Dermal - Rat - > 2,000 mg/kg
Remarks: (External MSDS)

Skin corrosion/irritation

Skin - Rabbit
Result: No skin irritation
Remarks: (External MSDS)

Serious eye damage/eye irritation

Eyes - Rabbit
Result: Severe irritations
Remarks: (External MSDS)

Respiratory or skin sensitization

Sensitisation test: - Guinea pig
Result: negative
Remarks: (External MSDS)

Germ cell mutagenicity

Test Type: Ames test
Result: negative
Remarks: (External MSDS)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
Acute oral toxicity - Vomiting, Diarrhea
Acute inhalation toxicity - slight mucosal irritations

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Aldrich- 85390

Page 8 of 11

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SECTION 12: Ecological information

12.1 Toxicity

Mixture
Toxicity to fish LC100 - Fish - 180 mg/l - 96 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

No data available

Components

α -Octadecyl- ω -hydroxy-poly(oxy-1,2-ethanediyl)
No data available

polymer of ethylenglycol and tridecylalcohol (ramified)

Toxicity to fish LC50 - Cyprinus carpio (Carp) - 1 - 10 mg/l - 96 h
(OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 1 - 10 mg/l - 48 h
(OECD Test Guideline 202)

Toxicity to algae IC50 - Desmodesmus subspicatus (green algae) - 1 - 10 mg/l - 72 h
(OECD Test Guideline 201)

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Aldrich- 85390

Page 9 of 11

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SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

Further information

Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Other regulations

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H302 Harmful if swallowed.
H318 Causes serious eye damage.

Aldrich- 85390

Page 10 of 11

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Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Aldrich- 85390

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Page 11 of 11



and a safety shower.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles.

Skin: Wear appropriate gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to minimize contact with skin.

9.0 Physical and Chemical Properties

APPEARANCE: Solid powder

COLOR: White

FORMULA: $(C_3H_5ON)_n(C_3H_5O_2N_3)_n(C_3H_5ON)_n \cdot Cl^-$

RELATIVE DENSITY (WATER = 1): 1.05~1.15

MELTING POINT (°C): 600

SOLUBILITY: Soluble in water .

10.0 Stability and Reactivity

STABILITY: stable.

POLYMERIZATION: none polymerizing.

ACTIVITY: Negative

11.0 Toxicological Information

CHRONIC (LONG-TERM) TOXICITY: None toxicity.

MUTAGENICITY: Negative.

ORAL LD50: none.

12.0 Ecological Information

None toxicity. Ec100000 PPM

13.0 Disposal Considerations

Approved landfill in accordance with all local, state and federal regulations.

14.0 Transportation Information

Out of restrict for air ,land or sea transportation.

15.0 Regulatory Information

Rules and regulations of China

16.0 Other Information

For questions about the Material Safety Data Sheet, contact Product Stewardship at +8613981885298

The information is furnished without warranty, expressed or implied, as to accuracy or completeness. The information is obtained from various sources including the manufacturer and other third party sources. The information may not be valid under all conditions nor if this combination with other material or in any process. Final determination of suitability of any material is the sole responsibility of the users.

化学品种类	防护服	口罩	手套	鞋套	安全帽	安全鞋	工作鞋	其他
Chemical Class	Protective Clothing	Mask	Gloves	Shoes	Safety Hat	Safety Shoes	Work Shoes	Others
防护服	★	★	★	★	★	★	★	★
口罩	★	★	★	★	★	★	★	★
手套	★	★	★	★	★	★	★	★
鞋套	★	★	★	★	★	★	★	★
安全帽	★	★	★	★	★	★	★	★
安全鞋	★	★	★	★	★	★	★	★
工作鞋	★	★	★	★	★	★	★	★
其他	★	★	★	★	★	★	★	★

MATERIAL SAFETY DATA SHEET

Amphoteric polymer (FA-367)

1.0 Chemical Product and Company Identification

Product Name: Amphoteric polymer (FA-367)

Formula: $(C_3H_5ON)_n(C_3H_5O_2N_3)_n(C_3H_5ON)_n \cdot Cl^-$

Molecular Weight: 2000000

2.0 Composition/Information on Ingredients

High polymer (70~85%) Prevent sticker (5~15%) Moisture content (5~15%)

3.0 Hazard Identification/ Potential Health Effects

None toxicity.

4.0 First Aid Measures

Eyes: Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin: Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Never give anything by mouth to an unconscious person. Get medical aid immediately. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

Inhalation: Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Notes to Physician: Treat symptomatically and supportively.

Antidote: The use of a metal chelate should be determined only by qualified medical personnel.

5.0 Fire Fighting Measure

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Extinguishing Media: Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Flash Point: Not applicable.

Autoignition Temperature: Not available. **Explosion Limits, Lower:**N/A **Upper:** N/A

NFPA Rating: (estimated) Health: 2; Flammability: 0; Instability: 0

6.0 Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.

Spills/Leaks: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

7.0 Handling and Storage

Handling: Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Use only with adequate ventilation. Avoid breathing dust.

Storage: Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

8.0 Exposure Controls, Personal Protection

Engineering Controls: Local exhaust ventilation may be necessary to control any air contamination during the use of this product. Facilities storing or utilizing this material should be equipped with an eyewash facility

(FA-367)

Sigma-Aldrich.

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SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 8.1
Revision Date 05.04.2022
Print Date 07.01.2023
GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Potassium sulfate
Potassium sulfate
Product Number : 223492
Brand : SIGALD
REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.
CAS-No. : 7778-80-5

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE

Telephone :

Fax :

E-mail address :

1.4 Emergency telephone

Emergency Phone # :

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2 Label elements

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

SIGALD- 223492

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Page 1 of 9



(FA-367)

2.3 Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances
Formula : K₂O₄S
Molecular weight : 174.26 g/mol
CAS-No. : 7778-80-5
EC-No. : 231-915-5

No components need to be disclosed according to the applicable regulations.

SECTION 4: First aid measures

4.1 Description of first-aid measures
If inhaled
After inhalation: fresh air.
In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.
In case of eye contact
After eye contact: rinse out with plenty of water. Remove contact lenses.
If swallowed
After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.
4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11
4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.
5.2 Special hazards arising from the substance or mixture
Sulfur oxides
Potassium oxides
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters
In the event of fire, wear self-contained breathing apparatus.
5.4 Further information
Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Avoid inhalation of dusts. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.
6.2 Environmental precautions
Do not let product enter drains.
6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.
6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
For precautions see section 2.2.
7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
Tightly closed. Dry.
Storage class
Storage class (TRGS 510): 13: Non Combustible Solids
7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Ingredients with workplace control parameters
8.2 Exposure controls
Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses
Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please

contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Material tested:KCL 741 Dermatril® L

Respiratory protection
required when dusts are generated.
Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.
Recommended Filter type: Filter type P1

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.
Control of environmental exposure
Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Physical state	powder
b) Color	colorless
c) Odor	No data available
d) Melting point/freezing point	Melting point: 1,067 °C
e) Initial boiling point and boiling range	1,689 °C at 1,013 hPa
f) Flammability (solid, gas)	The product is not flammable.
g) Upper/lower flammability or explosive limits	No data available
h) Flash point	Not applicable
i) Autoignition	No data available

	temperature	
j) Decomposition temperature	No data available	
k) pH	ca.7 at 25 °C	
l) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available	
m) Water solubility	120 g/l - soluble	
n) Partition coefficient: n-octanol/water	No data available	
o) Vapor pressure	No data available	
p) Density	2.662 g/cm ³	
	Relative density	No data available
q) Relative vapor density	No data available	
r) Particle characteristics	No data available	
s) Explosive properties	No data available	
t) Oxidizing properties	none	

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available
10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .
10.3 Possibility of hazardous reactions
Risk of explosion with:
smelt with
Aluminum
sodium
acetylidene
magnesium

10.4 Conditions to avoid
no information available
10.5 Incompatible materials
no information available
10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 425)
Remarks: (in analogy to similar products)
Symptoms: After uptake of large quantities: Gastrointestinal discomfort
Inhalation: No data available
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation

Skin - reconstructed human epidermis (RhE)
Result: No skin irritation - 5 min
(Regulation (EC) No. 440/2008, Annex, B.46)

Serious eye damage/eye irritation

Eyes - Rabbit
Result: No eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse
Result: negative
(OECD Test Guideline 429)
Remarks: (in analogy to similar products)
The value is given in analogy to the following substances: magnesium sulfate

Germ cell mutagenicity

Test Type: Ames test
Test system: Escherichia coli/Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

SIGALD- 223492

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Page 6 of 9

considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Discharge into the environment must be avoided.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number

ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name

ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)

ADR/RID: - IMDG: - IATA: -

14.4 Packaging group

ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

Further information

Not classified as dangerous in the meaning of transport regulations.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out

SIGALD- 223492

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Page 8 of 9

11.2 Additional Information

Endocrine disrupting properties

Product:

Assessment The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Repeated dose toxicity - Rat - male and female - Oral - NOAEL (No observed adverse effect level) - >= 1,500 mg/kg - LOAEL (Lowest observed adverse effect level) - > 1,500 mg/kg

RTECS: TT5900000

Gastrointestinal disturbance

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Hazardous properties cannot be excluded but are unlikely when the product is handled appropriately.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish	static test LC50 - Pimephales promelas (fathead minnow) - 680 mg/l - 96 h (US-EPA)
Toxicity to daphnia and other aquatic invertebrates	static test LC50 - Daphnia magna (Water flea) - 720 mg/l - 48 h (US-EPA)
Toxicity to algae	IC50 - Desmodesmus subspicatus (green algae) - 2,900 mg/l - 72 h Remarks: (IUCLID)

12.2 Persistence and degradability

The methods for determining biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components

SIGALD- 223492

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Page 7 of 9

SECTION 16: Other information

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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SIGALD- 223492

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Page 9 of 9

SIGALD- 223492

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Page 9 of 9

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifiers

Product name : Potassium hydroxide

Product Number : 484016
Brand : SIGALD
Index-No. : 019-002-00-8
REACH No. : 01-2119487136-33-XXXX
CAS-No. : 1310-58-3

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals, Manufacture of substances

1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Pte Ltd
(Co. Registration No. 199403788W)
2 Science Park Drive
#05-01/12 Ascent Building
SINGAPORE 118222
SINGAPORE

Telephone :
Fax :
E-mail address :

1.4 Emergency telephone

Emergency Phone # :

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Corrosive to Metals (Category 1), H290
Acute toxicity, Oral (Category 4), H302
Skin corrosion (Sub-category 1A), H314
Serious eye damage (Category 1), H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling according Regulation (EC) No 1272/2008

SIGALD- 484016

Page 1 of 10

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Formula : HKO
Molecular weight : 56,11 g/mol
CAS-No. : 1310-58-3
EC-No. : 215-181-3
Index-No. : 019-002-00-8

Component	Classification	Concentration
caustic potash		
CAS-No. 1310-58-3 EC-No. 215-181-3 Index-No. 019-002-00-8	Met. Corr. 1: Acute Tox. 4; Skin Corr. 1A; Eye Dam. 1; H290, H302, H314, H318 Concentration limits: >= 5 %: Skin Corr. 1A, H314; 2 - < 5 %: Skin Corr. 1B, H314; 0,5 - < 2 %: Skin Irrit. 2, H315; < 2 %: Eye Irrit. 2, H319; >= 0,5 %: Met. Corr. 1, H290;	<= 100 %

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice

First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled

After inhalation: fresh air. Call in physician.

In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.

In case of eye contact

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

If swallowed

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed

No data available

SIGALD- 484016

Page 3 of 10

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Pictogram



Signal word

Danger

Hazard statement(s)

H290
H302
H314

May be corrosive to metals.
Harmful if swallowed.
Causes severe skin burns and eye damage.

Precautionary statement(s)

P234
P260
P280

Keep only in original packaging.
Do not breathe dusts or mists.
Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements

none

Reduced Labeling (<= 125 ml)

Pictogram



Signal word

Danger

Hazard statement(s)

H314

Causes severe skin burns and eye damage.

Precautionary statement(s)

P260
P280

Do not breathe dusts or mists.
Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements

none

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms : Caustic potash

SIGALD- 484016

Page 2 of 10

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SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Potassium oxides
Not combustible.
Ambient fire may liberate hazardous vapours.

5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

5.4 Further information

Gives off hydrogen by reaction with metals. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions

Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

6.4 Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

No metal containers.
Tightly closed. Dry.
Absorbs carbon dioxide (CO2) from air.
Air sensitive, strongly hygroscopic

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SIGALD- 484016

Page 4 of 10

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

Derived No Effect Level (DNEL)

Application Area	Routes of exposure	Health effect	Value
Workers	Inhalation	Long-term local effects	1 mg/m3
Consumers	Inhalation	Long-term local effects	1 mg/m3

8.2 Exposure controls

Personal protective equipment

Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles

Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested:KCL 741 Dermatril® L

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0,11 mm

Break through time: 480 min

Material tested:KCL 741 Dermatril® L

Body Protection

protective clothing

Respiratory protection

required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: Filter type P2

SIGALD- 484016

Page 5 of 10

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The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

a) Appearance	Form: flakes Color: colorless
b) Odor	odorless
c) Odor Threshold	Not applicable
d) pH	ca.13,5 at 5,6 g/l at 25 °C
e) Melting point/freezing point	Melting point/range: 361 °C - lit.
f) Initial boiling point and boiling range	1.327 °C at 1.013 hPa
g) Flash point	Not applicable
h) Evaporation rate	No data available
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	No data available
k) Vapor pressure	1 hPa at 719 °C
l) Vapor density	No data available
m) Density	2,04 g/cm3 at 20 °C
Relative density	No data available
n) Water solubility	1.130 g/l at 20 °C
o) Partition coefficient: n-octanol/water	Not applicable for inorganic substances
p) Autoignition temperature	No data available
q) Decomposition temperature	No data available
r) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
s) Explosive properties	No data available
t) Oxidizing properties	No data available

9.2 Other safety information

No data available

SIGALD- 484016

Page 6 of 10

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SECTION 10: Stability and reactivity

10.1 Reactivity

No data available

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) . Heat of solution is very high, and with limited amounts of water, violent boiling may occur

10.3 Possibility of hazardous reactions

No data available

10.4 Conditions to avoid

Do not heat above melting point.
no information available

10.5 Incompatible materials

animal/vegetable tissues, glass, various plastics, Metals

10.6 Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - male - 333 mg/kg

(OECD Test Guideline 425)

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach.

Symptoms: burns of mucous membranes, Cough, Shortness of breath, Possible damages; damage of respiratory tract

Dermal: No data available

Skin corrosion/irritation

Skin - Rabbit

Result: Causes burns.

Remarks: (IUCLID)

Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage.

(OECD Test Guideline 405)

Causes serious eye damage.

Respiratory or skin sensitization

Sensitisation test: - Guinea pig

Result: negative

Remarks: (IUCLID)

Germ cell mutagenicity

Test Type: Ames test

Test system: S. typhimurium

Metabolic activation: with and without metabolic activation

Result: negative

Remarks: (ECHA)

Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Carcinogenicity

No data available

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

No data available

Aspiration hazard

No data available

11.2 Additional Information

RTECS: TT2100000

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After uptake:

Vomiting

shock

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish LC50 - Gambusia affinis (Mosquito fish) - 80 mg/l - 96 h

Remarks: (IUCLID)

12.2 Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SIGALD- 484016

Page 7 of 10

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SIGALD- 484016

Page 8 of 10

The life science business of Merck operates as MilliporeSigma in the US and Canada



12.6 Other adverse effects
No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

14.1 UN number

ADR/RID: 1813 IMDG: 1813 IATA: 1813

14.2 UN proper shipping name

ADR/RID: POTASSIUM HYDROXIDE, SOLID
IMDG: POTASSIUM HYDROXIDE, SOLID
IATA: Potassium hydroxide, solid

14.3 Transport hazard class(es)

ADR/RID: 8 IMDG: 8 IATA: 8

14.4 Packaging group

ADR/RID: II IMDG: II IATA: II

14.5 Environmental hazards

ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user

No data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3.

H290 May be corrosive to metals.
H302 Harmful if swallowed.

SIGALD- 484016

Page 9 of 10

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H314 Causes severe skin burns and eye damage.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H319 Causes serious eye irritation.

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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SIGALD- 484016

Page 10 of 10

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ระยะดำเนินการผลิต



List Chemical at NSN-6 Chemical Warehouse on 1 - 31 Dec 2020

Item	Description	Supply By	Manufacture	Expired	UOM	Department	Location	
							ECO-E	ECO-R
1.	Demulsifier Breaker (DMO86338) Demulsifier Breaker (DMO86338)	Baker Hughes	04-Feb-20 04-Feb-20	04-Feb-22 04-Feb-22	Drum Drum	Production Production		
2.	Demulsifier X-8656 - Nalco Emulsion Breaker Demulsifier X-8656 - Nalco Emulsion Breaker	MMSVS	10-Aug-20 10-Aug-20	09-Aug-22 09-Aug-22	Drum Drum	Production Production	POE-5	NSE-C1
3.	Demulsifier PROSOLV EB8197	SUEZ	27-Jul-19	27-Jul-21	DRUM	Production		
4.	PTT Gear Oil 320	PTT	20-Jul-20 21-Mar-20		Drum Drum	Production Production		
5.	H2S SULF SCAV	THAI PRETOLEUM	20-Dec-18	20-Dec-20	DRUM	Production		
6.	Shell Rimula R2 NG 15W-40	IIDA-SEVEN SUNS	02-Jan-20		Drum	Mechanical		
7.	HYDROCHLORIC acid 35% 25Kgs/Pail	THAI PRETOLEUM	25-Dec-18	25-Dec-20	Pail	WSVC		
8.	Soda Ash 50Kgs/Sack	THAI PRETOLEUM	25-Dec-18	25-Dec-20	Sack	WSVC		
9.	Hydrochloric acid 35%(Liquid) 1,250 ky/Tank	MMSVS	04-Aug-20	04-Aug-22	Tank	WSVC		
10.	Soda Ash (40 kg. /sack)	"MMSVS TXP	4-Aug-20 7-Aug-20	4-Aug-21 7-Aug-21	Sacks	WSVC		

List Chemical at NSN-6 Chemical Warehouse on 1 - 31 Dec 2020

Item	Description	Supply By	Manufacture	Expired	UOM	Department	Location	
							ECO-E	ECO-R
11.	Corrosion Inhibitor (55 gal/drum)	TXP	07-Aug-20	16-Jan-22	Drum	WSVC		
12.	Hydrochloric acid 15% (HCl) : 1,000 L/IBC Tank	TXP	07-Aug-20	07-Aug-22	Tank	WSVC		
13.	Hydrochloric acid 28% (HCl) : 1,000 L/IBC Tank	TXP	07-Aug-20	07-Aug-22	Tank	WSVC		
14.	Xanthan Gum (25kg/Sack)	TXP	07-Aug-20	07-Mar-22	Sacks	WSVC		

หมวดที่ 11. ข้อมูลด้านพิษวิทยา (Toxicological information)

การสัมผัสถูกดวงตา : อาจมีอาการที่ไม่ได้ดังต่อไปนี้
อาการปวดหรือระคายเคือง
การไหลน้ำ
อาการคันแดง

ผลกระทบเฉียบพลันและที่เกิดขึ้นภายหลัง (delayed and immediate effects) รวมทั้งผลเรื้อรัง (chronic effects) จากการรับสัมผัสทั้งในระยะสั้นและระยะยาว (short- and long-term exposure)

ความเป็นพิษเฉียบพลัน

ชื่อผลิตภัณฑ์/ส่วนประกอบ	ผลฉั้ย	สายพันธุ์	ขนาดความเข้มข้น	การได้รับสัมผัส
methanol	LC50 การสูดดม โอ LD50 เกี่ยวกับผิวหนัง LD50 ทางปาก LD50 ทางปาก	หนู (Rat) กระต่าย หนู (Rat) หนู (Rat)	128.2 มก./ลิตร 17100 มก./กก. >=2528 มก./กก. 3200 มก./กก.	4 ชั่วโมง - - -
Hydrocarbons, C10, aromatics, >1% naphthalene	LD50 ทางปาก LD50 ทางปาก	หนู (Rat) หนู (Rat)	>2000 มก./กก. 1470 มก./กก.	- -
Benzenesulfonic acid, 4-C10-13-sec-alkyl derivs. naphthalene	LD50 ทางปาก	หนู (Rat)	490 มก./กก.	-

ผลเรื้อรังที่อาจเกิดขึ้นต่อสุขภาพ

ทั่วไป : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
การสูดดม : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
การกลืนกิน : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
การสัมผัสทางผิวหนัง : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
การสัมผัสถูกดวงตา : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
มีคุณสมบัติเป็นสารก่อมะเร็ง : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
การกลายพันธุ์ : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
การก่อวิรูป : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
ผลต่อพัฒนาการในเด็ก : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
ผลต่อภาวะเจริญพันธุ์ : ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง

ความเป็นพิษเรื้อรัง

ไม่มีข้อมูล

มีคุณสมบัติเป็นสารก่อมะเร็ง

ไม่มีข้อมูล

การกลายพันธุ์

ไม่มีข้อมูล

การก่อวิรูป

ไม่มีข้อมูล

ความเป็นพิษต่อระบบสืบพันธุ์

ไม่มีข้อมูล

หมวดที่ 12. ข้อมูลด้านนิเวศวิทยา (Ecological information)

ความเป็นพิษต่อระบบนิเวศน์ : วัตถุก่อมลพิษในน้ำ อาจเป็นอันตรายต่อสิ่งแวดล้อม หากทิ้งออกน้ำในปริมาณมาก สารนี้เป็นอันตรายต่อสิ่งมีชีวิตในน้ำ และมีผลกระทบเป็นเวลานาน

ความเป็นพิษต่อสิ่งมีชีวิตในน้ำและบนบก

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

หมวดที่ 12. ข้อมูลด้านนิเวศวิทยา (Ecological information)

ชื่อผลิตภัณฑ์/ส่วนประกอบ	ผลฉั้ย	สายพันธุ์	การได้รับสัมผัส
methanol	เฉียบพลัน EC50 10000 ppm น้ำจืด เฉียบพลัน EC50 >10000 มก./ลิตร น้ำจืด เฉียบพลัน EC50 10000000 µg/l น้ำจืด เฉียบพลัน LC50 15400 มก./ลิตร น้ำจืด เฉียบพลัน LC50 100 มก./ลิตร น้ำจืด	สาหร่าย - Prorocentrum minimum แดฟเนีย แดฟเนีย - Daphnia magna ปลา ปลา - Pimephales promelas - รับ เนาร์ (ลูกอ่อนเพิ่งออกจากรัง, ลูก อ่อนเพิ่งฟักตัว, ลูกอ่อนนย่ยาม)	96 ชั่วโมง 48 ชั่วโมง 48 ชั่วโมง 96 ชั่วโมง 96 ชั่วโมง
Hydrocarbons, C10, aromatics, >1% naphthalene naphthalene	เฉียบพลัน LC50 2 ถึง 5 มก./ลิตร เฉียบพลัน EC50 1.96 มก./ลิตร น้ำจืด เฉียบพลัน EC50 1.6 ppm น้ำจืด เฉียบพลัน LC50 2800 µg/l น้ำทะเล	แดฟเนีย - Daphnia magna แดฟเนีย - Daphnia magna สัตว์เปลือกแข็งจำพวกกุ้งกิ้งกุ้ง - Elasmopus pectenircus - ตัวเต็ม วัย ปลา - Melanotaenia fluviatilis - ระยะตัวอ่อน ปลา - Oncorhynchus kisutch	96 ชั่วโมง 48 ชั่วโมง 48 ชั่วโมง 48 ชั่วโมง 96 ชั่วโมง
	เฉียบพลัน LC50 315 µg/l น้ำจืด หรือยัง NOEC 0.67 ppm น้ำจืด		40 วัน

ความคงอยู่/การสลายตัว

ไม่มีข้อมูล

ชื่อผลิตภัณฑ์/ส่วนประกอบ	ครึ่งชีวิตในน้ำ	การย่อยสลายด้วยแสง	การย่อยสลายได้ทางชีวภาพ
Hydrocarbons, C10, aromatics, >1% naphthalene naphthalene	- -	- -	ไม่รวดเร็ว ไม่รวดเร็ว

ศักยภาพในการสะสมทางชีวภาพ (bioaccumulative potential)

ชื่อผลิตภัณฑ์/ส่วนประกอบ	LogP _{ow}	BCF	มีแนวโน้ม
methanol	-0.77	<10	ต่ำ
Hydrocarbons, C10, aromatics, >1% naphthalene	2.8 ถึง 6.5	99 ถึง 5780	สูง
Benzenesulfonic acid, 4-C10-13-sec-alkyl derivs. naphthalene	3.2	-	ต่ำ
	3.4	36.5 ถึง 168	ต่ำ

การเคลื่อนย้ายในดิน (mobility in soil)

สัมประสิทธิ์การแบ่งส่วนดิน/น้ำ (K_{oc}) : ไม่มีข้อมูล

ผลกระทบในทางเสียหายอื่นๆ (: ยังไม่พบผลใดๆ ที่สำคัญหรืออันตรายร้ายแรง
other adverse effects

หมวดที่ 13. ข้อพิจารณาในการกำจัด (Disposal considerations)

วิธีกำจัดทิ้ง : ควรหลีกเลี่ยงและลดการสร้างขยะที่เป็นไปได้ ภาชนะบรรจุหรือบรรจุภาชนะในทิ้งว่างเปล่าแล้วอาจมีผลิตภัณฑ์ตกค้างอยู่ ต้องทิ้งสารและภาชนะนี้ด้วยวิธีการที่ปลอดภัย การทิ้งผลิตภัณฑ์ที่มีกากเกินพอและไม่สามารถรีไซเคิลผ่านวิชีพห้ครบถ้วนปัจจัยขยะที่ได้รับอนุญาต การกำจัดผลิตภัณฑ์เหล่านี้ สารละลาย และผลพลอยได้จากการผลิตควรเป็นไปตามข้อกำหนดการป้องกันสิ่งแวดล้อมและการกำจัดของเสีย รวมทั้งข้อกำหนดของท้องถิ่นด้วย หลีกเลี่ยงการทำให้วัตถุแตกกระจาย และสัมผัสกับพื้นดิน ทางเดินน้ำ ทะรระบายน้ำและท่อระบายของเสียใดๆ

หมวดที่ 14. ข้อมูลการขนส่ง (Transport information)

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

หมวดที่ 8. การควบคุมการรับสัมผัสและการป้องกัน ส่วนบุคคล (Exposure controls/personal protection)

เมทิลแอลกอฮอล์	Ministry of Interior (ประเทศไทย, 7/1977) ความเข้มข้นเฉลี่ยตลอดระยะเวลาทำงานปกติ: 260 mg/m ³ 8 ชั่วโมง ความเข้มข้นเฉลี่ยตลอดระยะเวลาทำงานปกติ: 200 ppm 8 ชั่วโมง ACGIH TLV (สหรัฐอเมริกา, 4/2014) ดุดซึมผ่านผิวหนัง TWA: 10 ppm, 0 ครั้งต่อรอบ, 8 ชั่วโมง TWA: 52 mg/m ³ , 0 ครั้งต่อรอบ, 8 ชั่วโมง
naphthalene	

กระบวนการเผ่าะวังที่แนะนำ : ถ้าผลิตภัณฑ์ประกอบด้วยส่วนประกอบที่มีชื่อจำกัดในการได้รับสาร ก็จะต้องจัดให้มีการติดตามตรวจสอบผลการ อากาศในสถานที่ทำงาน หรือการติดตามตรวจสอบทางชีวภาพ เพื่อระบุประสิทธิภาพของระบบถ่ายอากาศ หรือระบบควบคุม และ/หรือความจำเป็นในการใช้อุปกรณ์ปกป้องระบบหายใจ

การควบคุมทางวิศวกรรมที่เหมาะสม : ใช้ได้เฉพาะที่ที่มีการระบายอากาศเพียงพอ ให้ใช้กระบวนการในระบบปิด ใช้การระบายอากาศเฉพาะที่ หรือใช้การควบคุมทางวิศวกรรมอื่นๆ เพื่อให้ค่าการได้รับสัมผัสสารเป็นเงื่อนไขอากาศของงานต่ำกว่าค่าที่แนะนำหรือค่าที่กฎหมายกำหนด การออกแบบควบคุมทางวิศวกรรมยังต้องรักษาปริมาณแก๊ส ไอน้ำ หรือฝุ่นละอองให้อยู่ในระดับที่ต่ำกว่าขีดที่ทำให้ระบิดได้ ใช้อุปกรณ์ระบายอากาศที่ป้องกันการกระเิด

การควบคุมการปล่อยสารที่มีผลต่อสิ่งแวดล้อม : ต้องตรวจสอบสารที่ปล่อยออกจากระบบระบายอากาศหรืออุปกรณ์ในระบบการทำงาน เพื่อให้แน่ใจว่าสอดคล้องกับกฎปฏิบัติของกฎหมายป้องกันสิ่งแวดล้อม ในบางกรณี จำเป็นต้องใช้เครื่องกำจัดครัน เครื่องกรอง หรือการดัดแปลงทางวิศวกรรมของอุปกรณ์ในระบบการทำงาน เพื่อลดระดับสารที่ปล่อยออกมาให้อยู่ในระดับที่ยอมรับได้

มาตรการป้องกันส่วนบุคคล

มาตรการด้านสุขอนามัย

 : ล้างมือ แะพบช่วงล่าง และหน้าให้สะอาดหลังการทำงานเกี่ยวกับเคมีภัณฑ์ ก่อนรับประทานอาหาร ก่อนอาบน้ำ ก่อนการใช้ห้องน้ำ และหลังจากหมดชั่วโมงทำงานแล้ว ควรใช้เทคนิคที่เหมาะสมในการกำจัดเสื้อผ้าที่อาจมีการปนเปื้อน ซักเสื้อผ้าที่ปนเปื้อนสารก่อนนำมมาใช้ใหม่ จัดให้มีสถานที่สำหรับล้างตาและรีบบำชีระเพื่อความปลอดภัยใกล้กับบริเวณพื้นที่ปฏิบัติงาน

การป้องกันระบบทางเดินหายใจ : ควรใช้หน้ากากป้องกันวัตถุพิษที่พอดี อากาศถ่ายเทได้อย่างเหมาะสมซึ่งได้มาตรฐาน หากการประเมินความเสี่ยงระบุไว้ว่าจำเป็น การเลือกหน้ากากช่วยหายใจขึ้นอยู่กับระดับของการสัมผัสกับสารที่ทราบหรือที่คาดไว้, อันตรายจากผลิตภัณฑ์ และขีดจำกัดในการทำงานอย่างปลอดภัยของหน้ากากช่วยหายใจที่เลือกนั้น

การป้องกันมือ : ควรสวมถุงมือที่ทนสารเคมี และกั้นการซึมผ่านที่ได้มาตรฐานตลอดเวลาที่ต้องทำงานเกี่ยวข้องกับวัตถุเคมี หากการใช้ห้ทนความเสียหายไว้ว่าเป็นสิ่งจำเป็น

การป้องกันดวงตา : ควรสวมแว่นตาป้องกันอันตรายที่มีมาตรฐาน เพื่อหลีกเลี่ยงการได้รับของเหลวที่อาจกระเด็นใส่ โฉละออง หรือฝุ่นละอองต่างๆ ตามการประเมินความเสี่ยงที่ระบุไว้ว่าจำเป็น

การป้องกันผิวหนัง : ควรเลือกใช้อุปกรณ์ป้องกันร่างกายให้เหมาะสมตามลักษณะงานและความเสี่ยงที่อาจเกิดขึ้น และควรได้รับการอนุมัติจากผู้เชี่ยวชาญก่อนการจัดการกับการสัมผัสผลิตภัณฑ์

หมวดที่ 9. คุณสมบัติทางกายภาพและทางเคมี (Physical and chemical properties)

ลักษณะภายนอก

สถานะทางกายภาพ : ของเหลว

สี : สีน้ำตาล [เข้ม]

กลิ่น : อะโรมาติก

ค่าขีดจำกัดของกลิ่นที่รับได้ (odour threshold limit)

ค่าความเป็นกรด-ด่าง (pH) : ไม่มีข้อมูล

จุดหลอมเหลว : < -50°C (< -58°F)

จุดเดือด : >=65°C (> =149°F)

จุดวาบไฟ (flash point) : ถ่ายบิด: >9°C (>48.2°F) [Pensky-Martens.]

อัตราการระเหย (evaporation rate) : ไม่มีข้อมูล

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

หมวดที่ 9. คุณสมบัติทางกายภาพและทางเคมี (Physical and chemical properties)

ความสามารถในการลุกติดไฟ : ไม่มีข้อมูล

ได้ของของแข็ง และก๊าซ (flammability (solid, gas))

่าจำกัดการระเบิด (การติดไฟ : ไม่มีข้อมูล

ำค่าและสูงสุด

ความดันไอ (vapour pressure) : ไม่มีข้อมูล

ความหนาแน่นไอ (vapour density) : ไม่มีข้อมูล

ความหนาแน่นสัมพัทธ์ (relative density) : 0.933 ถึง 1.003 (16°C)

ความสามารถในการละลายได้ (solubility) : ไม่ได้ผสมกับน้ำที่ละลายน้ำได้ในตัวทำละลายที่มีกลิ่นหอม

ค่าสัมประสิทธิ์การละลายของ

สารในขั้ยของ n-octanol ต่อ

น้ำ (partition coefficient : n

-octanol/water) : ไม่มีข้อมูล

อุณหภูมิที่ลุกติดไฟได้เอง (auto-ignition temperature)

อุณหภูมิของการสลายตัว (decomposition temperature) : ไม่มีข้อมูล

จุดโหลเห : ไม่มีข้อมูล

SADT : ไม่มีข้อมูล

ความหนืด (viscosity) : กลดาส์คร (40°C): 44 ถึง 87 cSt

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

หมวดที่ 10. ความเสถียรและการเกิดปฏิกิริยา (Stability and reactivity)

ความเสถียรทางเคมี : ผลิตภัณฑ์มีความเสถียร

ความเป็นไปได้ในการเกิดปฏิกิริยาอันตราย : การเก็บรักษาและการใช้งานภายใต้สภาวะปกติจะไม่ทำให้เกิดปฏิกิริยาที่เป็นอันตราย

สภาวะที่ควรหลีกเลี่ยง

 : หลีกเลี่ยงแหล่งที่อาจเกิดการติดไฟทั้งหลาย (ไม่ว่าจะเป็นประกายไฟหรือเปลวไฟ) ห้ามใช้ความกดดัน, ตัด, เข็มต่อ, เข็มด้วยของเหล็อง, บัดกรี, เจาะ, บด, หรือปล่อยให้ภาชนะบรรจุได้รับความร้อนหรือถูกไฟลัดแสงจุดไฟ

วัสดุที่เข้ากันไม่ได้ : วัสดุที่เกิดปฏิกิริยาหรือไม่เข้ากันสารต่อไปนี้ : สารออกซิไดซ์

ความเป็นอันตรายของสารที่เกิดจากการสลายตัว : เมื่อเก็บและใช้งานในสภาพปกติ ไม่ควรมีผลิตภัณฑ์จากการสลายตัวที่เป็นอันตรายเกิดขึ้น

หมวดที่ 11. ข้อมูลด้านพิษวิทยา (Toxicological information)

ข้อมูลเกี่ยวกับทางรับสัมผัสที่อาจเกิดขึ้น ได้แก่ การหายใจทั่วไป การกลืนกิน และการสัมผัสทางผิวหนังและดวงตา

การสูดดม : เป็นอันตรายหากสูดดม

การกลืนกิน : เป็นอันตรายเมื่อกินเข้าไป ระคายเคืองต่อปาก, คอ และท้อง

การสัมผัสทางผิวหนัง : อันตรายเมื่อสัมผัสกับผิวหนัง ระคายเคืองต่อผิวหนังมาก

การสัมผัสถูกดวงตา : ระคายเคืองต่อดวงตอย่างรุนแรง

อาการปรากฏที่มีความสัมพันธ์กับคุณลักษณะทางกายภาพ ทางเคมี และทางพิษวิทยา

การสูดดม : ไม่มีข้อมูลจำเพาะ


การกลืนกิน : ไม่มีข้อมูลจำเพาะ





การสัมผัสทางผิวหนัง : อาจมีอาการที่ไม่ได้ดังต่อไปนี้

การระคายเคือง

อาการคันแดง

เวอรซัน	: 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร	: 7 พฤษภาคม 2015	

 เอกสารข้อมูลความปลอดภัย Emulsoft™ X-8656 (CHP917224)	
หมวดที่: 1. การแบ่งผลิตภัณฑ์และบริษัท	
ชื่อผลิตภัณฑ์	Emulsoft™ X-8656 (CHP917224)
วิธีการอื่นๆ ในการระบุ	ไม่มีข้อมูล
ข้อจำกัดในการใช้	ดูข้อจำกัดของซีไอและขนาดการใช้จากเอกสารข้อมูลผลิตภัณฑ์หรือสอบถามจากผู้แทนขาย
บริษัท	
หมายเลขโทรศัพท์ฉุกเฉิน	
พื้นที่ออกครั้งแรก	

TRETOLITE® DM086338					หน้า: 9/10	
หมวดที่ 14. ข้อมูลการขนส่ง (Transport information)						
ข้อมูลด้านกฎข้อบังคับ (Regulatory information)	หมายเลขสหประชาชาติ (UN number)	ชื่อในการขนส่งที่เหมาะสม	ประเภทวัตถุอันตราย	PG*	ฉลาก	ข้อมูลเพิ่มเติม
ประเภทวัตถุแบ่งตามเกณฑ์ขององค์การสหประชาชาติ	UN1993	FLAMMABLE LIQUID, N.O.S. (contains aliphatic alcohols & aromatic naphtha)	3	II		-
ประเภทของ ADR/RID	UN1993	FLAMMABLE LIQUID, N.O.S. (contains aliphatic alcohols & aromatic naphtha)	3	II		ข้อกำหนดอุณหภูมิ 640 (C) รหัสเสียงดัง (D/E)
ประเภทของ IATA	UN1993	FLAMMABLE LIQUID, N.O.S. (contains aliphatic alcohols & aromatic naphtha)	3	II		-
ประเภทของ IMDG	UN1993	FLAMMABLE LIQUID, N.O.S. (contains aliphatic alcohols & aromatic naphtha)	3	II		-

PG* : กลุ่มการบรรจุ (packing group)

หมวดที่ 15. ข้อมูลด้านกฎข้อบังคับ (Regulatory information)

พระราชบัญญัติวัดดกอันตราม พ.ศ. 2544 ค.ศ. 2001

ชนิด	ชนิด	หน่วยงานรับผิดชอบ	เงื่อนไขต่างๆ
ชื่อส่วนผสม methanol	1	กรมโรงงานอุตสาหกรรม	เว้นแต่ในส่วนที่อยู่ในความรับผิดชอบของสำนักปกครองกรมการอาหารและยา
	1	สำนักงานคณะกรรมการอาหารและยา	ในผลิตภัณฑ์อุปโภคที่ใช้ในบ้านเรือนที่มีสารนี้เป็นตัวฟอสเฟส
	4	สำนักงานคณะกรรมการอาหารและยา	ในผลิตภัณฑ์สำหรับฉีดหรือพ่นและในผลิตภัณฑ์ที่ใช้ทำใช้ต้องสัมผัสกับผิวหนังหรืออาหาร
	4	สำนักงานคณะกรรมการอาหารและยา	ในผลิตภัณฑ์ที่ใช้เป็นเชื้อเพลิงในการประกอบอาหารหรืออุ่นอาหาร
naphthalene	2	สำนักงานคณะกรรมการอาหารและยา	ในผลิตภัณฑ์ที่ใช้ในบ้านเรือนหรือทางสาธารณะซึ่งทำมาเพื่อประโยชน์แก่การรับ ป้องกัน ความคม ไม่ ทำจืดและลงเล็ดรั่ว

บัญชี ก. :ประกาศกระทรวงแรง : มีชื่ออยู่ในรายการ
งานและสวัสดิการสังคม

บัญชี ข. :ประกาศกระทรวงแรง : ไม่อยู่ในรายการ
งานและสวัสดิการสังคม

ไม่มีกฎหมายระดับชาติและ/หรือระดับภูมิภาคต่อไปนี้อาจเกี่ยวข้องกับผลิตภัณฑ์นี้ (รวมถึงส่วนประกอบของผลิตภัณฑ์)

เวอร์ชัน : 1	วันที่ออก/วันที่มีการปรับปรุงเอกสาร : 7 พฤษภาคม 2015
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เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

สารคงมีป้องกัน/ อุปกรณ์ป้องกัน/ หน้า
การครอบงอม:

หากสวมใส่: ใช้หน้ากากชนิดที่หายใจหรือแพทย์ /
โรงพยาบาลที่หากสัมผัสผลิตภัณฑ์ (หรือ ฝุ่น)
ถอดเสื้อผ้าที่เปื้อนหรือออกทันที จะสวมถุงด้วยถุง/ใส่ถุง
ห้ามห้าให้อาเจียนอาจเกิดการคายเคืองผิวหนังขึ้น
: รีบนำและนำจากแพทย์ /
พบแพทย์ถอดเสื้อผ้าที่เปื้อนและซักล้างก่อนนำกลับมาใช้ใหม่ในกรณีใส่
ใหม่ : ใส่ถุงมือ, สวมหน้ากาก หรือ ใส่ถุงเท้าและถอดรองเท้าในทันที
การซักเก็บ:
: ในสถานที่ที่มีการระบายอากาศได้ดี เก็บในที่เย็น เก็บในที่มืดไว้
การกำจัด:
กำจัดสิ่งปนเปื้อน/ ภาชนะ: ในโรงกำจัดของเสียที่ได้รับการรับรอง

อันตรายอื่นๆ: ไม่มีปฏิกิริยา

หมวดที่: 3. องค์ประกอบ/ข้อมูลเกี่ยวกับส่วนผสม

ชื่อทางเคมี	หมายเลข CAS	ความเข้มข้น: (%)
แบบฟอร์มโมเลกุลหรือโมล	64742-94-5	30 - 60
ผลิตภัณฑ์นี้เป็นผลจากปฏิกิริยาระหว่างฟอสฟอ กับอีโคโน	36484-54-5	10 - 30
Formaldehyde, polymers with branched 4- nonylphenol, ethylene oxide and propylene oxide	153795-76-7	5 - 10
ไอโซโพรพานอล	67-63-0	1 - 5
และฟอสฟอ	91-20-3	0.1 - 1

หมวดที่: 4. วิธีการปฐมพยาบาล

ในกรณีสัมผัสกับผิวหนัง

: ล้างด้วยน้ำปริมาณมาก หากมีอาการหายใจไม่พบแพทย์

ในกรณีสัมผัสกับผิวหนัง

: ล้างออกด้วยปริมาณมากทันทีและล้างไปอย่างน้อย 15 นาที ไปพบแพทย์ถ้ามี
พบแพทย์ ถ้ามีอาการคายเคืองแดงและคัน

หากกลืนกิน

: ห้ามห้าให้อาเจียน อาจเกิดผลกระพือที่สำคัญที่สุดวิธีแบบเตรียมพื้น
และเกิดพิษภายใน 5 นาที อาจมีอาการอื่นด้วยจากอาการสำคัญ
โดยเข้ารับการปฐมพยาบาลและไปพบแพทย์ทันที

หากหายใจเข้าไม่

: หากมีอาการหายใจไม่พบแพทย์

การป้องกันสำหรับปฐมพยาบาล

: ในกรณีที่เกิดเหตุฉุกเฉินให้รีบแจ้งเจ้าหน้าที่หรือหน่วยงาน
ในองค์กรดำเนินการโดยวิธีสื่อสารจากภายนอก
หากมีข้อมูลติดต่อติดต่อหน่วยงานที่รับผิดชอบกรณีเกิดเหตุฉุกเฉิน
ไปอยู่ก่อนป้องกันส่วนบุคคลตามที่กำหนด

หมายเลขฉุกเฉิน

: ปรึกษาตามอาการ

ไปอยู่ก่อนป้องกันสำหรับ (หมวดที่ 11)

หมวดที่: 5. วิธีการปฐมพยาบาล

สารต้นเพลิงที่เฉพาะ

: ไม่มีการดับเพลิงที่เหมาะสมกับสถานการณ์ในที่และสภาพแวดล้อม
ตามเงื่อนไข

สารต้นเพลิงที่เฉพาะ

: เจ็ดห้าที่มีปริมาณมาก

TRETOLITE® DMO86338		หน้า: 10/10
หมวดที่ 16. ข้อมูลอื่นๆ		
ประวัติ		
วันที่ตีพิมพ์	:	7 พฤษภาคม 2015.
วันที่ออก/วันที่มีการปรับปรุงเอกสาร	:	7 พฤษภาคม 2015
วันที่พิมพ์ครั้งที่แล้ว	:	ไม่มีการบังคับใช้มาก่อน
เวอร์ชัน	:	1
คำอธิบายคำย่อ	:	ADN=ข้อตกลงของยุโรปว่าด้วยการขนส่งสินค้าอันตรายระหว่างประเทศโดยทางน้ำภายในประเทศ ADE=ข้อตกลงของยุโรปว่าด้วยการขนส่งสินค้าอันตรายระหว่างประเทศทางถนน ATE=คำความเป็นพิษเทียบพหุคูณขององค์ประกอบในสารผสม BCF=ค่าปัจจัยความเข้มข้นทางชีวภาพ GHS=การทำงานประเภทและติดฉลากสารเคมีที่เป็นระบบเดียวกันทั่วโลก IATA=สมาคมขนส่งทางอากาศระหว่างประเทศ IBC=บรรจุภัณฑ์ IBC IMDG=การขนส่งสินค้าอันตรายทางทะเล LogPow=ค่าสัมประสิทธิ์การกระจายตัวของสารในชั้นออกทาลอและชั้นน้ำ MARPOL 73/78=อนุสัญญาแห่งประเทศว่าด้วยการป้องกันมลพิษจากเรือ ค.ศ.1973 และพิธีสาร ค.ศ.1978 RID=ข้อกำหนดเกี่ยวกับการขนส่งสินค้าอันตรายทางรถไฟ UN=องค์การสหประชาชาติ
ข้อมูลอ้างอิง	:	ไม่มีข้อมูล
✓ แสดงข้อมูลที่เปลี่ยนจากบันทึกพิมพ์ครั้งที่แล้ว		
หมายเหตุสำคัญ		
This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.		

เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

สิ่งปนเปื้อนที่ตรวจพบในส่วนของ Octanol ต่อหน่วย	ไม่มีข้อมูลที่สามารถหาได้
อุณหภูมิที่จุดติดไฟได้เอง	ไม่มีข้อมูลที่สามารถหาได้
อุณหภูมิของการสลายตัว	คาร์บอนออกไซด์
ความหนืดไดนามิก	< 100 mPa.s (25 °C)
ความหนืดไดนามิก VDC	ไม่มีข้อมูลที่สามารถหาได้

หมวดที่: 10. ความเสถียรและการเก็บรักษา

ความคงตัวทางเคมี	เสถียรภายใต้สภาวะปกติ
ปฏิกิริยาที่เป็นอันตรายที่อาจเกิดขึ้นได้	ไม่มีปฏิกิริยาอันตรายเกิดขึ้นภายใต้สภาวะการใช้งานปกติ
สภาวะที่ควรหลีกเลี่ยง	ความร้อน เป่าไฟ และ ประกายไฟ
สารอันตรายที่เกิดจากการสลายตัว	คาร์บอนออกไซด์

หมวดที่: 11. ข้อมูลทางพิษวิทยา

ข้อมูลเกี่ยวกับทางรับสัมผัสอาจเกิดขึ้น	การสูดดม, สัมผัสกับตา, การสัมผัสกับผิวหนัง
ผลต่อสุขภาพที่อาจเกิดขึ้น	
ความเฉื่อย	ไม่มีทราบหรือคาดว่าจะมีการบาดเจ็บทางสุขภาพภายใต้การใช้งานอย่างปกติ
ทางผิวหนัง	ไม่มีทราบหรือคาดว่าจะมีการบาดเจ็บทางสุขภาพภายใต้การใช้งานอย่างปกติ
การกลืนกิน	ไม่มีทราบหรือคาดว่าจะมีการบาดเจ็บทางสุขภาพภายใต้การใช้งานอย่างปกติ
การสูดดม	ไม่มีทราบหรือคาดว่าจะมีการบาดเจ็บทางสุขภาพภายใต้การใช้งานอย่างปกติ
การสัมผัสแบบเฉื่อย	ไม่มีทราบหรือคาดว่าจะมีการบาดเจ็บทางสุขภาพภายใต้การใช้งานอย่างปกติ
ประสมปนเปื้อนจากการสัมผัสในมนุษย์	
สัมผัสกับตา	ไม่มีข้อมูลอาการที่เป็นพิษหรือคาดหมายไว้
การสัมผัสกับผิวหนัง	บวมแดง, การระคายเคือง
การกลืนกิน	อาเจียน
การสูดดม	ไม่มีข้อมูลอาการที่เป็นพิษหรือคาดหมายไว้
ความเป็นพิษ	

เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

ความเป็นอันตรายเฉพาะที่เกิดจากสารเคมี	อันตรายจากไฟไหม้ ห้ามเข้าใกล้ความร้อนและแหล่งกำเนิดประกายไฟ ไฟไหม้สามารถลุกลามได้ภายใต้สภาวะที่กดขี่ของปริมาณ ระเหยที่สะสมของไอและความเข้มข้นที่สามารถระเบิดได้ ไม่สามารถดับด้วยน้ำในบริเวณที่ติด
ผลิตภัณฑ์อันตรายที่เกิดจากการจุดติดไฟ	คาร์บอนออกไซด์
อุปกรณ์ป้องกันเฉพาะสำหรับนักผจญเพลิง	ใช้อุปกรณ์ป้องกันอันตรายส่วนบุคคล
วิธีการดับเพลิงเฉพาะ	ใช้ถังดับเพลิงน้ำเพื่อเข้าใกล้ตามขั้นตอน แยกเก็บถังดับเพลิงที่ปลอดภัย โดยต้องไม่ไปปล่อยลงที่ระบายน้ำ ส่วนที่เหลือจากการเผาไหม้และน้ำจากการดับเพลิงที่ปนเปื้อนต้อง ถูกกำจัดตามข้อบังคับของท้องถิ่น

หมวดที่: 6. มาตรการจัดการเมื่อมีการหกและรั่วไหลของสารโดยอุบัติเหตุ

คำแนะนำสำหรับผู้ประสบเหตุ	กำจัดแหล่งกำเนิดของประกายไฟทั้งหมดออก ผู้ทำงานที่ทำความสะอาดสารเคมีต้องเป็นผู้ที่ได้รับการฝึกอบรมเท่านั้น แจ้งถึงมาตรการป้องกันที่แสดงในหัวข้อที่ 7 และ 8
ข้อควรระวังทางสิ่งแวดล้อม	อย่าปล่อยไว้สัมผัสกับดิน น้ำผิวดิน หรือ น้ำใต้ดิน
วิธีการและวิธีดำเนินการสำหรับการกักเก็บและการทำความสะอาด	กำจัดแหล่งกำเนิดไฟทั้งหมดที่สามารถทำได้เพื่อป้องกันการรั่วไหล หากมีความปลอดภัยบรรจุและเก็บส่วนที่เหลือด้วยวัสดุที่ดูดซับที่ไม่สามารถเผาไหม้ได้ (เช่น ทราย, ดิน, ดินเบา, เวอร์มิคูไลต์) และใส่ในภาชนะสำหรับกำจัดตามข้อบังคับที่ ท้องถิ่นหรือระดับชาติ (ดูหมวดที่ 13) ขอแจ้งสารที่ปนเปื้อนออกด้วยน้ำในกรณีที่เกิดการรั่วไหลเป็นปริมาณมาก ในถังที่เก็บเพื่อเก็บสารที่รั่วไหล หรือกำจัดการรั่วไหลเพื่อป้องกันไม่ให้เกิดมลพิษเพิ่มเติม

หมวดที่: 7. การป้องกันและการเก็บรักษา

คำแนะนำสำหรับการใช้งานอย่างปลอดภัย	หลีกเลี่ยงการสัมผัสกับผิวหนังและไฟหรือประกายไฟ ใช้มาตรการที่จำเป็นเพื่อหลีกเลี่ยงการเกิดประกายไฟจากไฟฟ้าสถิต (ซึ่งอาจก่อให้เกิดการลุกไหม้ของไอของสารอินทรีย์) ห้ามเข้าใกล้เปลวไฟ ประกายไฟและพื้นผิวที่ร้อน ห้ามมือสัมผัสโดยตรงหลังจากใช้สาร
สภาวะการเก็บรักษาอย่างปลอดภัย	ห้ามเข้าใกล้ความร้อนและแหล่งกำเนิดประกายไฟ เก็บในที่เย็นและอากาศถ่ายเทได้สะดวก เก็บให้ห่างจากสารออกซิไดซ์ เก็บให้ห่างจากเด็ก ปีกาษาขณะบรรจุให้แน่น เก็บในภาชนะที่เหมาะสมพร้อมติดฉลาก
วัสดุที่เหมาะสม	เก็บในภาชนะที่มีการติดฉลากอย่างถูกต้อง
วัสดุที่ไม่เหมาะสม	พลาสติก

หมวดที่: 8. การควบคุมการรับสัมผัสสาร/การป้องกันส่วนบุคคล

ส่วนประกอบที่สำคัญในการควบคุมในที่ทำงาน	เราไม่ตระหนักถึงอันตรายจากการรับสารทางอากาศ
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เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

ผลิตภัณฑ์	
ความเป็นพิษเฉียบพลันทางปาก	การประมาณความเป็นพิษเฉียบพลัน > 5,000 mg/kg
ความเป็นพิษต่อการสูดดมแบบเฉียบพลัน	การประมาณความเป็นพิษเฉียบพลัน > 40 mg/l ระยะเวลาในการสัมผัส 4 h
ความเป็นพิษทางผิวหนังแบบเฉียบพลัน	ไม่มีข้อมูลที่สามารถหาได้
การกัดกร่อน/ระคายเคืองต่อผิวหนัง	ไม่มีข้อมูลที่สามารถหาได้
การทำลายดวงตา/การระคายเคืองต่อดวงตาอย่างรุนแรง	ไม่มีข้อมูลที่สามารถหาได้
การทำลายเนื้อเยื่อจากการระคายเคืองต่อระบบทางเดินหายใจหรือผิวหนัง	ไม่มีข้อมูลที่สามารถหาได้
การก่อมะเร็ง	ไม่มีข้อมูลที่สามารถหาได้
ผลกระทบต่อระบบสืบพันธุ์	ไม่มีข้อมูลที่สามารถหาได้
การก่อให้เกิดการกลายพันธุ์ของเซลล์สืบพันธุ์	ไม่มีข้อมูลที่สามารถหาได้
การทำลายหรือการยับยั้งการเจริญเติบโต	ไม่มีข้อมูลที่สามารถหาได้
จากการสัมผัสครั้งเดียว	ไม่มีข้อมูลที่สามารถหาได้
จากการสัมผัสซ้ำ	ไม่มีข้อมูลที่สามารถหาได้
ความเป็นพิษจากการสำลัก	ไม่มีข้อมูลที่สามารถหาได้
ส่วนประกอบ	
ความเป็นพิษทางผิวหนังแบบเฉียบพลัน	ไอโซโพรพานอล LD50 กระด่ำย 12,870 mg/kg เมทิลแซลิซิล LD50 กระด่ำย > 2,000 mg/kg

หมวดที่: ข้อมูลด้านนิเวศวิทยา

ความเป็นพิษต่อระบบนิเวศน์	
ความเป็นพิษต่อปลา	ไม่มีข้อมูลที่สามารถหาได้
ความเป็นพิษต่อไรน้ำและสัตว์ไม่มีกระดูกสันหลังอื่นที่อาศัยในน้ำ	ไม่มีข้อมูลที่สามารถหาได้
ความเป็นพิษต่อสาหร่าย	ไม่มีข้อมูลที่สามารถหาได้

เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

การควบคุมทางวิศวกรรมที่เหมาะสม	ระบบระบายอากาศเชิงลบที่มีประสิทธิภาพ, ควบคุมความเข้มข้นของอากาศให้ต่ำกว่ามาตรฐานการสัมผัสในที่ทำงาน
อุปกรณ์ป้องกันส่วนบุคคล	
การป้องกันอันตรายต่อดวงตา	แว่นตาป้องกัน
ป้องกันอันตรายต่อมือ	สวมอุปกรณ์ป้องกันส่วนบุคคลดังต่อไปนี้: ถุงมือชนิดทนสาร ควรทิ้งถุงมือและเปลี่ยนใหม่ถ้าเห็นว่ามีสารซึมซับหรือการทะลุผ่านของสารเคมี
ป้องกันอันตรายต่อผิวหนัง	สวมใส่เสื้อผ้าที่เหมาะสมเพื่อการป้องกัน
ทางเดินหายใจ	โดยปกติแล้วไม่จำเป็นต้องใช้อุปกรณ์ป้องกันการหายใจ
มาตรการด้านสุขวิทยา	ไม่รับประทานอาหาร/เครื่องดื่ม/ยาสูบและเครื่องดื่มแอลกอฮอล์ ล้างมือและทำความสะอาดร่างกายให้ถี่ครั้งสม่ำเสมอ มือ และ บริเวณผิวหนังอื่นๆ ที่สัมผัสกับสารเคมีให้สะอาดหลังการใช้งานทุกครั้ง

หมวดที่: 9. สมบัติทางกายภาพและเคมี

ลักษณะ	ของเหลว
สี	สีเหลือง - สีนํ้าตาล
กลิ่น	ไม่มีข้อมูลที่สามารถหาได้
จุดวาบไฟ	20 - 30 °C วิธีการ: ถ้วยเปิดเบนส์ - มาร์เทนส์
ค่าความเป็นกรด-ด่าง	ไม่มีข้อมูลที่สามารถหาได้
ปริมาณกลิ่นที่ปลอดภัยที่สุด	ไม่มีข้อมูลที่สามารถหาได้
จุดหลอมเหลว/ช่วงของจุดเยือกแข็ง	ไม่มีข้อมูลที่สามารถหาได้
จุดเดือดเริ่มต้น/ช่วงของจุดเดือด	ไม่มีข้อมูลที่สามารถหาได้
อัตราความระเหย	ไม่มีข้อมูลที่สามารถหาได้
ความสามารถในการจุดติดไฟ (ของแข็ง, ก๊าซ)	ไม่มีข้อมูลที่สามารถหาได้
ค่าขีดจำกัดสูงสุดของการระเบิด	ไม่มีข้อมูลที่สามารถหาได้
ค่าขีดจำกัดต่ำสุดของการระเบิด	ไม่มีข้อมูลที่สามารถหาได้
ความดันไอ	ไม่มีข้อมูลที่สามารถหาได้
ความหนาแน่นสัมพัทธ์ของไอ	ไม่มีข้อมูลที่สามารถหาได้
ความหนาแน่นสัมพัทธ์	0.89 - 0.99 (25 °C)
ความหนาแน่น	ไม่มีข้อมูลที่สามารถหาได้
ความสามารถในการละลายน้ำ	ไม่มีข้อมูลที่สามารถหาได้
ความสามารถในการละลายในตัวทำละลายอื่น	ไม่มีข้อมูลที่สามารถหาได้

SAFETY DATA SHEET
PROSOLV EB8197

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Trade name or designation of the mixture
PROSOLV EB8197Date of first issue
30/09/2015Version number
1.2Revision date
29/04/2018Supersedes date
05/01/2018

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses
Emulsion breaker
Uses advised against
None known.

1.3. Details of the supplier of the safety data sheet

1.4. Emergency telephone number

Multilingual emergency number (24/7)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 as amended

Physical hazards		
Flammable liquids	Category 3	H226 - Flammable liquid and vapour.
Health hazards		
Skin corrosion/irritation	Category 2	H315 - Causes skin irritation.
Serious eye damage/eye irritation	Category 2	H319 - Causes serious eye irritation.
Carcinogenicity	Category 2	H351 - Suspected of causing cancer.
Specific target organ toxicity - single exposure	Category 3 narcotic effects	H336 - May cause drowsiness or dizziness.
Aspiration hazard	Category 1	H304 - May be fatal if swallowed and enters airways.
Environmental hazards		
Hazardous to the aquatic environment, long-term aquatic hazard	Category 2	H411 - Toxic to aquatic life with long lasting effects.

Page: 1 / 12

SAFETY DATA SHEET
PROSOLV EB8197

2.2. Label elements

Label according to Regulation (EC) No. 1272/2008 as amended

Contains:
Hydrocarbons, C10, aromatics, >1% naphthalene, Naphthalene, Xylene

Hazard pictograms

Signal word
Danger

Hazard statements

H226
H304
H315
H319
H336
H351
H411

Flammable liquid and vapour.
May be fatal if swallowed and enters airways.
Causes skin irritation.
Causes serious eye irritation.
May cause drowsiness or dizziness.
Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P210
P273
P280

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.

Response

P303 + P361 + P353
P305 + P351 + P338
P308 + P313

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF exposed or concerned: Get medical advice/attention.

Storage

Not available.

Disposal

Not available.

Supplemental label information

None.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

Mixtures

Chemical description	Alkoxyated polymers in aromatic solvent				
Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Hydrocarbons, C10, aromatics, >1% naphthalene	50 - 70	N/A 919-284-0	01-2119463588-24	-	
Classification:	Asp. Tox. 1;H304, STOT SE 3;H336, Carc. 2;H351, Aquatic Chronic 2;H411				
Naphthalene	2.5 - < 25	91-20-3 202-049-5	-	601-052-00-2	#
Classification:	Acute Tox. 4;H302, Carc. 2;H351, Aquatic Acute 1;H400, Aquatic Chronic 1;H410				
2-Butoxyethanol (Butylglycol)	5 - < 10	111-76-2 203-905-0	01-2119475108-36	603-014-00-0	#
Classification:	Acute Tox. 4;H302, Acute Tox. 4;H312, Skin Irrit. 2;H315, Eye Irrit. 2;H319, Acute Tox. 4;H332				

เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

ส่วนประกอบ

ความเป็นพิษต่อปลา : แนนพาทะโรนคียดเอนทิก
LC50 : 3.5 mg/l
ระยะเวลาในการสัมผัส: 96 h

ไอโซโพรพานอล
LC50 : ปลา: 9,640 mg/l
ระยะเวลาในการสัมผัส: 96 h

ความคงทนและความสามารถในการสลายตัว

ไม่มีข้อมูลที่สามารถหาได้

การเคลื่อนไหว

ไม่มีข้อมูลที่สามารถหาได้

ความเป็นไปได้ในการสะสมทางชีวภาพ

ไม่มีข้อมูลที่สามารถหาได้
ข้อมูลสั้นๆ

ไม่มีข้อมูลที่สามารถหาได้

หมวดที่: มาตรการการกำจัด

วิธีการกำจัด : ห้ามไม่ปล่อยผลิตภัณฑ์นี้สู่ท่อระบายน้ำ, แหล่งน้ำ หรือดิน แม้ว่าอาจจะนำมาใช้ใหม่ได้แต่ต้องไม่ทิ้งหรือเผา(ด้วยเตาเผาและวิธีควบคุมอย่างถูกต้อง) ถ้าการนำกลับมาใช้ใหม่ไม่สามารถทำได้ ให้กำจัดให้สอดคล้องตามข้อบังคับท้องถิ่น
กำจัดของเสียที่อาจเป็นอันตรายของเสียที่ได้รับการรับรอง

มาตรการการกำจัด : กำจัดเป็นเสียเกี่ยวกับผลิตภัณฑ์ที่ไม่ได้ใช้งาน
ควรส่งภาชนะเปล่าไปยังสถานที่จัดการของเสียที่ได้รับการรับรองเพื่อ
นำกลับมาใช้ใหม่หรือกำจัด ห้ามนำภาชนะเปล่ามาใช้อีก

หมวดที่: 14. ข้อมูลการขนส่ง

ผู้ขนส่งสินค้า / ผู้ส่งของ / ผู้ส่ง จะเป็นผู้รับผิดชอบเพื่อไม่ให้พบการรั่วซึม, ฉลาก
และเครื่องหมายเป็นไปตามข้อกำหนดที่จำเป็นกับการขนส่ง

การขนส่งทางบก

หมายเลข UN/ID : UN 1993
ชื่อในการขนส่งที่ถูกต้อง : ของเหลวไวไฟ, N.O.S.(Not Otherwise Specified-
ไม่ถูกระบุไว้เป็นอย่างอื่น)
ชื่อทางเทคนิค : แนนพาทะโรนคียดเอนทิก
ประเภทของอันตรายในการขนส่ง : 3
กลุ่มบรรจุภัณฑ์ : III

การขนส่งทางอากาศ (IATA)

หมายเลข UN/ID : UN 1993

7 / 8

เอกสารข้อมูลความปลอดภัย

Emulsotron™ X-8656 (CHP917224)

ชื่อในการขนส่งที่ถูกต้อง : ของเหลวไวไฟ, N.O.S.(Not Otherwise Specified-
ไม่ถูกระบุไว้เป็นอย่างอื่น)
ชื่อทางเทคนิค : แนนพาทะโรนคียดเอนทิก, ไอโซโพรพานอล
ประเภทของอันตรายในการขนส่ง : 3
กลุ่มบรรจุภัณฑ์ : III

การขนส่งทางทะเล (IMDG/IMO)

หมายเลข UN/ID : UN 1993
ชื่อในการขนส่งที่ถูกต้อง : ของเหลวไวไฟ, N.O.S.(Not Otherwise Specified-
ไม่ถูกระบุไว้เป็นอย่างอื่น)
ชื่อทางเทคนิค : แนนพาทะโรนคียดเอนทิก, ไอโซโพรพานอล
ประเภทของอันตรายในการขนส่ง : 3
กลุ่มบรรจุภัณฑ์ : III
สถานะทางทะเล :

หมวดที่: ข้อมูลเกี่ยวกับกฎข้อบังคับ

กฎหมายที่บังคับใช้, ประเทศไทย

พระราชบัญญัติวัตถุอันตราย พ.ศ. 2535

การจำแนกและการสื่อสารความเป็นอันตรายของวัตถุอันตราย พ.ศ. 2555

กฎหมายควบคุมสารเคมีระหว่างประเทศ :

กฎหมายควบคุมสารพิษ
ห้ามนำเข้า

หมวดที่: 16. ข้อมูลอื่นๆ

วันที่มีการแก้ไข : 24.07.2014
หมายเลขตอน : 1.1
เครือข่าย : Regulatory Affairs

ข้อมูลปรับปรุงใหม่:

การเปลี่ยนแปลงข้อมูลเกี่ยวกับระบบหรือสภาพการใช้งานที่ส่งผลกระทบต่อความปลอดภัยและสุขภาพ
ทางซ้ายมือของ MSDS

ข้อมูลทั่วไปปรากฏอยู่ในเอกสารข้อมูลความปลอดภัยนี้มีความถูกต้องตามเท่าที่องค์ความรู้ ข้อมูล และความเห็น ถึง ณ
วันที่จัดทำเอกสารนี้จะผ่านข้อมูลนี้ถูกจัดทำขึ้นเพื่อใช้เป็นแนวทางในการจัดการ ใช้งาน ดำเนินกระบวนการ
เกี่ยวกับ ขนถ่าย กำจัด และปลดปล่อยสารเคมีอย่างปลอดภัย
โดยข้อมูลเหล่านี้ไม่ใช่การรับประกันหรือการรับประกันของผลิตภัณฑ์เฉพาะเกี่ยวกับคุณภาพ
ข้อมูลจะเกี่ยวข้องกับสารเคมีเฉพาะที่ระบุไว้ในเอกสารและไม่ครอบคลุมถึงสารเคมีดังกล่าวที่นำไปรวมกับสารเคมี
หรือกระบวนการอื่น เว้นแต่มีการระบุไว้ในเอกสาร



SAFETY DATA SHEET

PROSOLV EB8197

Recommended monitoring procedures Not available.

Derived no effect levels (DNELs)

<u>Workers</u>			
Components	Value	Assessment factor	Notes
2-Butoxyethanol (Butylglycol) (CAS 111-76-2)			
Long-term, Systemic, Dermal	75 mg/kg	2	
Long-term, Systemic, Inhalation	98 mg/m3		
Short-term, Local, Inhalation	246 mg/m3		
Short-term, Systemic, Dermal	89 mg/kg	15	
Short-term, Systemic, Inhalation	663 mg/m3	15	
Hydrocarbons, C10, aromatics, >1% naphthalene (CAS N/A)			
Long-term, Systemic, Dermal	12.5 mg/kg/day	3	
Long-term, Systemic, Inhalation	151 mg/m3		
Xylene (CAS 1330-20-7)			
Long-term, Systemic, Dermal	180 mg/kg/day	3	
Long-term, Systemic, Inhalation	77 mg/m3		
Short-term, Systemic, Inhalation	289 mg/m3		

Predicted no effect concentrations (PNECs)

Components	Value	Assessment factor	Notes
2-Butoxyethanol (Butylglycol) (CAS 111-76-2)			
Freshwater	8,8 mg/l	10	
Intermittent releases	9,1 mg/l	100	
Marine water	0,88 mg/l	100	
Secondary poisoning	0,02 g/kg	90	
Sediment (freshwater)	34,6 mg/kg	1	
Sediment (marine water)	3,46 mg/kg		
Soil	3,13 mg/kg		
STP	463 mg/l		
Xylene (CAS 1330-20-7)			
Freshwater	0,327 mg/l	1	
Marine water	0,327 mg/l	1	
Sediment (freshwater)	12,46 mg/kg	1	
Sediment (marine water)	12,46 mg/kg	1	
Soil	2,31 mg/kg	1	
STP	6,58 mg/l	1	

Exposure guidelines

Belgium OELs: Skin designation	
2-Butoxyethanol (Butylglycol) (CAS 111-76-2)	Can be absorbed through the skin.
Naphthalene (CAS 91-20-3)	Can be absorbed through the skin.
Xylene (CAS 1330-20-7)	Can be absorbed through the skin.

8.2. Exposure controls

Appropriate engineering controls Adequate ventilation to maintain air contaminants below exposure limits.

Individual protection measures, such as personal protective equipment

Eye/face protection	Splash proof chemical goggles. CEN : EN 166
Skin protection	
- Hand protection	Nitrile gloves (Protection against unintentional short-term contact) Neoprene gloves (Protection against unintentional short-term contact) CEN : EN 374-1/2/3/4; EN 420
- Other	Protective clothing. CEN : EN ISO 13688; EN ISO 6529; EN 14605
Respiratory protection	In case of insufficient ventilation, use a breathing mask with filter type: A2-P2 CEN : EN 136; EN 14387

Material name: PROSOLV EB8197

Page: 5 / 12



SAFETY DATA SHEET

PROSOLV EB8197

Thermal hazards	Not available.
Environmental exposure controls	Prevent from entering in public sewers or the immediate environment. Do not empty into drains, dispose of this material and its container to hazardous or special waste collection point.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	
Colour	Yellow to brown
Physical state	Liquid
Odour	Hydrocarbon
Odour threshold	Not available.
pH in aqueous solution	8,5 (5% Emulsion)
Melting point/freezing point	< -18 °C
Initial boiling point and boiling range	177 °C
Flash point	60 °C P-M(CC)
Evaporation rate	Slower than Ether
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	< 1 mmHg
Vapor pressure temp.	21 °C
Vapour density	< 1
Relative density	0,91
Relative density temperature	21 °C
Solubility	
Solubility (water)	< 0,01 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not applicable.
Decomposition temperature	Not available.
Viscosity	Not applicable.
Explosive properties	Not available.
Oxidising properties	Not available.
9.2. Other information	
Pour point	< -18 °C
Shelf life	720 Days
VOC	60 % Estimated

SECTION 10: Stability and reactivity

10.1. Reactivity	None known.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	Not applicable.
10.4. Conditions to avoid	Keep away from heat. Keep away from all sources of ignition.

Material name: PROSOLV EB8197

Page: 6 / 12



SAFETY DATA SHEET

PROSOLV EB8197

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Xylene	5 - < 10	1330-20-7 215-535-7	01-2119488216-32	601-022-00-9	#
Classification:	Flam, Liq, 3:H226, Asp. Tox, 1:H304, Acute Tox, 4:H312, Skin Irrit, 2:H315, Eye Irrit, 2:H319, Acute Tox, 4:H332, STOT SE 3:H335, STOT RE 2:H373, Aquatic Chronic 3:H412				C

The classification of the above substance(s) is given, including the hazard class, category code and hazard statements which are assigned in accordance with their physicochemical, health and environmental hazards. Please refer to section 16 where the full text of each relevant H-statement is listed.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical attention immediately.
Skin contact	Take off immediately all contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Eye contact	Rinse immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.
Ingestion	Rinse mouth. Do not give anything to eat or drink. Do not induce vomiting. Call a physician or poison control centre immediately.

4.2. Most important symptoms and effects, both acute and delayed Irritant effects.
Vapours have a narcotic effect and may cause headache, fatigue, dizziness and nausea.

4.3. Indication of any immediate medical attention and special treatment needed Not available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Dry chemical, carbon dioxide. Foam.
Unsuitable extinguishing media	Water.

5.2. Special hazards arising from the substance or mixture Oxides of carbon evolved in fire.

5.3. Advice for firefighters

Special protective equipment for firefighters	Self contained breathing apparatus. (CEN : EN 137) Protective clothing (CEN : EN 469) Protective gloves (CEN : EN 659) Helmet (CEN : EN 443)
Special fire fighting procedures	Use standard firefighting procedures and consider the hazards of other involved materials. Prevent spillage and fire-fighting water from entering in public sewers or the immediate environment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Wear protective clothing, gloves and safety goggles.

For emergency responders Use personal protection recommended in Section 8 of the SDS.

6.2. Environmental precautions

Prevent from entering sewers or the immediate environment.
Do not empty into drains, dispose of this material and its container to hazardous or special waste collection point.

Material name: PROSOLV EB8197

Page: 3 / 12



SAFETY DATA SHEET

PROSOLV EB8197

6.3. Methods and material for containment and cleaning up	Absorb onto inert material and dispose of according to Hazardous Waste Regulations. Remove small spills with plenty of water.
6.4. Reference to other sections	Please refer also to section no. 8 'Exposure controls' for further information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling	Handle in accordance with good industrial hygiene and safety procedures. Do not breathe vapours.
7.2. Conditions for safe storage, including any incompatibilities	Store in cool, well ventilated area. Do not store at elevated temperatures. Store containers closed when not in use.
7.3. Specific end use(s)	Only for professional and industrial users
Shelf life	720 Days

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

UAE, OELs. Maximum Allowable Limits for Air Pollutants in Working Areas [Law to Protect the Air from Pollution, Resolution of the Cabinet of Ministers No. 12 of 2006]

Components	Type	Value
2-Butoxyethanol (Butylglycol) (CAS 111-76-2)		
Naphthalene (CAS 91-20-3)	TWA	121 mg/m3
	STEL	25 ppm
	STEL	79 mg/m3
Xylene (CAS 1330-20-7)	TWA	15 ppm
	STEL	52 mg/m3
	STEL	10 ppm
Xylene (CAS 1330-20-7)	STEL	651 mg/m3
	TWA	150 ppm
	TWA	434 mg/m3
Xylene (CAS 1330-20-7)	TWA	100 ppm
	STEL	100 ppm
	STEL	100 ppm

US, ACGIH Threshold Limit Values

Components	Type	Value
2-Butoxyethanol (Butylglycol) (CAS 111-76-2)		
Naphthalene (CAS 91-20-3)	TWA	20 ppm
	STEL	10 ppm
	STEL	150 ppm
Xylene (CAS 1330-20-7)	TWA	100 ppm
	STEL	100 ppm
	STEL	100 ppm

EU, Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

Components	Type	Value
2-Butoxyethanol (Butylglycol) (CAS 111-76-2)		
Naphthalene (CAS 91-20-3)	TWA	246 mg/m3
	STEL	50 ppm
	STEL	98 mg/m3
Xylene (CAS 1330-20-7)	TWA	20 ppm
	STEL	50 mg/m3
	STEL	50 mg/m3
Xylene (CAS 1330-20-7)	STEL	442 mg/m3
	TWA	100 ppm
	TWA	221 mg/m3
Xylene (CAS 1330-20-7)	TWA	50 ppm
	STEL	50 ppm
	STEL	50 ppm

Biological limit values No biological exposure limits noted for the ingredient(s).

Material name: PROSOLV EB8197

Page: 4 / 12

SAFETY DATA SHEET
PROSOLV EB8197

Subsidiary class(es)	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Not available.
ADN	
14.1. UN number	UN1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Xylene, Hydrocarbons, C10, aromatics, >1% naphthalene, Mixture)
14.3. Transport hazard class(es)	3
Subsidiary class(es)	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
14.6. Special precautions for user	Not available.
IATA	
14.1. UN number	UN1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Xylene, Hydrocarbons, C10, aromatics, >1% naphthalene, Mixture)
14.3. Transport hazard class(es)	3
Subsidiary class(es)	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
ERG Code	Not available.
14.6. Special precautions for user	Not available.
IMDG	
14.1. UN number	UN1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Xylene, Hydrocarbons, C10, aromatics, >1% naphthalene, Mixture)
14.3. Transport hazard class(es)	3
Subsidiary class(es)	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
Marine pollutant	Yes
EmS No.	F-E, S-E
14.6. Special precautions for user	Not available.
14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code	This substance/mixture is not intended to be transported in bulk.
ADN; ADR; IATA; IMDG; RID	



Material name: PROSOLV EB8197

Page: 9 / 12

SAFETY DATA SHEET
PROSOLV EB8197

Marine pollutant



SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

EU regulations	
Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended	Not listed.
Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended	Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended	Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended	Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended	Not listed.
Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended	Not listed.
Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry	Not listed.
Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA	Not listed.

Material name: PROSOLV EB8197

Page: 10 / 12

SAFETY DATA SHEET
PROSOLV EB8197

10.5. Incompatible materials	Avoid contact with strong oxidisers.
10.6. Hazardous decomposition products	Oxides of carbon evolved in fire.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Product	Test results
PROSOLV EB8197 (Mixture)	Acute Dermal LD50 Rabbit: > 5000 mg/kg (Calculated according to GHS additivity formula) Acute Inhalation LC50 Rat: > 20 mg/l 4 hour (Calculated according to GHS additivity formula) Acute Oral LD50 Rat: > 5000 mg/kg (Calculated according to GHS additivity formula)
Components	Test results
2-Butoxyethanol (Butylglycol) (111-76-2)	Acute Dermal LD50 Rabbit: 667 mg/kg Acute Inhalation LC50 Rat: 2.35 mg/l 4 hour Acute Oral LD50 Rat: 1746 mg/kg Acute Dermal LD50 Rabbit: > 5000 mg/kg Acute Inhalation LC50 Rat: 11.58 mg/l 4 hour Acute Oral LD50 Rat: 4300 mg/kg Acute Dermal LD50 Rabbit: > 16000 mg/kg Acute Oral LD50 Rat: > 2000 mg/kg
Xylene (1330-20-7)	Acute Dermal LD50 Rabbit: > 2000 mg/kg Acute Inhalation LC50 Rat: > 4688 mg/m3 (Saturated vapor concentration) Acute Oral LD50 Rat: > 2000 mg/kg
Naphthalene (91-20-3)	
Hydrocarbons, C10, aromatics, >1% naphthalene (N/A)	

Acute toxicity	Not classified.
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/irritation	Causes serious eye irritation.
Respiratory or skin sensitisation	Not classified.
Specific target organ toxicity - repeated exposure	Not classified.
Specific target organ toxicity - single exposure	May cause drowsiness or dizziness.
Carcinogenicity	Suspected of causing cancer.
Germ cell mutagenicity	Not classified.
Reproductive toxicity	Not classified.

Information on likely routes of exposure

Ingestion	May cause irritation of the gastrointestinal tract. Ingestion of large amounts may produce gastrointestinal disturbances including irritation, nausea, and diarrhoea.
Inhalation	May cause irritation to the respiratory system. May cause drowsiness and dizziness.
Skin contact	Causes skin irritation. Repeated exposure may cause skin dryness or cracking.
Eye contact	Causes serious eye irritation.
Symptoms	Not available.
Aspiration hazard	May be fatal if swallowed and enters airways.

Material name: PROSOLV EB8197

Page: 7 / 12

SAFETY DATA SHEET
PROSOLV EB8197

Mixture versus substance information	None known.
Other information	Not available.
SECTION 12: Ecological information	
12.1. Toxicity	No toxicity data noted for the ingredient(s).
12.2. Persistence and degradability	No data available
12.3. Bioaccumulative potential	Not available.
Partition coefficient n-octanol/water (log Kow)	
2-Butoxyethanol (Butylglycol)	0,83
Naphthalene	3,3
Xylene	3,12 - 3,2
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	Not available.
12.5. Results of PBT and vPvB assessment	Not a PBT or vPvB substance or mixture.
12.6. Other adverse effects	Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contaminated packaging	According to Hazardous Waste Regulations. EWC (European Waste Code) recommendation : 15 01 10 15 Waste packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified. 15 01 Packaging (including separately collected municipal packaging waste), 15 01 10 Packaging containing residues of or contaminated by dangerous substances. Depending on the origin and state of the waste, other EWC numbers may be applicable too.
Disposal methods/information	According to Hazardous Waste Regulations. EWC (European Waste Code) recommendation : 16 03 05 16 Wastes not otherwise specified in the list. 16 03 Off-specification batches and unused products. 16 03 05 Organic wastes containing dangerous substances. Depending on the origin and state of the waste, other EWC numbers may be applicable too.

SECTION 14: Transport information

ADR	
14.1. UN number	UN1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Xylene, Hydrocarbons, C10, aromatics, >1% naphthalene, Mixture)
14.3. Transport hazard class(es)	3
Subsidiary class(es)	-
14.4. Packing group	III
14.5. Environmental hazards	Yes
Tunnel restriction code	(D/E)
14.6. Special precautions for user	Not available.
RID	
14.1. UN number	UN1993
14.2. UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Xylene, Hydrocarbons, C10, aromatics, >1% naphthalene, Mixture)
14.3. Transport hazard class(es)	3

Material name: PROSOLV EB8197

Page: 8 / 12



SAFETY DATA SHEET PROSOLV EB8197

Country(s) or region	Inventory name	On inventory (yes/no)*
Europe	European List of Notified Chemical Substances (ELINCS)	No
*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s) *A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).		

SECTION 16: Other information

List of abbreviations

CAS: Chemical Abstract Service.
EC-No: European Commission Number
CLP: Classification, Labeling and Packaging REGULATION (EC) No 1272/2008 on classification, labeling and packaging of substances and mixtures.
CEN: European Committee for Standardization (Comité Européen de Normalisation).
TWA: Time Weighted Average.
STEL: Short-term Exposure Limit.
LD50: Lethal Dose 50%.
LC50: Lethal Concentration 50%.
EC50: Effective Concentration 50%.
NOEL: No observed effect level.
COD: Chemical Oxygen Demand.
BOD: Biochemical oxygen demand.
TOC: Total Organic Carbon.
ADR: European agreement concerning the international carriage of dangerous goods by road (Accord européen relatif transport des marchandises dangereuses par route).
ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures).
IATA: International Air Transport Association
IMDG Code: International Maritime Dangerous Goods Code.
RID: Regulations concerning the international carriage of dangerous goods by rail (Règlement International concernant le transport de marchandises dangereuses par chemin de fer).
Safety data sheets of raw materials.
The physical, health and environmental hazards of this mixture are assessed by applying the classification criteria for each hazard class or differentiation in Parts 2 to 5 of Annex I to Regulation (EC) No 1272/2008 (CLP).

References

Information on evaluation method leading to the classification of mixture
Full text of any H-statements not written out in full under Sections 2 to 15

H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H304 May be fatal if swallowed and enters airways.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.
H351 Suspected of causing cancer.
H373 May cause damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
H411 Toxic to aquatic life with long lasting effects.
H412 Harmful to aquatic life with long lasting effects.
Transport Information: Material Transportation Information
GHS: Classification
Provide training on safe handling while considering the type of application and exposure scenarios.
Based on EC Directive / Regulations
(EC) No 1907/2006 (REACH)
(EC) No 1272/2008
(EU) 2015/830
(EU) No 1357/2014

Revision information

Training information

Material name: PROSOLV EB8197

Page: 11 / 12



SAFETY DATA SHEET PROSOLV EB8197

Further information Correction in Section: 2,3,11,16

Material name: PROSOLV EB8197

Page: 12 / 12

 PTT MSDS	แบบแจ้งรายละเอียดของสารเคมีอันตรายในรัฐวิสาหกิจ แบบ สทร. 1				QC-MSDS-029
	MATERIAL SAFETY DATA SHEET				
	ตามข้อ 4 ของประกาศคณะกรรมการรัฐวิสาหกิจขึ้นบังคับใช้ เรื่องความปลอดภัยในการดำเนินงานเกี่ยวกับสารเคมีอันตราย				
	Product	Rev.	Page	Date	
	PTT Gear Oil EP 68,100,150, 220, 320 , 460,680	6	1/5	16/04/2005	

แบบ สทร. 1

1. รายละเอียดเกี่ยวกับผลิตภัณฑ์ (Product Data)

- ชื่อทางการค้า (Trade Name) พี ที ที เกียร์ ออยส์ อี พี (PTT Gear Oil EP 68,100,150, 220, 320, 460, 680)
ชื่อทางเคมี (Chemical Name) ไม่มี (not available)
สูตรทางเคมี (Chemical Formula) ไม่มี (not available)
- การใช้ประโยชน์ (Use)
ใช้หล่อลื่นเพื่อบำรุงในระบบเครื่องจักรกลและระบบเครื่องกลสำหรับอุตสาหกรรม (Use as lubricant for extreme pressure gear oil in industrial sector)
- ปริมาณสูงสุดที่มีไว้ครอบครอง (Max Quantity Storage)
ไม่มีข้อมูล (No information found)
- ผู้ผลิต / ผู้นำเข้า (Manufacturer / Importer) บริษัท ปตท. จำกัด (มหาชน) (PTT Public Company Limited)
ที่อยู่ (Address) [REDACTED]
โทรศัพท์ (Tele) [REDACTED]

2. การจำแนกสารเคมีอันตราย (Chemical Classification)

- U.N. Number ไม่มีข้อมูล (no information found)
- CAS Number ไม่มีข้อมูล (no information found)
- สารก่อมะเร็ง (Carcinogenicity) ไม่เป็นสารก่อมะเร็ง (no carcinogenicity)

3. สารประกอบที่เป็นอันตราย (Hazardous Ingredients)

ชื่อสารเคมี(Substances)	เปอร์เซ็นต์(Percent)	ค่ามาตรฐานความปลอดภัย	
		TLV	LD ₅₀
ไม่มีส่วนผสมของสารอันตราย * Non-hazardous additive blend	-	-	-

* ตรวจสอบตามประกาศกระทรวงมหาดไทย เรื่องความปลอดภัยในการดำเนินงานเกี่ยวกับสารเคมีอันตราย, ความปลอดภัยในการทำงานเกี่ยวกับสารแวดล้อม และประกาศกระทรวงอุตสาหกรรม ตาม พรบ วัตถุอันตราย 2535



	แบบแจ้งรายละเอียดของสารเคมีอันตรายในรัฐวิสาหกิจ แบบ สทร.1			QC-MSDS-029
	MATERIAL SAFETY DATA SHEET			
	ตามข้อ 4 ของประกาศคณะกรรมการรัฐวิสาหกิจขึ้นบังคับใช้ เรื่องความปลอดภัยในการดำเนินงานเกี่ยวกับสารเคมีอันตราย			
PTT	Product	Rev.	Page	Date
MSDS	PTT Gear Oil EP 68,100,150, 220, 320, 460,680	6	2/5	16/04/2005

แบบ สทร. 1

4. ข้อมูลทางกายภาพและทางเคมี(Physical and Chemical Data)

- จุดเดือด (Boiling Point) ไม่มีข้อมูล (no information found)
- จุดหลอมเหลว (Melting Point) ไม่มีข้อมูล (no information found)
- ความดันไอ (Vapor Pressure) ไม่มีข้อมูล (no information found)
- การละลายในน้ำ (Solubility in Water) ไม่ละลายน้ำ (insoluble)
- ความถ่วงจำเพาะ (Specific Gravity) 0.8855, 0.8895, 0.8965, 0.9025, 0.9045, 0.9065, 0.9015 ตามลำดับ
ผลิตภัณฑ์ (follow up product number)
- อัตราการระเหย (Evaporating Rate) ไม่มีข้อมูล (no information found)
- ลักษณะสีและกลิ่น (Appearance Color and Odor) สีเหลือง (Yellow)
- ความเป็นกรด/ด่าง (pH-Value) ไม่มีข้อมูล (no information found)

5. ข้อมูลด้านอัคคีภัยและการระเบิด (Fire and Explosion Hazard Data)

- จุดวาบไฟ (Flash Point) ไม่ต่ำกว่า (minimum) 218, 224, 226, 235, 239, 242, 266 °C ตามลำดับผลิตภัณฑ์
(Follow up product number)
- ขีดจำกัดการติดไฟ (Flammable limits)
ค่าต่ำสุด (LEL) ไม่มีข้อมูล (no information found)
ค่าสูงสุด (UEL) ไม่มีข้อมูล (no information found)
- อุณหภูมิสามารถติดไฟได้เอง (Autoignition Temperature) ไม่มีข้อมูล (no information found)
- การเกิดปฏิกิริยาเคมี (Chemical Reactivity) มีความคงตัวสูงในสภาวะการเก็บและการใช้งานปกติ (Stable under ordinary conditions of use and storage)
- สารที่ควรหลีกเลี่ยงอย่างสิ้นเชิง (Material to Avoid) สารออกซิไดซ์ที่รุนแรงเช่น คลอเรต ไนเตรต และ เปอร์ออกไซด์
(strong oxidizing agents, chlorate, nitrate, peroxides)
- สารอันตรายที่เกิดจากการสลายตัว (Hazardous Decomposition Products) คาร์บอนมอนอกไซด์
คาร์บอนไดออกไซด์ ไอระเหยของซัลเฟอร์ไดออกไซด์ / ไนโตรเจน / ฟอสฟอรัส / ไบรอน (CO, CO₂, water vapor, oxide of sulfur / nitrogen / phosphorus / boron)



 PTT MSDS	แบบแจ้งรายละเอียดของสารเคมีอันตรายในรัฐวิสาหกิจ แบบ สท. 1				QC-MSDS-029
	MATERIAL SAFETY DATA SHEET				
	ฉบับที่ 4 ของประกาศคณะกรรมการรัฐวิสาหกิจฉบับที่ ๕ เรื่องความปลอดภัยในการปฏิบัติงานเกี่ยวกับสารเคมีอันตราย				
	Product	Rev.	Page	Date	
	PTT Gear Oil EP 68,100,150, 220, 320, 460,680	6	5/5	16/04/2005	

แบบ สปส. 1

8 ข้อปฏิบัติที่สำคัญ (Special Instructions)

8.1 การขนถ่ายและการจัดเก็บ (Handling and Storage)

จัดเก็บในที่มีอากาศถ่ายเทได้สะดวก ไม่มีแหล่งที่ทำให้เกิดประกายไฟ (Eliminate all sources of ignition. Provide adequate ventilation)

8.2 การป้องกันการกัดกร่อนของสารเคมี (Corrosiveness)

ไม่มีข้อมูล (No information found)

8.3 การป้องกันการรั่วและสารหก (Spill and Leak Procedure)

ปิดส่วนที่ทำให้เกิดการรั่วไหล แล้วทำความสะอาดทันทีที่ได้ ปิดกั้นไม่ให้มีการวิ่งลงพื้นดิน หรือผิวน้ำ หรือน้ำใต้ดิน แล้วกำจัดส่วนที่เหลือด้วยการใช้ตัวดูดซับ หรือปั๊มสุญญากาศ แล้วทำความสะอาด (Stop source of leak / release. Clean up as soon as possible. Contain to prevent further contamination of soil / surface / groundwater. Small: Clean up with sorbent materials or pumping where feasible & appropriate.)

8.4 การกำจัดสิ่งปฏิกูลที่เกิดจากสารเคมี (Disposal Methods)

ใส่ภาชนะที่เหมาะสม แล้วนำไปกำจัดตามข้อบังคับทางกฎหมาย (Place contaminated material in containers & dispose of law / federal, state & local regulation)

8.5 การใช้สารดับเพลิง (Extinguishing Media)

คาร์บอนไดออกไซด์ ละอองน้ำแห้ง โฟม และผงน้ำ (CO₂, Dry Chemical, Foam, Water Fog)

 PTT MSDS	แบบแจ้งรายละเอียดของสารเคมีอันตรายในรัฐวิสาหกิจ แบบ สท.1				QC-MSDS-029
	MATERIAL SAFETY DATA SHEET				
	ฉบับที่ 4 ของประกาศคณะกรรมการรัฐวิสาหกิจฉบับที่ ๕ เรื่องความปลอดภัยในการดำเนินงานเกี่ยวกับสารเคมีอันตราย				
	Product	Rev.	Page	Date	
	PTT Gear Oil EP 68,100,150, 220, 320, 460,680	6	3/5	16/04/2005	

แบบ สปส. 1

6 ข้อมูลเกี่ยวกับอันตรายต่อสุขภาพ (Health Hazard Data)

6.1 ทางเข้าร่างกาย (Way of Exposure)

การหายใจ (Inhalation): ใช่ (yes)

ผิวหนัง (Skin): ไม่ใช่ (no)

การกลืนอาหาร (Ingestion): ใช่ (yes)

6.2 อันตรายเฉพาะที่ (ผิวหนัง ตา เยื่อเมือก) (Local Effect (skin, eye, mucous membranes))

ทำให้เกิดอาการระคายเคืองบริเวณที่สัมผัส (Irritation)

6.3 ผลจากการสัมผัสสารที่มีปริมาณมากเกินไปในระยะสั้น (Effect of Overexposure ShortTerm)

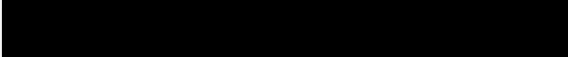
ไม่มีข้อมูล (No information found)

6.4 ผลจากการสัมผัสสารที่มีปริมาณมากเกินไปในระยะยาว (Effect of Overexposure Long-term)

ไม่มีข้อมูล (No information found)

6.5 ค่ามาตรฐานความปลอดภัย (TLV) ไม่มีข้อมูล (no information found)

ผู้จัดทำส่วนควบคุมคุณภาพ



MI SWACO

A Schlumberger Company

MATERIAL SAFETY DATA SHEET

MSDS No. 13483

Trade Name: HR-2590

Revision Date: 01/12/2011

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: HR-2590
Chemical Family: Mixture
Product Use: Hydrogen Sulfide Scavenger

Supplied by:

Telephone Number:
Emergency Telephone (24 hr.):
Prepared by:

Revision No. 2

HMIS Rating
Health: 3 Flammability: 2 Physical Hazard: 0 PPE: X

4=Severe, 3=Serious, 2=Moderate, 1=Slight, 0=Minimal Hazard. *Chronic effects - See Section 11. See Section 8 for Personal Protective Equipment recommendations.

2. HAZARDS IDENTIFICATION

Emergency Overview: Danger! Combustible liquid and vapor. Corrosive. May cause burns to eyes, skin and respiratory tract. May cause skin sensitization, an allergic reaction, on repeated exposure.

Canadian Classification: UN PIN No: UN2735 WHMIS Class: B3 D2B E

Physical State: Liquid Color: Colorless to pale yellow. Odor: Amine

Potential Health Effects:

Acute Effects
Eye Contact: May cause burns, severe eye damage and blindness.
Skin Contact: May cause skin burns. May cause skin sensitization, an allergic reaction, on repeated exposure.
Inhalation: May cause burns to lungs and respiratory tract.
Ingestion: May cause burns of the mouth, throat and stomach.

Carcinogenicity & Chronic Effects: See Section 11 - Toxicological Information.
Routes of Exposure: Eyes. Dermal (skin) contact. Inhalation.
Target Organs/Medical Conditions Aggravated by Overexposure: Eyes. Skin. Respiratory System.

 PTT MSDS	แบบแจ้งรายละเอียดของสารเคมีอันตรายในรัฐวิสาหกิจ แบบ สท.ร.1				QC-MSDS-029
	MATERIAL SAFETY DATA SHEET				
	ฉบับที่ 4 ของประกาศคณะกรรมการรัฐวิสาหกิจฉบับที่ ๕ เรื่องความปลอดภัยในการดำเนินงานเกี่ยวกับสารเคมีอันตราย				
	Product	Rev.	Page	Date	
	PTT Gear Oil EP 68,100,150, 220, <u>320</u> , 460,680	6	4/5	16/04/2005	

แบบ สปส. 1

7 มาตรการด้านความปลอดภัย (Safety Measure)

7.1 ข้อมูลป้องกันโดยเฉพาะ (Special Protection Information)

7.1.1 การป้องกันไฟและระเบิด (Fire and Explosion Prevention)

เก็บในที่อากาศเย็น ความชื้นต่ำ และห่างจากแหล่งกำเนิดไฟ และสารออกซิไดซ์อื่นๆ (Store in a cool, dry place away from source of ignition and strong oxidizing agents)

7.1.2 การระบายอากาศ (Ventilation)

ต้องมีการระบายอากาศที่ดีพอ และมีความเข้มข้นของสารอันตรายต่ำกว่ามาตรฐานกำหนด (Adequate to keep airborne concentrations of material below recommended exposure standard)

7.1.3 ชนิดของอุปกรณ์ป้องกันทางเดินหายใจ (Respiratory Protection Type)

ต้องสวมใส่อุปกรณ์ป้องกันทางเดินหายใจที่เหมาะสมถ้ามีสารอันตรายในอากาศเข้มข้นเกินกว่ามาตรฐานกำหนด (Wear an approved respirator if operating conditions create airborne concentrations which exceed recommended exposure standard)

7.1.4 การป้องกันอันตรายที่เกิดกับมือ (Hand Protection)

ต้องใส่ถุงมือ (Protective gloves required)

7.1.5 การป้องกันอันตรายที่เกิดกับตา (Eye Protection)

ต้องใส่แว่นตาป้องกันสารเคมี (Use chemical goggles)

7.1.6 การป้องกันอื่นๆ (Other protection) ไม่มีข้อมูล (no data available)

7.2 การปฐมพยาบาล (First Aid)

7.2.1 กรณีสัมผัสสารเคมีทางผิวหนัง (Skin Contacting)

ล้างบริเวณที่สัมผัสด้วยสบู่และน้ำ (Wash with mild soap & water)

7.2.2 กรณีสัมผัสสารเคมีทางตา (Eye Contacting)

ล้างตาด้วยน้ำอย่างน้อย 15 นาที แล้วจึงไปพบแพทย์ (Flush with fresh water for 15 mins. And consult medical personnel)

7.2.3 กรณีสัมผัสสารเคมีโดยการหายใจ (Respiratory Contacting)

รีบเคลื่อนย้ายผู้ป่วยไปในที่ที่มีอากาศบริสุทธิ์ แล้วจึงปรึกษาแพทย์ (Remove to fresh air. Obtain medical attention in all cases)

7.2.4 ข้อมูลเพิ่มเติมในการรักษาพยาบาล (ระบุการรักษาทันทีหากมีพิษ) (Other First Aid)

ไม่มีข้อมูล (No data available)



MATERIAL SAFETY DATA SHEET

MSDS No. 13483

Trade Name: HR-2590
Revision Date: 01/12/2011

Page 4/6

Respiratory Protection:

All respiratory protection equipment should be used within a comprehensive respiratory protection program that meets the requirements of 29 CFR 1910.134 (U.S. OSHA Respiratory Protection Standard) or local equivalent.

If exposed to airborne mist/aerosol of this product, use at least a NIOSH-approved N95 half-mask disposable or re-usable particulate respirator. In work environments containing oil mist/aerosol, use at least a NIOSH-approved P95 half-mask disposable or reusable particulate respirator.

This product contains nitrogen compounds which may, in some circumstances, form ammonia or amine compounds. If exposed to ammonia or amine compounds from this product use a NIOSH/MSHA-approved respirator with an Ammonia/Methylamine cartridge.

General Hygiene Considerations: Work clothes should be washed separately at the end of each work day. Disposable clothing should be discarded, if contaminated with product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: Colorless to pale yellow.
Odor: Amine
Physical State: Liquid
pH: 9.0 - 11.5
Specific Gravity (H₂O = 1): 0.99 - 1.05 at 68F (20C)
Solubility (Water): Soluble
Flash Point: F (C): >167F (75C)
Melting/Freezing Point: <-4F (-20C)
Boiling Point: ND
Viscosity: 12 cP at 68F (20C)
Vapor Pressure: 2.1 kPa at 68F (20C)
Vapor Density (Air=1): >1
Evaporation Rate: <1 (n-butyl acetate = 1)
Odor Threshold(s): ND

10. STABILITY AND REACTIVITY

Chemical Stability: Stable
Conditions to Avoid: Keep away from heat, sparks and flame.
Materials to Avoid: Acids, Oxidizers.
Hazardous Decomposition Products: For thermal decomposition products, see Section 5.
Hazardous Polymerization: Will not occur

11. TOXICOLOGICAL INFORMATION

Component Toxicological Data: Any adverse component toxicological effects are listed below. If no effects are listed, no such data were found.

Product Toxicological Information:
No toxicological data is available for this product.

MATERIAL SAFETY DATA SHEET

MSDS No. 13483

Trade Name: HR-2590
Revision Date: 01/12/2011

Page 5/6

12. ECOLOGICAL INFORMATION

Component Ecotoxicity Data: Component ecotoxicity data are listed below. If no data are listed, none were found in the component review.

Product Ecotoxicity Data: Contact M-I Environmental Affairs Department for available product ecotoxicity data.
Biodegradation: The product is biodegradable.
Bioaccumulation: Not expected to bioaccumulate.
Octanol/Water Partition Coefficient: ND

13. DISPOSAL CONSIDERATIONS

Waste Classification:

ND

Waste Management:

Under U.S. Environmental Protection Agency (EPA) Resource Conservation and Recovery Act (RCRA), it is the responsibility of the user to determine at the time of disposal, whether the product meets RCRA criteria for the hazardous waste. This is because product uses, transformations, mixtures, processes, etc., may render the resulting materials hazardous. Empty containers retain residues. All labeled precautions must be observed.

Disposal Method:

Recover and reclaim or recycle, if practical. Should this product become a waste, dispose of in a permitted industrial landfill. Ensure that the containers are empty by the RCRA criteria prior to disposal in a permitted industrial landfill.

14. TRANSPORT INFORMATION

U.S. DOT Shipping Description: Amines, liquid, corrosive, n.o.s., (contains triazine), Class 8, UN2735, PG III.
Emergency Response Guide No.: 153
Canada TDG Shipping Description: See U.S. Shipping Description.
UN PIN No: UN2735
IMDG Shipping Description: See U.S. Shipping Description.
ICAO/IATA Shipping Description: See U.S. Shipping Description.

15. REGULATORY INFORMATION

U.S. Federal and State Regulations

SARA 311/312 Hazard Categories: Fire hazard. Immediate (acute) health hazard.

SARA 302/304, 313; CERCLA RQ, Note: If no components are listed below, this product is not subject to the referenced SARA and CERCLA regulations and is not known to contain a Proposition 65 listed chemical at a level that is expected to pose a significant risk under anticipated use conditions.
California Proposition 65:

International Chemical Inventories

MATERIAL SAFETY DATA SHEET

MSDS No. 13483

Trade Name: HR-2590
Revision Date: 01/12/2011

Page 2/6

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	Wt. %	Comments:
Triazine		30 - 60	No comments.

4. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with large amounts of water. Look for and remove contact lenses. Continue to rinse for at least 15 minutes. Seek immediate medical attention.

Skin Contact: Immediately flush skin with soap and water for at least 15 minutes. Remove contaminated clothing and laundry before reuse. Seek immediate medical attention.

Inhalation: Move person to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Rinse mouth with water many times. Do not induce vomiting. Dilute with 2 - 3 glasses of water or milk, if conscious. Never give anything by mouth to an unconscious person. Get immediate medical attention.

General notes: Persons seeking medical attention should carry a copy of this MSDS with them.

5. FIRE FIGHTING MEASURES

Flammable Properties

Flash Point: F (C): >167F (75C)
Flash Point Method: CC
Flammable Limits in Air - Lower (%): ND
Flammable Limits in Air - Upper (%): ND
Autoignition Temperature: F (C): ND
Flammability Class: IIIA
Other Flammable Properties: ND
Extinguishing Media: Water fog, carbon dioxide, foam, dry chemical.

Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Do not enter fire area without proper personal protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus. Evacuate area and fight fire from a safe distance. Water spray may be used to keep fire-exposed containers cool. Keep water run off out of sewers and waterways. Note that flammable vapors may form an ignitable mixture with air. Vapors may travel considerable distances and flash back if ignited.

Hazardous Combustion Products: Formaldehyde. Oxides of Carbon. Nitrogen.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Use personal protective equipment identified in Section 8.

MATERIAL SAFETY DATA SHEET

MSDS No. 13483

Trade Name: HR-2590
Revision Date: 01/12/2011

Page 3/6

Spill Procedures:

Evacuate the spill area with the exception of the spill response team. Keep personnel removed and upwind of spill. Extinguish all ignition sources. Avoid sparks, flames, heat and smoking. Shut off leak if it can be done safely. Contain spilled material. Do not allow spilled material to enter sewers, storm drains or surface waters. Absorb in vermiculite, dry sand or earth. Place into containers for disposal. Use non-sparking or explosion proof means to transfer material to containers. Note that flammable/combustible vapors may form an ignitable mixture with air. Vapors may travel considerable distances from spill and flash back, if ignited.

Environmental Precautions:

Waste must be disposed of in accordance with federal, state and local laws. In the U.S., for products with reportable quantity (RQ) components - if the RQ is exceeded, report to National Spill Response Office at 1 800 424 8802.

7. HANDLING AND STORAGE

Handling:

Put on appropriate personal protective equipment. Do not get in eyes, on skin or on clothing. Do not inhale vapors. Use only in a well ventilated area. Ground and bond containers when transferring material. Wash thoroughly after handling.

Storage:

Store in dry, well-ventilated area. Keep container closed. Keep away from heat, sparks and flames. Store away from incompatibles. Follow safe warehousing practices regarding palletizing, banding, shrink-wrapping and/or stacking.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits (TLV & PEL - 8H TWA):

Ingredient	CAS No.	Wt. %	ACGIH TLV	OSHA PEL	Other	Notes
Triazine		30 - 60	NA	NA	NA	None

Engineering Controls: Local exhaust ventilation as necessary to maintain exposures to within applicable limits.

Personal Protection Equipment

All chemical Personal Protective Equipment (PPE) should be selected based on an assessment of both the chemical hazards present and the risk of exposure to those hazards. The PPE recommendations below are based on our assessment of the chemical hazards associated with this product. The risk of exposure and need for respiratory protection will vary from workplace to workplace and should be assessed by the user.

Eye/Face Protection:

Wear chemical safety goggles. Wear faceshield.

Skin Protection:

Wear appropriate clothing to prevent repeated or prolonged skin contact. Wear chemical resistant gloves such as nitrile or neoprene. Wear rubber apron. Use rubber boots.

Material Safety Data Sheet

Additional Information : The highly refined mineral oil contains <3% (w/w) DMSO-extract, according to IP346. Refer to chapter 16 for full text of EC R-phrases.

4. FIRST AID MEASURES

General Information : Not expected to be a health hazard when used under normal conditions.
Inhalation : No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
Skin Contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
Eye Contact : Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
Ingestion : In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Advice to Physician : Treat symptomatically.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.
Specific Hazards : Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide. Unidentified organic and inorganic compounds.
Suitable Extinguishing Media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
Unsuitable Extinguishing Media : Do not use water in a jet.
Protective Equipment for Firefighters : Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.

6. ACCIDENTAL RELEASE MEASURES

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe all relevant local and international regulations.
Protective measures : Avoid contact with skin and eyes. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers.
Clean Up Methods : Slippery when spilled. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.
Additional Advice : Local authorities should be advised if significant spillages cannot be contained.

Print Date 29.05.2009

2/7

Material Safety Data Sheet

7. HANDLING AND STORAGE

General Precautions : Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Properly dispose of any contaminated rags or cleaning materials in order to prevent fires. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Handling : Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used.
Storage : Keep container tightly closed and in a cool, well-ventilated place. Use properly labelled and closeable containers. Storage Temperature: 0 - 50 °C / 32 - 122 °F
Recommended Materials : For containers or container linings, use mild steel or high density polyethylene.
Unsuitable Materials : PVC.
Additional Information : Polyethylene containers should not be exposed to high temperatures because of possible risk of distortion.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Oil mist, mineral	AU OEL	TWA [Mist]		5 mg/m3	

Exposure Controls : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
Respiratory Protection : No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precautions should be taken to avoid breathing of material. If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for combined particulate/organic gases and vapours [boiling point >65°C(149 °F)].
Hand Protection : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374,

Print Date 29.05.2009

3/7

Australia AICS - Components are listed or exempt from listing.
Canada DSL - Components are listed or exempt from listing.
China Inventory - Components are listed or exempt from listing.
European Union EINECS/ELINCS - Components are listed or exempt from listing.
Japan METI ENCS - Contains a component that is not listed.
Korea TCCL ECL - Contains a component that is not listed.
New Zealand - Components are listed or exempt from listing.
Philippine PICCS - Components are listed or exempt from listing.
U.S. TSCA - Components are listed or exempt from listing.
U.S. TSCA - No components are subject to TSCA 12(b) export notification requirements.

Canadian Classification:

Controlled Products Regulations Statement: This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS Class: B3 D2B E

16. OTHER INFORMATION

The following sections have been revised: 1, 2, 16.

NA - Not Applicable, ND - Not Determined.

Disclaimer:

MSDS furnished independent of product sale. While every effort has been made to accurately describe this product, some of the data are obtained from sources beyond our direct supervision. We can not make any assertions as to its reliability or completeness; therefore, user may rely on it only at user's risk. We have made no effort to censor or conceal deleterious aspects of this product. Since we cannot anticipate or control the conditions under which this information and product may be used, we make no guarantee that the precautions we have suggested will be adequate for all individuals and/or situations. It is the obligation of each user of this product to comply with the requirements of all applicable laws regarding use and disposal of this product. Additional information will be furnished upon request to assist the user, however, no warranty, either expressed or implied, nor liability of any nature with respect to this product or to the data herein is made or incurred hereunder.

Material Safety Data Sheet

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

Material Name : Shell Rimula R3 X 15W-40
Recommended Uses : Engine oil.
Product Code : 001C4582
Manufacturer/Supplier :
Telephone :
Fax :
Emergency Telephone Number :
Number :

2. HAZARDS IDENTIFICATION

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS.
Not classified as hazardous according to the criteria of NOHSC, and not classified as Dangerous Goods according to the Australian Dangerous Goods Code.

Symbol(s) : No Hazard Symbol required
R-phrases(s) : Not classified.
S-phrases(s) : Not classified.
Health Hazards : Not expected to be a health hazard when used under normal conditions. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as acne/folliculitis. Used oil may contain harmful impurities.
Signs and Symptoms : Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.
Safety Hazards : Not classified as flammable but will burn.
Environmental Hazards : Not classified as dangerous for the environment.
SUSDP Schedule : Not scheduled.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Preparation description : Highly refined mineral oils and additives.

Hazardous Components

Chemical Identity	CAS	EINECS	Symbol(s)	R-phrases(s)	Conc.
Zinc alkyl dithiophosphate	68649-42-3	272-028-3	Xi, N	R38; R41; R51/53	1.00 - 2.40 %

Print Date 29.05.2009

1/7

Material Safety Data Sheet

- Persistence/degradability** : Expected to be not readily biodegradable. Major constituents are expected to be inherently biodegradable, but the product contains components that may persist in the environment.
- Bioaccumulation** : Contains components with the potential to bioaccumulate.
- Other Adverse Effects** : Product is a mixture of non-volatile components, which are not expected to be released to air in any significant quantities. Not expected to have ozone depletion potential, photochemical ozone creation potential or global warming potential.

13. DISPOSAL CONSIDERATIONS

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations. Do not dispose into the environment, in drains or in water courses.
- Container Disposal** : Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.
- Local Legislation** : Disposal should be in accordance with applicable regional, national, and local laws and regulations.

14. TRANSPORT INFORMATION

ADG

This material is not classified as dangerous according to the Australian Dangerous Goods Code.

IMDG

This material is not classified as dangerous under IMDG regulations.

IATA (Country variations may apply)

This material is not classified as dangerous under IATA regulations.

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

- SUSDP Schedule** : Not scheduled.
- EINECS** : All components listed or polymer exempt.
- AICS** : All components listed.
- TSCA** : All components listed.

Print Date 29.05.2009

6/7

Material Safety Data Sheet

Eye Protection

- Wear safety glasses or full face shield if splashes are likely to occur.
- Protective Clothing** : Skin protection not ordinarily required beyond standard issue work clothes.
- Monitoring Methods** : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.
- Environmental Exposure Controls** : Minimise release to the environment. An environmental assessment must be made to ensure compliance with local environmental legislation.

9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance** : Amber. Liquid at room temperature.
- Odour** : Slight hydrocarbon
- pH** : Data not available
- Initial Boiling Point and Boiling Range** : > 280 °C / 536 °F estimated value(s)
- Pour point** : Typical -33 °C / -27 °F
- Flash point** : Typical 233 °C / 451 °F (COC)
- Upper / lower Flammability or Explosion limits** : Typical 1 - 10 % (V) (based on mineral oil)
- Auto-ignition temperature** : > 320 °C / 608 °F
- Vapour pressure** : < 0.5 Pa at 20 °C / 68 °F (estimated value(s))
- Specific gravity** : Data not available
- Density** : Typical 888 kg/m³ at 15 °C / 59 °F
- Water solubility** : Negligible.
- Solubility in other solvents** : Data not available
- n-octanol/water partition coefficient (log Pow)** : > 6 (based on information on similar products)
- Kinematic viscosity** : Typical 105.4 mm²/s at 40 °C / 104 °F
- Vapour density (air=1)** : > 1 (estimated value(s))
- Evaporation rate (nBuAc=1)** : Data not available

10. STABILITY AND REACTIVITY

- Stability** : Stable.
- Conditions to Avoid** : Extremes of temperature and direct sunlight.
- Materials to Avoid** : Strong oxidising agents.
- Hazardous Decomposition Products** : Hazardous decomposition products are not expected to form during normal storage.

Print Date 29.05.2009

4/7

Material Safety Data Sheet

- Other Information** : National Code of Practice for the Preparation of Material Safety Data Sheets [NOHSC:2011] List of Designated Hazardous Substances [NOHSC:10005], Approved Criteria for Classifying Hazardous Substances [NOHSC:1008], Adopted National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003], Australian Dangerous Goods Code, Standard Uniform Scheduling of Drugs and Poisons.

16. OTHER INFORMATION

R-phrases(s)

- R38 : Not classified.
- R41 : Irritating to skin.
- R51/53 : Risk of serious damage to eyes.
- R51/53 : Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

MSDS Version Number : 1.0

MSDS Effective Date : 23.12.2008

MSDS Revisions : A vertical bar (|) in the left margin indicates an amendment from the previous version.

MSDS Regulation : The information in this document should be made available to all who may handle the product.

MSDS Distribution : This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

Disclaimer

Print Date 29.05.2009

7/7

Material Safety Data Sheet

- Hazardous Polymerisation** : Data not available
- Sensitivity to Mechanical Impact** : Data not available
- Sensitivity to Static Discharge** : Data not available

11. TOXICOLOGICAL INFORMATION

- Basis for Assessment** : Information given is based on data on the components and the toxicology of similar products.
- Acute Oral Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg
- Acute Dermal Toxicity** : Expected to be of low toxicity: LD50 > 5000 mg/kg
- Acute Inhalation Toxicity** : Not considered to be an inhalation hazard under normal conditions of use.
- Skin Irritation** : Expected to be slightly irritating. Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as acne/folliculitis.
- Eye Irritation** : Expected to be slightly irritating.
- Respiratory Irritation** : Inhalation of vapours or mists may cause irritation.
- Sensitisation** : Not expected to be a skin sensitizer.
- Repeated Dose Toxicity** : Not expected to be a hazard.
- Mutagenicity** : Not considered a mutagenic hazard.
- Carcinogenicity** : Product contains mineral oils of types shown to be non-carcinogenic in animal skin-painting studies. Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC). Other components are not known to be associated with carcinogenic effects.
- Reproductive and Developmental Toxicity** : Not expected to be a hazard.
- Additional Information** : Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal. ALL used oil should be handled with caution and skin contact avoided as far as possible. Continuous contact with used engine oils has caused skin cancer in animal tests.

12. ECOLOGICAL INFORMATION

Ecotoxicological data have not been determined specifically for this product. Information given is based on a knowledge of the components and the ecotoxicology of similar products.

- Acute Toxicity** : Poorly soluble mixture. May cause physical fouling of aquatic organisms. Expected to be practically non-toxic: LL_{EL}/L₅₀ > 100 mg/l (to aquatic organisms) (LL_{EL}/L₅₀ expressed as the nominal amount of product required to prepare aqueous test extract). Mineral oil is not expected to cause any chronic effects to aquatic organisms at concentrations less than 1 mg/l.
- Mobility** : Liquid under most environmental conditions. Floats on water. If it enters soil, it will adsorb to soil particles and will not be mobile.

Print Date 29.05.2009

5/7



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THAI PETROLEUM SUPPORT COMPANY LIMITED

Prevention
Do not breathe mist/vapors.
Avoid skin contact.
Keep container tightly closed.
Wear respiratory protection, protective gloves, and eye/face protection.
Use only in well-ventilated area.
Store container tightly closed in cool/dry well-ventilated area.
Wash thoroughly after handling.

3. Composition/Information on Ingredients

Chemical Name	Common Name and Synonyms	CAS Number	% by Weight
Hydrogen Chloride	Muriatic Acid	7647-01-0	20-36
Water		7732-18-5	Balance

4. First Aid Measures

General Information	Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures is essential.
Eye Contact	Rinse immediately with plenty of water for at least 20 minutes holding eyelids apart. Remove any contact lenses. Get medical attention immediately.
Skin Contact	Immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. If skin is only irritated and symptoms do not persist, wash with a disinfectant soap. If skin is burned, get medical attention immediately. During transport apply compresses of cold water, if available. Wash clothing separately before reuse. Discard heavily contaminated shoes or clothing.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen, if available. If not breathing, give artificial respiration. A one-way pocket mask will prevent cross-contamination to the provider. Get medical attention immediately. Symptoms may appear up to 48 hours after exposure.
Ingestion	Do NOT induce vomiting. Immediately give large quantities of water or milk, if available. If vomiting does occur, give fluids again. Never give anything by mouth to an unconscious person. Call a physician or the nearest Poison Control Center.
Notes to Physician	Treat symptomatically and supportively focusing on the respiratory and cardiovascular functions. No specific antidote exists. Symptoms of pulmonary edema, such as shortness of breath, can be delayed for several hours after exposure.

5. Fire-Fighting Measures

Flammability	Not flammable, but reacts with most metals to form flammable Hydrogen gas.
Flash Point	Not applicable
Flammable/Explosive Range	Not applicable
Auto-Ignition Temperature	Not applicable
Sensitivity to Mechanical Impact	Not sensitive
Sensitivity to Static Discharge	Not sensitive
Decomposition Temperature	This product will not decompose at temperatures below 1500 °C (2730 °F).
Suitable Extinguishing Media	Substance is non-flammable an extinguishant should be appropriate for acid and the burning material. For large fires, an all-purpose AFFF foam may be used. For small fires, use dry chemical or carbon dioxide. If only water is available, use it in the form of a fog. Water fog is also effective for controlling vapors.
Unsuitable Extinguishing Media	Do not use carbon dioxide if cyanides are involved in a fire. Do NOT use straight streams of water.



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Protection of Firefighters	This product is corrosive, and presents a significant inhalation and contact hazard to fire-fighters. Irritating and toxic gases or fumes may be released during a fire.
Specific Hazards Arising From the Chemical	As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH-approved or equivalent, and full protective gear ensemble.
Protective Equipment and Precautions for Firefighters	Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.
Fire Fighting Equipment/Instructions	Reacts with active metals (potassium, sodium, calcium, powdered aluminum, zinc, magnesium) to liberate flammable hydrogen gas which can form explosive mixtures. Explosive concentrations of hydrogen may accumulate inside metal equipment.
Fire and Explosion Hazards	Hydrogen chloride, chlorine, and hydrogen gas.
Combustion and Thermal Decomposition Products	If tank, rail car, or cargo trailer is involved in a fire, isolate for 1/4 mile in all directions and consider initial evacuation for 1/4 mile in all directions.
Evacuation	

6. Accidental Release Measures

Personal Precautions	Keep unnecessary personnel away until cleanup has been completed. Ensure adequate ventilation. Wear adequate personal protective equipment (PPE). (Section 8 Exposure Controls for Specific PPE information). Do not touch spilled material.
Environmental Precautions	All spills on land involving hydrochloric acid should be contained, if possible, to prevent entry into bodies of water or sewer systems and into low lying areas (like basements).
Methods for Containment	ELIMINATE all ignition sources (no smoking, flames, sparks or flames in immediate area). Stop leak if this can be done without risk. Dike the spilled material, where this is possible, using sand, dirt, or similar material.
Methods for Cleaning Up Small Spills	Cover with an inert dry material (earth, sand, or other non-combustible material). Use non-sparking tools to collect material and place in a loosely covered plastic container for later disposal. Do not get water inside container.
Large Spills	As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (165 feet). Build dikes for ahead of the spill to contain the liquid for later reclamation or disposal using inert material such as sand, earth, foamed polyurethane, or foamed concrete. Absorb the bulk of the liquid with fly ash or cement powder. Neutralize with recommended materials, taking care to avoid any foaming or splattering that may occur from the neutralizing reaction. Make sure all liquid has been thoroughly contacted and absorbed by the dry materials. Transfer absorbed spill material and contaminated soil to a suitable chemical waste container. Ensure adequate decontamination of tools and equipment following clean up. Washing down of spills with water is not recommended as this tends to spread the contamination and increases the likelihood of percolating the acid down through the soil and/or of uncontrolled flow of acid into sewers, streams, or other waters. Do not allow spill material to contact any acid soluble waste (such as in sewers) because of the danger of evolving hydrogen sulfide gas. Do not put water directly on leak or spill area. Use water spray curtain to divert vapor drift that is beyond spill area. Call for assistance on disposal.
Deactivating Chemicals	Lime, limestone, sodium carbonate (soda ash), sodium bicarbonate. Absorbent materials which have been tested and recommended for concentrated hydrochloric acid are anionic polyacrylamide, nonionic polyacrylamide, and hydroxyethylcellulose.
Waste Disposal	See Section 13 Disposal Considerations.

7. Handling and Storage

Handling	Take precautions to avoid personal contact. Prevent release of vapor or mist. Ensure adequate ventilation in handling areas. Ensure water drenching facilities are close to the handling area. Inspect containers for leaks before handling. Do not allow smoking or food consumption while handling or in storage areas. Wash well after use.
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Material Safety Data Sheet Hydrochloric Acid, 32-36%

1. Identification

Product Identifier	Hydrochloric Acid, 32-36%
Other Means of Identification	
Product Code	507-USA-TMI
Recommended Use	Metal processing, pH adjustment for water treatment
Synonyms	Muriatic Acid, 20-22 Degrees Baumé Muriatic Acid, Aqueous Hydrogen Chloride
Manufacturer/Importer/Supplier/Distributor Information:	
Supplier name	
Address	
Telephone	
E-mail	

2. Hazard(s) Identification

Physical Hazards	Corrosive to Metals	Category 1
Health Hazards	Acute Toxicity, inhalation	Category 1
	Acute Toxicity, oral	Category 1
	Serious Eye Damage	Category 1
	Skin Corrosion	Category 1
	Respiratory Sensitization	Category 1
Environmental Hazards	Not classified	
OSHA Defined Hazards	Not classified	
Label Elements		



Signal Word	DANGER
Hazard Statements	Fatal if inhaled (mist, vapor). Fatal if swallowed. Causes serious eye damage. Causes severe burns and eye damage. May cause allergic or asthmatic symptoms or breathing difficulties if inhaled. May be fatal if swallowed and enters airway. May be corrosive to metals.



Silver Shield [®] H	Gloves	>4 hrs	>4 hrs
HH (Polyethylene/Ethylene Vinyl Alcohol)	Gloves	>4 hrs	>4 hrs
Polyethylene	Gloves, Boots, Suits	Use for short periods < 4 hrs	Use for short periods < 1 hr
Polyvinyl Alcohol	Gloves	Not Recommended	Not Recommended

Community Emergency Planning Emergency Response Planning Guidelines (ERPG):

ERPG 1 = 3 ppm

ERPG 2 = 20 ppm

ERPG 3 = 150 ppm

9. Physical and Chemical Properties

Appearance	Clear to light yellow
Physical State	Liquid
Color	Colorless to light yellow
Odor	Pungent, irritating (strong)
Odor Threshold	0.77 ppm is odor detection if person is focused on perceiving it.
5 ppm (7 mg/m ³)	About 50% of population will detect when distracted.
pH	Less than 1
Acidity	Very strong acid
Molecular Weight	36.46
Molecular Formula	HCl
Melting Point / Freezing Point	-43 °C (-45.4 °F)
32%	-32.22 °C (-26.0 °F)
Boiling Point	84 °C (183.2 °F) @ 760 mmHg
32%	61.11-63.33 °C (142-146 °F)
Evaporation Rate	Hydrochloric acid solutions of greater than 28% are very volatile and can readily release high concentrations of hydrogen chloride gas.
Flash Point	None. See Section 5
Flammability	See Section 5.
Flammability Limits (Lower/Upper)	Not applicable
Auto-Ignition Temperature	Not applicable
Vapor Pressure	Partial Pressure
32%	23.5 mmHg (3.13 kPa) @ 25 °C
36%	~76 mmHg @ 20 °C
Vapor Density (Air = 1)	1.287
Volatility by Volume	100%
Volatility Organic Compounds	Zero
Specific Gravity	
32%	1.1593 @ 20 °C
36%	1.1828 @ 16 °C
Relative Density (lb/gal)	
32%	9.657 @ 20 °C
36%	9.979 @ 20 °C (1,198 kg/m ³)
Solubility (in water)	100% in all proportions
Solubility in Other Liquids	Very soluble in ethanol, methanol, dioxane and tetrahydrofuran; insoluble in
Emulsifiable in Water	Yes
Specific Heat	
32%	2.55 kJ/kg K

Storage

Never add water to this product. When diluting with water, always add acid to water and add it slowly. Avoid mixing with alkalis. Keep away from incompatible materials such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Do not wash down the drain.

Keep container tightly closed when not in use. Keep away from heat and flame. Do not store in direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances such as hydroxides, amines, alkalis, or metals, such as copper, brass, zinc, potassium, and sodium. Prevent access to storage areas.

Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside metal containers in storage. Metal storage containers should be vented on a regular basis by trained personnel only.

The ideal storage temperature for hydrochloric acid is 10-27 °C (50-80 °F). Do not expose sealed containers to temperatures above 40 °C (104 °F).

For indoor storage, floors should be acid resistant, electrical equipment should be flameproof and protected against corrosive action. Wood and other organic materials should not be used on floors, structural materials, and ventilation systems in the storage areas.

Equipment Compatibility

Storage drums must be coated with an acid resistant material. Rubber-lined steel, PVC/FRP, FRP, Hastelloy C-276, Inconel 625, and tantalum are the most commonly used corrosion-resistant materials of construction at room temperature. Rubber, glass, plastic, and ceramic ware are also resistant to corrosion. Vented containers must be used and must be kept closed when not being used. Containers should have a safety relief valve. Care should be taken to release any internal pressure slowly. Use corrosion-resistant transfer equipment when dispensing.

8. Exposure Controls/Personal Protection

Engineering Controls

Under normal conditions of use, natural ventilation should effectively remove and prevent buildup of any vapor/mist/aerosol generated from the handling of this product. Indoor, use only in a chemical fume hood, in poorly ventilated outdoor areas, provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value and below irritation levels.

Ensure that eyewash stations and safety showers are readily available in the immediate work area. Do not delay immediately flushing with water upon exposure.

Exposure Guidelines

While exposure limits have been established for hydrogen chloride gas, exposure limits to vapor or mist without appropriate respiratory protection. The higher the concentration, the more vapor/mist potential in air.

CAS #	Chemical Name	OSHA PEL	ACGIH TLV (8-hr TWA)	NIOSH	IDLH
7647-01-4	Hydrogen Chloride	5 ppm (Ceiling) (7 mg/m ³)	2 ppm (Ceiling) (3 mg/m ³)	5 ppm (Ceiling) (7 mg/m ³)	50 ppm
7732-18-5	Water	None	None	None	None

ACGIH limit is based on the risk of acute irritation [ACGIH 1991, p. 773]

NIOSH limit is based on the risk of eye, mucous membrane, and skin irritation [NIOSH 1992]

Personal Protective Equipment (PPE)

Eye / Face Protection

Wear splash-resistant chemical safety goggles and a full face shield.

Skin Protection

Wear impervious protective clothing, including boots, gloves, and lab coat, apron or full body suit, as appropriate, to prevent skin contact. A chemical protective acid-resistant full-body encapsulating suit and respiratory protection may be required in some operations.

Respiratory Protection

No personal respiratory protective equipment is normally required.

Use NIOSH-approved respirator with an acid gas cartridge or combination style approved for hydrogen chloride. If aerosol or mist involved, use a filter with the cartridge.



EMERGENCY

Gas mask with canister to protect against hydrogen chloride or powered air-purifying respirator with cartridge(s) to protect against hydrogen chloride.

Supplied Air Respirator (SAR); or full-facepiece self-contained breathing apparatus (SCBA).

OR planned entry into unknown concentration or IDLH conditions:

Positive pressure, full facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

Gas mask with acid gas canister or escape-type SCBA.

ESCAPE

Personal Hygiene

If liquid contacts the skin, workers should flush the affected areas immediately with plenty of water, followed by washing with soap and water. Remove contaminated clothing immediately. Keep contaminated clothing in closed containers. Discard or launder before re-wearing. Persons laundering the clothes should be informed of the hazardous properties of hydrochloric acid, particularly its potential for causing irritation.

Workers should not eat, drink, use tobacco products, apply cosmetics, or take medication in areas where a solution containing hydrogen chloride is handled, processed, or stored. A worker who handles hydrochloric acid should thoroughly wash hands, forearms, and face with soap and water before eating, using tobacco products, using toilet facilities, applying cosmetics, or taking medication.

Personal Protection

Face shield with splash goggles or full facepiece respirator equipped with acid gas cartridge for acid vapors. Impervious clothing, boots, and gloves.

Personal Protection

Full body splash and vapor protection. Impervious boots and gloves. Self-contained breathing apparatus. Suggested protective clothing might not be sufficient; consult a specialist.

Resistance of Materials for Protective Clothing

To evaluate the use of PPE materials with hydrogen chloride, users should consult the best available performance data and manufacturers' recommendations. Significant differences have been demonstrated in the chemical resistance of generally similar PPE materials (e.g., butyl) produced by different manufacturers. In addition, the chemical resistance of a mixture may be significantly different from that of any of its pure components. Breakthrough times are obtained under conditions of continuous contact, generally at room temperature. Evaluate resistance under conditions of use and maintain clothing carefully.

Material for Hydrogen Chloride	PPE Use	HCl < 30% Recommended Use	HCl 37% Recommended Use	Comments
Butyl Rubber	Gloves, Boots, Suits	> 8 hrs	> 8 hrs	
Natural Rubber	Gloves	> 8 hrs	> 4 hrs	Gloves > 0.3 mm
Necoprene Rubber	Gloves, Boots, Suits	> 8 hrs	> 4 hrs	Gloves > 0.3 mm
Nitrile Rubber	Gloves, Boots, Suits	> 8 hrs	> 4 hrs	Gloves > 0.3 mm
Viton [™]	Gloves, Suits	> 8 hrs	> 8 hrs	
Teflon [™]	Gloves, Boots, Suits	> 8 hrs	4 hrs	
Baricade [™]	Suits	> 8 hrs	> 8 hrs	
Treichem [™] HPS	Suits	> 4 hrs	> 4 hrs	
Treichem [™] VPS	Suits	> 4 hrs	> 4 hrs	
Tychem [™] SL Saranex [™]	Suits	> 8 hrs	> 8 hrs	
Tychem [™] CPF-3	Suits	> 8 hrs	> 8 hrs	
Tychem [™] P	Suits	> 8 hrs	> 8 hrs	
Tychem [™] BR or LV	Suits	> 8 hrs	> 8 hrs	
Tychem [™] Responder [™]	Suits	> 8 hrs	> 8 hrs	
Tychem [™] TK	Gloves, Boots, Suits	> 8 hrs	> 8 hrs	Gloves > 0.3 mm
Polyvinyl chloride	Gloves, Boots, Suits	> 4 hrs	> 4 hrs	



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Sensitization	May cause painful sensitization to light after repeated or significant exposure. No skin sensitization has been reported.
Subchronic Effects	Chronic inhalation exposure caused hyperplasia of the nasal mucosa, larynx, and trachea and lesions in the nasal cavity in rats.
Delayed Effects	No data available.
Effects on Animals	Acute animal tests in rats, mice, and rabbits have demonstrated hydrochloric acid to have moderate to high acute toxicity from inhalation and moderate acute toxicity from oral exposure. Pulmonary irritation, lesions of the upper respiratory tract, and laryngeal and pulmonary edema have been reported in rodents acutely exposed by inhalation.

Acute Toxicity to Humans Data:

Parameter	Concentration	Exposure Time	Species	Ingredient
LC ₅₀	1300 ppm	0.5 hr	human, inhalation	Hydrochloric Acid, concentrated
LD ₅₀	2657 mg/kg		human, oral	HCl

Acute Toxicity to Animals Data:

Parameter	Concentration	Exposure Time	Species	Ingredient
LC ₅₀	3124 ppm	1 hr	rat, inhalation	Hydrogen Chloride
LC ₅₀	1108 ppm	1 hr	mouse, inhalation	HCl
LC ₅₀	4701 ppm	0.5 hr	rat, inhalation	Hydrogen Chloride gas
LD ₅₀	25010 mg/kg		rabbit, dermal	Hydrochloric Acid, concentrated
LD ₅₀	890 mg/kg		rabbit, oral	Hydrochloric Acid, concentrated
LD ₅₀	4413 ppm	0.5 hr	rabbit, inhalation	HCl

Test Animal	Results
Rabbit Eye	Hydrochloric acid is injurious only at concentrations having acidity below pH 3. Contact with 0.25N to 1N acid for 20 seconds resulted in some scarring of rabbit corneas. 5 mg for 30 seconds caused mild irritation.
Rabbit Skin	0.5 mL of 17% HCl for 4 hours caused corrosive burns.

Epidemiology	No information available.
Mutagenicity	Ames test - negative. Hydrochloric acid has produced mutagenic effects in bacterial and insect test systems, and in one in vitro mammalian cell test (hamster lung cells). HCl was negative in another in vitro mammalian cell test. The significance of the positive reports is questionable since pH (acidity) can influence the results of short-term tests.
Reproductive Effects	In rats exposed to hydrochloric acid by inhalation (450 mg/m ³ for 1 hour), severe dyspnea, cyanosis, and altered estrus cycles have been reported in dams, and increased fetal mortality and decreased fetal weight have been reported in the offspring.
Teratogenicity	No information available.
Aspiration Hazard	Leads to a pulmonary inflammatory response.
Target Organs	Skin, eyes, respiratory tract, lungs, gastrointestinal system, teeth
Neurological Effects	No information available.
Synergistic Effects	No information available.
Other Information	Persons suffering from skin and respiratory diseases should take extra care to avoid exposure to hydrochloric acid.

12. Ecological Information

Ecotoxicity	This material is expected to be toxic to aquatic life. Toxicity is primarily associated with pH.
Environmental Effects	No ecological problems are expected when the product is handled and used with due care. Large discharges may cause acidification of water and may be fatal to aquatic organisms, fish and plants. The concentration of hydrochloric acid that was found to be injurious to crops (grain) is 350 mg/L.



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Environmental Fate	When released into the soil, this material is not expected to be biodegraded and may leak into groundwater where it will dissociate almost completely into the hydronium ion. It is not expected to accumulate in the food chain. If released into the water, the water pH will be decreased.
Mobility in Soil	Upon transport through the soil, hydrochloric acid will dissolve some of the soil materials (especially those with carbonate bases) and the acid will neutralize to some degree. Significant amounts will transport to the ground water table.

Aquatic Toxicity

Parameter	Concentration	Exposure Time	Species	Ingredient
TL ₅₀	282 mg/L	96 hr	mosquito fish, fresh water	HCl
LC ₅₀	21,000 ug/L	96 hr	fathead minnow	HCl
LC ₅₀	10 mg/L	24 hr	trout	HCl
LC ₅₀	100 - 338 mg/L	96 hr	crayfish, saltwater	HCl
LC ₅₀	178 mg/L	96 hr	gulf fish, saltwater	HCl
LC ₅₀	240 mg/L	96 hr	shrimp, saltwater	HCl
LC ₅₀	10 mg/L	24 hr	trout	HCl

Plant Toxicity	Chronic plant toxicity = 100 ppm.
Persistence and Degradability	Rapidly hydrolyzes when exposed to water.
Partition Coefficient: n-octanol/water	See Section 9.
BCF	No information available

13. Disposal Considerations

Waste Codes	Test waste material for corrosivity, D002 (Corrosive Waste), prior to disposal.
Disposal Instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies.
Whether cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.	
Waste from Residues and Unused Products	Re-use or reprocess, if possible. As produced, the product meets the RCRA definition of corrosive with D002 waste code. Processing, use, or condemnation of this product may change the waste management options.
Contaminated Packaging	Do not re-use empty containers for other substances. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information



Label



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Partition Coefficient: n-octanol/water Log P _{ow} = 0.3 (36% hydrochloric acid)	Not available
Critical Temperature	Not available
Viscosity-Dynamic	1.71 mPa.s (or centipoise) @ 20 °C 1.8 mPa.s (or centipoise) @ 20 °C
Surface Tension	71.75 mN/m (71.75 dyne/cm) 70.55 mN/m (70.55 dyne/cm)
Oxidizing Properties	None
Dissociation Constant	6.2 pKa @25 °C
Dielectric Constant	Approximately 78.30 @25 °C (77 °F)
Henry's Law Constant	Hydrochloric acid water solutions do not obey Henry's law at all measured concentrations; however 2.04 x 10 ⁻⁶ mol/L atm (4.90 x 10 ⁻¹⁰ mol/L atm) has been reported. This means that hydrochloric acid is expected to be essentially non-volatile from water surfaces.
Conversion Factor	1 ppm = 1.45 mg/L; 1 mg/L = 0.67 ppm @25 °C (780 torr) (calculated)

10. Stability and Reactivity

Chemical Stability	The product is stable under normal conditions of use.
Corrosivity	Extremely corrosive in presence of aluminum, copper and its alloys, stainless steel (304), stainless steel (316). Non-corrosive in presence of glass. It attacks nearly all metals (mercury, gold, platinum, silver, and certain alloys are exceptions). Severe corrosive effect on brass and bronze.
Conditions to Avoid	Avoid heat, flames, sparks and other sources of ignition. Contact with water may produce a strong exothermic reaction with splattering. Contact with metals may evolve flammable hydrogen gas. Hydrogen chloride may react with cyanide, forming lethal concentrations of hydrocyanic acid.
Hazardous Decomposition Products	When heated to decomposition emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine vapors and flammable hydrogen gas.
Polymerization	HCl itself does not polymerize. Reaction of HCl with aldehydes and epoxides can cause polymerization.
Possibility of Hazardous Reactions	Reacts with most metals and evolves highly flammable hydrogen. Reacts with oxidizing agents and sulfuric acid liberating toxic chlorine gas. Reacts violently (moderate reaction with heat of evolution) if water is added to the product. Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid.

11. Toxicological Information

See Section 2 Hazards Identification for additional health effects information.	
Carcinogenicity	There is inadequate evidence for the carcinogenicity of hydrochloric acid in humans and in experimental animals.



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Component	IARC	NTP	OSHA	NIOSH	California Prop 65
Hydrochloric Acid CAS 7647-01-0	Group 3 not classifiable as to its carcinogenicity to humans	No	No	No	No
Water CAS 7732-18-5	No	No	No	No	No

Summary of Human Studies	10 ppm - recognition odor in air and maximal allowable for prolonged exposure. 35 ppm - causes irritation of throat. 50-100 ppm - can be barely tolerated for 1 hr (severe irritation and breathing difficulty occurs). 1,300-2,000 ppm - lethal for brief exposures of a few minutes by causing pulmonary edema. Workers chemically exposed to hydrogen chloride did not exhibit the pulmonary function changes observed in nine subjects exposed to similar concentrations, which suggests that workers become acclimated to hydrogen chloride. Dental discoloration and erosion of exposed incisors may occur on prolonged exposure to low concentrations.
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Acute Exposure Effects on Humans

Skin Corrosion/Irritation	Corrosive. Contact with aqueous solutions causes burns of the skin and mucous membranes; the severity of the burns depends on the concentration of the solution. Burns may progress to ulcerations and lead to keloid and refractory scarring. Frequent contact of the skin with aqueous solution may cause dermatitis. Exposure to hydrochloric acid can produce burns on the skin and mucous membranes; the severity of which is related to the concentration of the solution. Subsequently, ulceration may occur, followed by keloid and refractory scarring. Contact with the eyes may produce reduced vision or blindness.
Eye Damage/Irritation	Frequent contact with aqueous solutions of hydrochloric acid may lead to dermatitis. Corrosive. Contact with aqueous solutions is corrosive to the eyes and can cause severe eye irritation/conjunctivitis, burns, corneal necrosis, reduced vision, irreversible eye injury, or blindness. Vapor or mist may cause irritation and severe burns. May cause painful sensitization to light. Degree of damage is proportional to concentration involved.
Inhalation	The greatest impact is in the upper respiratory tract. May cause coughing, hoarseness, inflammation and ulceration of the respiratory tract, chest pain, and pulmonary edema. Irritating and potentially corrosive to the respiratory tract and lungs. Exposure to high concentrations can rapidly lead to swelling and spasm of the throat and suffocation. Material is extremely destructive to tissues of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid vapors and mists produces nose, throat, and laryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, shortness of breath, hoarseness, laryngeal spasm, upper respiratory tract edema, bronchial constriction, bronchitis, chest pains, as well as headache, and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, laryngeal perforation, glottal closure, occur, particularly if exposure is prolonged. May be fatal if inhaled.
Ingestion	May cause severe burns of the mucous membranes, mouth, esophagus, and stomach, with pain, nausea, vomiting, and diarrhea reported in humans. May be fatal if swallowed. Causes irritation and burning, edema of the gut, ulceration, or perforation of the esophagus and digestive tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomiting (with "coffee ground" emesis), diarrhea, thick difficulty swallowing, salivation, chills, fever, unconsciousness, shock, stupor and stupor (apophagetic, gastric, pyloric). May affect behavior (excitement), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidney-renal failure, nephritis).

Chronic Effects on Humans	Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation that leads to frequent attacks of bronchial infection and may produce ulceration of the nose, mouth and gum. Acute, repeated exposure via inhalation or ingestion can also cause erosion of tooth enamel. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, and circulatory system.
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NFPA Rating: NFPA Hazard Scale: 0 - Minimal

- 1 - Slight
- 2 - Moderate
- 3 - Serious
- 4 - Severe

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists
BCF	Bioconcentration Factor
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CFR	Code of Federal Regulations
CHEMTREC	Chemical Transportation Emergency Center
DOT	Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EPCRA	Emergency Planning and Community Right-to-Know
ERG	Emergency Response Guidelines
ERPG-1	The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing other than mild transient adverse health effects or perceiving a clearly defined, objectionable odor
ERPG-2	The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action
ERPG-3	The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing or developing life-threatening health effects
IARC	International Agency for Research on Cancer
IDLH	Immediately Dangerous to Life and Health - the maximum airborne concentration from which one could escape (within 30 minutes) without any escape-inhibiting symptoms or any irreversible health effects
MDG	International Maritime Dangerous Goods
LC50	Lethal Concentration - median dose at which 50% of test animals die from inhalation
LD50	Lethal Dose - median dose at which 50% of test animals die from oral or dermal exposure
NDSL	Non-Domestic Substances List (Canada)
NIOSH	National Institute of Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Health and Safety Administration
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RQ	Reportable Quantity
SARA	US EPA Superfund Amendments and Reauthorization Act
TG	Transport of Dangerous Goods (Canada)
TLV	Average threshold limit
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TC	Threshold Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average airborne concentration for a worker in an 8-hour day
WHMIS	Workplace Hazardous Materials Identification System (Canada)



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US DOT / Canadian TDG

	DOT	CANADA TDG
UN Number	1789	1789
Proper Shipping Name	Hydrochloric Acid, 32-36%	Hydrochloric Acid Solution, 32-36%
Hazard Class	8	8
Packing Group	II	II
RQ or ERAP	5,000 lbs (2,270 kg) - about 500 gallons	3000 L (ERAP)
Marine Pollutant	No	No
ERG	157	

MDG (Water)

Basic Shipping Requirements:

UN Number	UN1789
Proper Shipping Name	Hydrochloric Acid Solution, (32-36%)
Hazard Class	8
Packing Group	II
Marine Pollutant	No

Additional Information:

Vessel Stowage	C - On Deck only cargo or passenger
EMS	F-A, S-B

ICAO/IATA (Air)

Basic Shipping Requirements:

UN Number	UN1789
Proper Shipping Name	Hydrochloric Acid (32-36%)
Hazard Class	8
Packing Group	II
Additional Information:	
Packaging Instruction	808 - 1 L, passenger 813 - 30 L cargo

Excepted Quantities

Y809 (excepted quantities): inner packaging net - 30 mL (1 oz.);
outer aggregate - 500 mL (0.1 gal); Documentation: Dangerous
Goods in Excepted Quantities and Excepted Quantity mark (label):
1 mL (0.03 oz.) inner packaging net; 100 mL (3.38 oz.) outer aggregate.

15. Regulatory Information

Clean Air Act 112(i), RMP	No for this product. Applicable for HCl 37% or greater in solution.
Clean Air Act	CAS# 7647-01-0 is listed as a hazardous air pollutant (HAP).
Class 1 Ozone Depletor	None
Class 2 Ozone Depletor	None
Clean Water Act	CAS# 7647-01-0 is listed as a Hazardous Substance under the CWA.
Priority Pollutants	None
Toxic Pollutants	None
OSHA PSM (Highly Hazardous)	CAS# 7647-01-0 (Hydrogen Chloride Gas and Hydrochloric Acid, Anhydrous) is considered highly hazardous by OSHA with a 5,000 lbs TQ
US FEDERAL REGULATIONS:	
OSHA	This product is known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200
TSCA Inventory 8(b)	Hydrogen Chloride, CAS# 7647-01-0 Water, CAS# 7732-18-5
TSCA H&S Data Reporting List 8(d)	None of the components are on this list.



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THAI PETROLEUM SUPPORT COMPANY LIMITED

Material Safety Data Sheet Soda Ash

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. PRODUCT IDENTIFIERS

Product Name:	Soda Ash or Sodium Carbonate
Chemical Name:	Sodium Carbonate
Synonyms / Common Names:	Carbonic Acid Sodium Salt
Registration Number REACH:	01-211948/5498-19-0011
Product Type REACH:	Substance/mixture-constituent
CAS Number:	497-19-8
EC Index Number:	011-005-00-2
EC Number:	207-839-8
RTECS Number:	VZ4050000

1.2. RELEVANT IDENTIFIED USES

Glass production	Paper production	Manufacture of substances
Detergent component	Laboratory chemicals	Acidity regulator

1.3. MANUFACTURER

Supplier name:
Address:
Telephone:
E-mail:



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TSCA Proposed Test Rule, 4(a)	CAS# 7647-01-0 (Hydrochloric Acid).
TSCA Significant New Use Rule 5(a)	None of the components are on this list.
TSCA, Section 12b	None of the components are on this list.
CERCLA Reportable Quantity (RQ)	5000 pounds (2270 kg) for CAS# 7647-01-0 (Hydrochloric Acid)
Section 302 - Extremely Hazardous Substance	CAS# 7647-01-0, Hydrogen Chloride gas only, TQ 500 lbs
Section 311 - Hazardous Chemical	Yes (Hydrogen Chloride gas and solution)
SARA 312/313	CAS # 7647-01-0 (Hydrogen Chloride and solution) Immediate (Acute) Hazard Yes Delayed Hazard No Fire Hazard No Pressure Hazard No Reactivity Hazard No
EPORA Section 313	This material contains Hydrochloric acid (CAS# 7647-01-0, 32 to 36%) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373, if it is in aerosol form (including mists, vapors, gas, fog, and other airborne forms of any particle size).
STATE REGULATIONS:	
State Regulations that Apply	Hydrogen chloride (CAS 7647-01-0) can be found for: California Director's List of Hazardous Substances New Jersey Environmental Hazardous Substance Florida Hazardous Substance List Massachusetts Extremely Hazardous Substance Minnesota Hazardous Substance List Rhode Island Hazardous Substance List
State Right-To-Know	Illinois, Massachusetts, New Jersey, Pennsylvania
California Prop 65	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.
California No Significant Risk Level	No information available.
CANADA	This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and this MSDS contains all required information.
DSL/NDL	CAS# 7647-01-0 (Hydrogen Chloride) is listed on Canada's DSL List. CAS# 7732-18-5 (Water) is listed on Canada's DSL List.
WHMIS Classification	Class D1A - Immediate and serious effects - Very Toxic. Class E - Corrosive Liquid
Ingredient Disclosure List	CAS# 7647-01-0 (Hydrogen Chloride), meets criteria for disclosure at 1% or greater.
European Economic Community (EEC) Information	
EINECS	231-595-7

16. Other information, including date of preparation or last revision

Issue Date:	06-01-2015	Version # 01
Revision History:	06-01-2015	Initial version
HMS# Rating	HMS# is a registered trade and service mark of the American Coatings Association	
Health	3	
Flammability	0	
Physical hazard	1	



4.3 INDICATION OF ANY IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED
No data available.

5 FIRE-FIGHTING MEASURES

5.1 EXTINGUISHING MEDIA

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE

Upon combustion CO and CO₂ are formed. Reacts on exposure to water with some metals. CO₂ generation occurs when mixed with acidic materials.

5.3 ADVICE FOR FIREFIGHTERS

Wear self-contained breathing apparatus for firefighting if necessary.

5.4 SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Gloves. Safety glasses. Protective clothing. Dust cloud protection and heat/fire exposure: Compressed air respirator.

6 ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 ENVIRONMENTAL PRECAUTIONS

Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray. Violent exothermic reaction with some acids; release of harmful gases/vapors (carbon dioxide). Carbon dioxide is heavier than air and will collect in ducts, drains and low lying areas. Prevent spreading in sewers.

6.3 METHODS AND MATERIAL FOR CONTAINMENT AND CLEANUP

Prevent dust cloud formation. Scoop solid spill material into closed containers. Carefully collect the spill. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

6.4 REFERENCE TO OTHER SECTIONS

For disposal see section 13.



2 HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

GHS Classification in accordance with 29 CFR 1910 (OSHA HazCom Standard):

Eye Irritation (Category 2A), H319

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS LABEL ELEMENTS, INCLUDING PRECAUTIONARY STATEMENTS

Pictograms:



Irritant

Signal Word: Warning

Hazard Statement(s):

H319 Causes serious eye irritation.

Precautionary Statement(s):

P264 Wash skin thoroughly after handling.

P280 Wear eye protection / face protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice / attention.

2.3 HAZARDS NOT OTHERWISE CLASSIFIED OR NOT COVERED BY GHS

None

3 COMPOSITION / INFORMATION ON INGREDIENTS

3.1 SUBSTANCES

Synonyms:

Soda Ash, Sodium Carbonate, Carbonic Acid Sodium Salt

Formula:

Na₂CO₃



7 HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Avoid contact with skin and eyes. Use air conveying/mechanical systems for bulk transfer to storage. Provide appropriate exhaust ventilation at places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment if release of airborne dust is expected.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES

Store in original container. Keep in properly labeled containers. Keep container tightly closed.

7.3 SUITABLE PACKAGING MATERIAL

No data available.

7.4 INCOMPATIBLE PRODUCTS

Aluminum, powdered aluminum, and acids.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 COMPONENTS WITH WORKPLACE CONTROL PARAMETERS

Contains no substances with occupational exposure limit values.

8.2 EXPOSURE CONTROLS

Appropriate engineering controls – Avoid formation of dust. Keep away from ignition sources. Keep container tightly closed. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 PERSONAL PROTECTIVE EQUIPMENT

Eye / Face Protection – Safety glasses with side shields or protective goggles. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection – Handle with gloves, butyl rubber or PVC, which have good resistance. Gloves must be inspected prior to use. Use proper glove removal technique to avoid skin contact with product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Body Protection – Protective clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection – For nuisance exposures use type P95 (US) or type P1 (EU EN 143) particle respirator. For higher level protection use type OV/AG/P99 (US) or type ABEK-P2 (EU EN 143) respirator cartridges. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).



Molecular Weight: 105.99 g/mol

Component (REACH Registration)	CAS # / EC #	Concentration	Classifications	Remark
Sodium carbonate (01-2119485498-19-0011)	CAS #: 497-19-8 EC #: 207-638-8	≥ 99%	Eye Irrit. 2A, H319	Non-constituent

* For the full text of the H-Statements mentioned in this Section, see Section 16.

4 FIRST-AID MEASURES

4.1 DESCRIPTION OF FIRST-AID MEASURES

General – Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with labored breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

After inhalation – Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

After skin contact – Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists.

After eye contact – Rinse immediately with plenty of water for at least 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

After ingestion – Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Consult a doctor/medical service if victim is unwell.

4.2 MOST IMPORTANT SYMPTOMS AND EFFECTS, BOTH ACUTE AND DELAYED

4.2.1 Acute Symptoms

If inhaled – Dry/sore throat. Coughing. Slight irritation. Exposure to high concentrations: Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Respiratory difficulties.

In case of skin contact – Not irritating

In case of eye contact – Inflammation/damage of the eye tissue. Corrosion of the eye tissue. Lacrimation.

If swallowed – After absorption of high quantities: Nausea. Vomiting. Abdominal pain. Irritation of the gastric/intestinal mucosa.

4.2.2 Delayed Symptoms

No effects known.



12 ECOLOGICAL INFORMATION

12.1 Toxicity

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt water	Value determination
Acute toxicity /fishes	LC50	Other	300 mg/l	96 h	Lepomis macrochirus	Static system	Fresh water	Experimental value
Acute toxicity /invertebrates	EC50	Other	200 - 227 mg/l	48 h	Ceriodaphnia sp.	Semi-static	Fresh water	Experimental value
Toxicity algae and other aquatic plants	EC50		242 mg/l	5 days	Algae			Experimental value

12.2 PERSISTENCE AND DEGRADABILITY:

Biodegradability: not applicable

12.3 BIOACCUMULATIVE POTENTIAL:

Low potential for bioaccumulation (Log Kow <4)

12.4 MOBILITY IN SOIL:

Low potential for absorption in soil.

12.5 RESULTS OF PBT AND vPvB ASSESSMENT:

PBT/vPvB assessment not available as chemical safety assessment is not required/not conducted.

12.6 OTHER ADVERSE EFFECTS:

No data available

13 DISPOSAL CONSIDERATIONS

13.1 WASTE DISPOSAL:

Remove waste in accordance with local and/or national regulations. Contact a licensed professional waste disposal service to dispose of this material. Different types of hazardous waste should not be mixed together if it will entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. Do not discharge into drains.



8.4 CONTROL OF ENVIRONMENTAL EXPOSURE

Prevent leakage or spillage if safe to do so. Do not let product enter drains. See section 6.2, 6.3, and 13.

9 PHYSICAL AND CHEMICAL PROPERTIES

9.1 INFORMATION ON BASIC PHYSICAL AND CHEMICAL PROPERTIES

Appearance Form:	Crystalline Solid / Crystalline Powder / Grains / Lumps
Color:	Colorless
Odor:	Odorless
Odor Threshold:	No data available
Particle Size:	694 µm
pH:	11.6; 5.0%
Melting Point / Freezing Point:	851 °C / 1,564 °F
Boiling Point:	1,600 °C / 2,912 °F
Flash Point:	No data available
Explosion Limits:	No data available
Evaporation Rate:	No data available
Flammability:	Non Combustible
Log Kow:	-6.19 Estimated value
Viscosity:	No data available
Vapor Pressure:	No data available
Vapor Density:	No data available
Solubility water:	212.5 g/l; 20 °C / 68 °F
Relative Density:	2.52 - 2.63; 20 °C / 68 °F
Absolute Density:	2,530 kg/m³
Decomposition temperature:	>1600 °C / >2912 °F
Auto-ignition temperature:	>400 °C / >752 °F
Explosive Properties:	No data available
Oxidizing Properties:	No data available

9.2 PHYSICAL HAZARDS

No data available

10 STABILITY AND REACTIVITY

10.1 REACTIVITY

None under normal use conditions.

10.2 CHEMICAL STABILITY

Stable. Decomposes by reaction with strong acid.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS

None under normal processing.

10.4 CONDITIONS TO AVOID

Exposure to air or moisture over prolonged periods.

10.5 INCOMPATIBLE MATERIALS:

Aluminum, powdered aluminum, and acids.

10.6 HAZARDOUS POLYMERIZATION

Hazardous polymerization does not occur.

11 TOXICOLOGICAL INFORMATION

11.1 INFORMATION ON TOXICOLOGICAL EFFECTS

11.1.1 Acute toxicity

LD50 Oral - rat - 2,800 mg/kg
LD50 Dermal - rabbit >2,000 mg/kg
LD50 Inhalation - rat - 2.30 mg/l, 2 hour exposure time

11.1.2 Corrosion/Irritation

Skin - rabbit
Result: Mild skin irritation - 24 hours

11.1.3 Serious eye damage/eye irritation

Eyes - rabbit
Result: Severe eye irritation - 24 hours

11.1.4 Respiratory or skin sensitization

Inhalation - no data available
Skin Sensitization: no data available

11.1.5 Germ cell mutagenicity

No data available

11.1.6 Carcinogenicity

No data available

11.1.7 Reproductive toxicity

No data available

11.1.8 Specific target organ toxicity - single exposure

No data available

11.1.9 Specific target organ toxicity - repeated exposure

No data available

11.1.10 Chronic effects from short and long-term exposure

On continuous / repeated exposure / contact: Red skin. Dry skin. Tingling / irritation of the skin. Affection of the nasal septum.



14 TRANSPORT INFORMATION

14.1 UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT)

Non-regulated

14.2 INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

Non-regulated

14.3 INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)

Non-regulated

14.4 TDG / ADN / RID / ADR

Non-regulated

15 REGULATORY INFORMATION

15.1 SARA 302 COMPONENTS

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

15.2 SARA 313 COMPONENTS

SARA 313: This material does not contain any chemical with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

15.3 SARA 311/312 HAZARDS

Acute Health Hazard

15.4 PENNSYLVANIA RIGHT TO KNOW COMPONENTS


Sodium carbonate, CAS-No: 497-19-8

15.5 NEW JERSEY RIGHT TO KNOW COMPONENTS

Sodium carbonate, CAS-No: 497-19-8

15.6 WHMIS CLASSIFICATION: C, D2

Note: The product listed on this SDS has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations.

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

3. ข้อมูลอันตรายของสารเคมี (Hazard Identification)

การจำแนกประเภทสารเคมีตามระบบ GHS :

เป็นพิษเฉียบพลัน (ปาก)	ประเภทที่ 4
การกัดกร่อนและการระคายเคืองต่อผิวหนัง	ประเภทที่ 1
การทำลายดวงตาอย่างรุนแรงและการระคายเคืองต่อดวงตา	ประเภทที่ 1
การทำให้ไอระเหยก่อการแพ้ต่อผิวหนัง	ประเภทที่ 1
ความเป็นพิษต่อระบบอวัยวะเป้าหมายอย่างเฉพาะเจาะจงจากการรับสัมผัสครั้งเดียว (ระบบประสาท ระบบทางเดินหายใจ)	ประเภทที่ 1
ความเป็นพิษต่อระบบอวัยวะเป้าหมายอย่างเฉพาะเจาะจงจากการรับสัมผัสซ้ำ (ตับ อวัยวะสืบพันธุ์ ระบบทางเดินหายใจ)	ประเภทที่ 1

องค์ประกอบหลัก :



คำสัญญาณ อันตราย กัดกร่อน เป็นพิษต่อระบบทางเดินหายใจ

ข้อความแสดงความเป็นอันตราย

อันตรายต่อระบบทางเดินหายใจ

อันตรายต่อผิวหนังอย่างรุนแรง และทำลายดวงตา

อันตรายต่อสิ่งมีชีวิตในน้ำ

ทำให้เกิดการแพ้ที่ผิวหนัง

	MMSVS GROUP HOLDING CO.,LTD	
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	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

ข้อความแสดงข้อควรระวัง

ควรได้รับคำแนะนำก่อนการใช้งาน

หลีกเลี่ยงการสัมผัสหรือหายใจรับสาร

สวมชุดป้องกันสารเคมี จุกมือกันสารเคมี แหวนครอบตา รองเท้าบูท

บริเวณใช้งาน ควรมีการระบายอากาศที่ดี

ห้ามปล่อยสารออกสู่สิ่งแวดล้อม หรือแหล่งน้ำ

4. มาตรการการปฐมพยาบาล (First Aid Measure)

มาตรการที่จำเป็นต้องดำเนินการไว้ทันที

การหายใจเข้าไป : หันย้ายผู้ป่วยไปยังบริเวณที่มีอากาศบริสุทธิ์ หากหายใจไม่สะดวกให้ช่วยปฐมพยาบาลเบื้องต้น นำส่งแพทย์ทันที

การสัมผัสทางดวงตา : ถูด้วยน้ำปริมาณมาก โดยลืมตาให้กว้าง ให้น้ำไหลผ่านอย่างน้อย 15 นาที อาจใช้สารละลายน้ำเกลือ (Neutral saline solution) ระวังอย่าให้น้ำล้างตาข้างตรงที่ไม่สัมผัสสาร แล้วรีบนำไปส่งแพทย์ทันที

การกลืนกิน : ห้ามทำให้อาเจียน ควรได้ดื่มน้ำ หรือน้ำสะอาด ในปริมาณมาก เพื่อเจือจางสาร

อาการ/ผลกระทบที่สำคัญ

การหายใจ : ระคายเคืองเยื่อเยื่ออย่างรุนแรง แสบคอ หายใจไม่ออก

ตา : ระคายเคือง แสบ ไหม้ อาจทำให้ตาบอด

ผิวหนัง : ระคายเคืองผิวหนังอย่างรุนแรง

การกลืนกิน : ไหม้ปากและทางเดินอาหาร กลืนลำบาก คลื่นไส้ อาเจียน ท้องเสีย อาจเสียชีวิตได้

ข้อควรพิจารณาทางการแพทย์ที่สิ่งต้องทำทันทีและการดูแลรักษาเฉพาะที่สำหรับบุคลากรทางการแพทย์

ผิวหนังไหม้แดง จมูกและแก้มมีเลือดออก โรคกระดูกสันหลังหัก หกล้มล้มศีรษะร้าย



บริษัท ไทยปิโตรเลียมซัพพอร์ต จำกัด
THAI PETROLEUM SUPPORT COMPANY LIMITED

16 OTHER INFORMATION

16.1 FULL TEXT OF H-STATEMENTS REFERRED TO UNDER SECTION 2 AND 3.

Eye Irrit. H319	Eye Irritation Causes serious eye irritation
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16.2 HMIS Rating

Health Hazard:	2
Flammability:	0
Physical Hazard:	0

16.3 NFPA Rating

Health Hazard:	2
Fire Hazard:	0
Reactivity Hazard:	0

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

1. ข้อมูลสารเคมีและรายละเอียดผู้จำหน่าย (Chemical Product and Company Identification)

ชื่อผลิตภัณฑ์ : Hydrochloric Acid 35%

ชื่อทางเคมี : Hydrochloric Acid

ชื่อท้องถิ่น : กรดเกลือ Muriatic acid, Spirit (s) of Salt, Chlorone

สูตร โมเลกุล : HCl

น้ำหนักโมเลกุล : 36.46 กรัม/โมล

2. องค์ประกอบและข้อมูลสารเคมี (Composition and Information on Ingredients)

ส่วนประกอบ	หมายเลข CAS	% โดยน้ำหนัก
Hydrochloric acid	7647-01-0	35
น้ำ	7732-18-5	65

ลักษณะทางกายภาพ : ของเหลวใส ไม่มีสี หากละลายในน้ำจะมีสีเหลืองจางๆ มีฤทธิ์เป็นกรดกัดกร่อน ไม่ติดไฟ ละลายน้ำได้ ผิดกลิ่นฉุน

CAS No. : 7647-01-0

EC / EINECS : 231-595-7

RTECS No. : MW 4025000

UN No. : 1789

EC Index 1 Index No. : 017-002-00-2

ข้อแนะนำในการใช้ประโยชน์และข้อจำกัดการใช้งาน

สำหรับการบำบัดน้ำเสีย ด้วยกระบวนการบำบัดด้วยไฮโดรคลอริก (Hydrolysis) อุณหภูมิที่เหมาะสม

อุณหภูมิที่เหมาะสม ใช้เป็น Catalyst ใช้เป็นสารตั้งต้นคลอรีนไดออกไซด์ (Chlorine)

ห้ามสัมผัสผิวหนัง ห้ามสูดดม ห้ามรับประทาน

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

- การป้องกันลาวัว : ชุดกันสารเคมี
- ข้อควรปฏิบัติ : เปลี่ยนเสื้อผ้าที่เปื้อนสารเคมี
- : สวมมือและหน้ากากหลังจากการทำงานกับสารเคมี
- : ห้ามกินอาหาร ดื่ม หรือสูบบุหรี่ในสถานที่ที่ทำงาน



- ข้อควรปฏิบัติ : เปลี่ยนเสื้อผ้าที่เปื้อนสารเคมี
- : สวมมือและหน้ากากหลังจากการทำงานกับสารเคมี
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9. สมบัติทางกายภาพและทางเคมี (Physical and Chemical Properties)

- ลักษณะทั่วไป : ของเหลวใส ไม่มีสี
- กลิ่น : กลิ่นฉุน
- ระดับค่าขีดจำกัดของกลิ่น : ไม่มีข้อมูล
- ค่าความเป็นกรด-ด่าง : 1.1
- จุดหลอมเหลว/ จุดเยือกแข็ง : -35°C
- จุดเริ่มต้นและช่วงของการเดือด : 63.8 °C ที่ 101.3 kPa
- จุดควบไฟ : ไม่ติดไฟ
- อัตราการระเหย : <1
- ความสามารถในการลุกติดไฟได้ : ไม่ติดไฟ
- ค่าขีดจำกัดสูงสุดและต่ำสุดของความไวไฟ หรือค่าขีดจำกัดสูงสุดและต่ำสุดของภาวะระเบิด (%v/v) :
- ชนิดต่าง :- ชนิดบ :-
- ความดันไอ : 84 mmHg ; 13.3 kPa ที่อุณหภูมิ 20 °C
- ความหนาแน่นไอ (อากาศ = 1) : 1.27
- ความหนาแน่นสัมพัทธ์ (น้ำ = 1) : 1.10 -1.19 ที่อุณหภูมิ 20 °C
- ความสามารถในการละลาย : ละลายในน้ำได้ดี
- ค่าสัมประสิทธิ์การละลายของสารในชั้นของ n-octanol ต่อน้ำ (Log K_{ow}) : ไม่มีข้อมูล

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

- อุณหภูมิที่ลุกติดไฟได้เอง : ไม่ติดไฟ
- อุณหภูมิของสารละลาย : ไม่มีข้อมูล
- ความหนืด : 1.9 cP ที่อุณหภูมิ 20 °C

10. ความเสถียรและความว่องไวต่อปฏิกิริยา (Stability and Reactivity)

- การเกิดปฏิกิริยา : ทำปฏิกิริยารุนแรงและก่อให้เกิดระเบิด กับ อะซิไธซีน (Acetylene), อีเทอร์ (Ether), สารประกอบฟลูออรีน (Fluorine compound), เทอพินทีน (Terpentine) , แอลกอฮอล์ (Alcohol) , แอมโมเนีย (Ammonia) , ต่างแก่ เช่น โซเดียมไฮดรอกไซด์ ไทเทสซิออนไฮดรอกไซด์
- ความเสถียรทางเคมี : ความเสถียรภายใต้อุณหภูมิและความดันปกติ ของการใช้และการเก็บ
- สถานะที่ควรหลีกเลี่ยง : โทษะ เมื่อสัมผัสแล้วจะ ให้เกิดไอโครเจนที่อาจระเบิด ได้ วัสดุออกซิไดซ์ วัสดุรีดิวซ์
- วัสดุที่เข้ากันไม่ได้ : ไฮโดรเจน คลอไรด์, คลอรีน, แก๊สไฮโดรเจน
- ผลิตภัณฑ์จากการเผาไหม้ : ไม่มีข้อมูล
- ผลิตภัณฑ์จากการสลายตัวที่เป็นอันตราย : ไม่มีข้อมูล
- ความเป็นปฏิกิริยาในการเกิดปฏิกิริยาอันตราย : ความร้อน ความชื้น แสงแดด พื้นที่ที่มีประกายไฟ

11. ข้อมูลพิษวิทยา (Toxicological Information)

- การหายใจเข้าไป : ระคายเคืองจมูก คอ ปอด ไอ เจ็บคอ หายใจถี่ แผลไหม้ของเยื่อเมือก ทำให้อ่อนเพลีย สารนี้ทำให้เยื่อเยื่อและผิวหนังทางเดินหายใจส่วนบน ถูกทำลายอย่างรุนแรง
- การสัมผัสทางผิวหนัง : เป็นแผลไหม้
- การดูดซึมทางผิวหนัง : อาจเป็นอันตรายหากดูดซึมทางผิวหนัง
- การสัมผัสทางดวงตา : ระคายเคือง ตาไหม้รุนแรง
- การกลืนกิน : เกิดอาการปวดท้อง
- ข้อบ่งชี้และอาการของการได้รับสาร : คลื่นไส้ อาเจียน ปวดศีรษะ ง่วงซึม ตาพร่าแฉกแสบ
- พิษเฉียบพลัน :-
- ความเป็นพิษเฉียบพลันทั้งการหายใจของหนูทุก : LC₅₀(Rat) : 8,300 mg/m3
- ความเป็นพิษเฉียบพลันทั้งปากของกระต่าย : LD₅₀(Rabbit) : 900 mg/kg

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

5. นมาตรการการผจญเพลิง (Fire Fighting Measure)

- สารดับเพลิงที่เหมาะสม : ให้ใช้สารดับเพลิงที่เหมาะสมกับเพลิงไหม้ที่เกิดขึ้นบริเวณใดๆ
- สารดับเพลิงที่ไม่เหมาะสม : น้ำ (ถ้าต้องใช้น้ำ ต้องระวังการเกิด ไอและแก๊ซ จากการเดือดจากสัสมักสารถลดโดยตรง ต้องฉีดน้ำเป็นม่านกั้นเพื่อป้องกันผู้ระับ)
- ความเป็นอันตรายเฉพาะที่เกิดขึ้นจากสารเคมี : เมื่อสัมผัสโลหะจะ ให้เกิดไอโครเจน ซึ่งอาจระเบิดได้
- อุปกรณ์ป้องกันที่สวมและข้อควรระวังสำหรับนักผจญภัย : สวมชุดผจญเพลิง ชุดป้องกันสารเคมี สวมหน้ากากป้องกันการหายใจถึงอวัยวะ (SCBA) ฉีดน้ำเป็นละอองฝอยเพื่อหล่อเย็นภาชนะบรรจุ ห้ามเดินเข้าภาชนะโดยตรง เพราะจะเกิดปฏิกิริยารุนแรง

6. นมาตรการเมื่อมีการอุบัติเหตุรั่วไหล (Accidental release Measure)

- ข้อควรระวังส่วนบุคคล : อพยพออกจากบริเวณที่สารหกตร ควบคุมอยู่ในทิศทางเหนือลม
- : ห้ามสัมผัสกับสารเคมีโดยตรง
- : ห้ามหายใจเอาไอสารเข้าไป
- : ให้กั้นเขตที่อันตรายและความคุมบุคคลที่มีอุปกรณ์ป้องกันด้านเข้า-ออก ได้เท่านั้น
- : จัดให้มีการระบายอากาศอย่างเพียงพอ
- : การเข้าพื้นที่ต้องเข้าในทิศทางที่เหนือลม
- : ห้ามสัมผัส วัสดุปนเปื้อน

- อุปกรณ์ป้องกันส่วนบุคคล : สวมชุดป้องกันสารเคมี อุปกรณ์ช่วยหายใจแบบมีถังอัดอากาศ รองเท้าบูท และถุงมือป้องกันสารเคมี
- ข้อควรระวังพื้นสิ่งแวดล้อม : ป้องกันไม่ให้สารไหลลงท่อระบายน้ำหรือแม่น้ำ เพราะสารนี้มีผลกระทบต่อสิ่งมีชีวิตในน้ำ ซึ่งส่งผลกระทบต่อระบบนิเวศจากเปลี่ยนแปลงค่า pH ของน้ำ

- วิธีการและวัสดุที่ใช้เก็บกักเก็บและทำความสะอาด :
- สวมชุดป้องกันสารเคมี อุปกรณ์ป้องกันระบบหายใจชนิดแบบมีถังกรองสารเคมี ประเภทกรด
- ให้ระบายอากาศ ในบริเวณที่เกิดเหตุ
- ใช้อุปกรณ์ดักสารเคมีปนเปื้อนที่เป็นพลาสติก
- จัดเตรียมถุงพลาสติก (แบบมีฝาปิด)
- สารเคมีปนเปื้อนใส่ถุงพลาสติกปิดคลุมและใส่ลงในถังพลาสติกปิดฝาแล้วใช้เทปผ้าพันปิดที่ขอบถึง
- ฉีกป้ายที่ถัง “สารเคมีปนเปื้อนจากอุบัติเหตุ” นำไปกำจัดตามข้อกำหนด

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

7. การใช้และการจัดเก็บ (Handling and Storage)

- ข้อควรระวังในการขนถ่าย เคลื่อนย้าย ใช้ภาชนะอย่างปลอดภัย :
- ภาชนะประเภทบรรจุภัณฑ์ที่ขนย้ายต้องแข็งแรง
- จัดระบบระบายอากาศที่เพียงพอในบริเวณที่ใช้งาน
- ป้องกันละอองไอของกรดในบริเวณทำงาน
- สถานะการเก็บรักษาอย่างปลอดภัย
- : ปิดภาชนะให้สนิท เก็บในบริเวณที่ระบายอากาศได้ดี เก็บในที่แห้ง และเย็น
- : เก็บให้ห่างจากความร้อน ความชื้น สารออกซิไดซ์ โทษะ แอลกอฮอล์ กรด โซดาไบคาร์บอเนต โซลโฟลด์
- : ภาชนะบรรจุเป็นวัสดุทนการกัดกร่อน (เหล็กเคลือบผิวด้วยยาง หรือ PE หรือ PP หรือพลาสติกชนิดอื่นๆ ใช้สำหรับเก็บปริมาณน้อยที่สุดในพื้นที่ทำงาน
- : ห้ามรับประทานอาหารเครื่องดื่ม และสูบบุหรี่ บริเวณพื้นที่ใช้สาร
- ข้อควรระวังพื้นสิ่งแวดล้อม
- : ห้ามใช้สารปนเปื้อนสิ่งแวดล้อม

8. การควบคุมการสัมผัส/ การป้องกันส่วนบุคคล (Exposure Control/ Personal Protection)

- ค่าต่างๆ ที่ใช้ควบคุมการรับสัมผัส :
- IDLH : 50 ppm (NIOSH 2012)
- REL-Ceiling : 5 ppm ; 7 mg/m3 (NIOSH 2012)
- PEL-Ceiling : 5 ppm ; 7 mg/m3 (OSSHA 2012)
- TLV- Ceiling : 2 ppm (OSSHA 2012)
- การควบคุมทางวิศวกรรมที่เหมาะสม :
- จัดให้มีการระบายอากาศที่เพียงพอ
- ติดตั้งระบบดูดอากาศที่ลงที่
- กระบวนการผลิตควรออกแบบเป็นระบบปิดสารที่ติดกร่อนและระคายเคือง

- อุปกรณ์ป้องกันภัยส่วนบุคคล
- การป้องกันระบายไอ : หน้ากากกรองสารเคมี ประเภทป้องกันไอกรด
- การป้องกันตา : แว่นตานิรภัยหรือแว่นตา หรือกระบังหน้า
- การป้องกันมือ : ถุงมือชนิดที่ป้องกันสารเคมี

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

1. ข้อมูลสารเคมีและรายละเอียดผู้จำหน่าย (Chemical Product and Company Identification)

ชื่อผลิตภัณฑ์ : SODIUM CARBONATE
ชื่อทางเคมี : SODIUM CARBONATE, Anhydrous
ชื่อห้อง : Crystal Carbonate, Disodium Carbonate, Sal Soda, Soda Asha, Washing Soda
สูตร โมเลกุล : Na₂CO₃

2. องค์ประกอบและข้อมูลสารเคมี (Composition and Information on Ingredients)

ชื่อ	หมายเลข CAS	% โดยน้ำหนัก
Sodium carbonate	497-19-8	≥90%

3. ข้อมูลอันตรายของสารเคมี (Hazard Identification)

การจำแนกประเภทสารเคมีตามระบบ GHS :
องค์ประกอบหลัก



GHS07

คำสัญญาอันตราย

ข้อความแสดงความเป็นอันตราย

H315 ระคายเคืองผิวหนัง

H319 ระคายเคืองตาอย่างรุนแรง

12. ข้อมูลทางนิเวศวิทยา (Ecological Information)

ความเป็นพิษต่อระบบนิเวศ

ความเป็นพิษต่อปลา : Mosquito fish : LC50: 282 mg/L/ 96 hour
ความเป็นพิษต่อ Crustacea : Daphnia magna : EC50: 48 hour EC50= 0.492 mg/L of Crustacea
ผลกระทบต่อสัตว์น้ำ : ไม่สะสมทั้งชีวภาพ
สภาพเคลื่อนไ้วในดิน : ไม่มีข้อมูล
ผลกระทบต่อพืช : เป็นพิษมากต่อสิ่งมีชีวิตในน้ำ
การตกค้างยาวนาน และความสามารถในการย่อยสลายทั้งชีวภาพ : ไม่สามารถย่อยสลายทั้งชีวภาพได้

13. ข้อแนะนำในการกำจัด (Disposal Consideration)

กำจัดสาร : ใช้น้ำทำความสะอาด และทำเป็นกลางด้วยโซเดียมคาร์บอเนต หรือเลโซเดียมคาร์บอเนต
การทิ้งภาชนะบรรจุที่ปนเปื้อน : ภาชนะบรรจุที่ทำความสะอาดแล้วให้กำจัดแบบขยะทั่วไป


14. ข้อมูลเกี่ยวกับการขนส่ง (Transport Information)

หมายเลขสารประชาชาติ (UN No.) : 1789
การขนส่งของสารประชาชาติ : HYDROCHLRIC ACID
ประเภทความเป็นอันตรายสำหรับการขนส่ง : 8
กลุ่มการบรรจุ (ถ้ามี) : II
มลภาวะทางทะเล : ไม่มี
การขนส่งด้วยภาชนะขนาดใหญ่ : IBC 02
ชื่อการระ วังพิเศษ : ไม่มีข้อมูล

15. ข้อมูลเกี่ยวกับข้อกำหนด (Regulatory Information)

กฎข้อบังคับของประเทศไทย
พระราชบัญญัติวัตถุอันตราย พ.ศ.2535
ประเภทวัตถุอันตรายชนิดที่ 3 (กรมโรงงานอุตสาหกรรม และกรม ประมง)
ประกาศกระทรวงอุตสาหกรรมเรื่องกำหนดวัตถุอันตรายทั้งบก พ.ศ.2546

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

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ประกาศกรมการขนส่งทางบก เรื่องการติดป้ายฉลากกราฟและเครื่องหมายของรถบรรทุก อันตราย พ.ศ.2543

การติดฉลากตามระเบียบ FCC

สัญลักษณ์สีก่อน : C สีลก่อน

ข้อความบอกความเสียง : R35 ทำให้เกิดแผลไหม้อย่างรุนแรง

ข้อความบอกมาตรฐานความปลอดภัย

: S1/2 เก็บไว้อย่างปลอดภัย และให้พ้นมือเด็ก
: S26 เมื่อเข้าตาให้ล้างน้ำทันทีด้วยน้ำปริมาณมากๆ และไปพบแพทย์
: S37/39 สวมถุงมือ และแว่นตาหน้ากากลที่เหมาะสม
: S45 ในกรณีเกิดอุบัติเหตุหรือรู้สึกไม่สบายให้พบแพทย์ทันที
(แสดงฉลากสารเคมีแต่ละชนิด)
: NFPA Code: H3; F0; R0
: รหัสมาตรฐาน L48N

NFPA/NMIS RATING

	NFPA
สุขภาพ	3
ไวไฟ	0
ความไวในปฏิกิริยา	1
ข้อมูลพิเศษ	-

16. ข้อมูลอื่นๆ (Other Information)

ข้อมูลที่ไม่ได้ในเอกสารนี้จะอำนวยความสะดวกด้านข้อมูลความปลอดภัยที่ถูกต้อง ทั้งในด้านการเก็บรักษา การขนส่ง และอันตรายที่เกิดขึ้นกับผู้ปฏิบัติงาน

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

สัญลักษณ์อุปกรณ์ PPE



9. สมบัติทางกายภาพและทางเคมี (Physical and Chemical Properties)

ลักษณะทางกายภาพ	: ของแข็ง (ผง)
สี	: สีขาว
น้ำหนักโมเลกุล	: 105.99 กรัม/โมล
ความเป็นกรด-ด่าง	: 11.5
จุดเดือด-ช่วงการเดือด	: ไม่สามารถใช้งานได้
จุดหลอมเหลว-ช่วงการหลอมเหลว	: 851 องศาเซลเซียส
จุดวาบไฟ	: ไม่สามารถใช้งานได้
ความไวไฟ	: ไม่สามารถใช้งานได้
อุณหภูมิจุดติดไฟหลังตนเอง	: ไม่สามารถใช้งานได้
สมบัติออกซิไดซ์	: ไม่สามารถใช้งานได้
สมบัติการระเบิด	: ไม่สามารถใช้งานได้
ขีดจำกัดการระเบิด	: ไม่สามารถใช้งานได้
ความดันไอ	: ไม่สามารถใช้งานได้
ถพ./ความหนาแน่น	: 2.532 g/cms
ข้อมูลเบ็ดเตล็ด	: ไม่มีข้อมูลปรากฏ
การละลาย	: สามารถละลายได้ในน้ำร้อน กลีเซอรอล บางส่วนละลายได้ในน้ำเย็น ไม่สามารถละลายได้ใน อะซิโตน แอลกอฮอล์

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

10. ความเสถียรและความไวต่อปฏิกิริยา (Stability and Reactivity)

ความเสถียร	: เสถียร
อุณหภูมิที่ไม่เสถียร	: ไม่สามารถใช้ได้
สภาวะที่เกิดความไม่เสถียร	: มีความชื้น
ความไม่เข้ากันได้กับสารต่างๆ	: ปฏิกิริยากับกรด มีความชื้น
การเกิดควัน	: ไม่มีฤทธิ์กัดกร่อนแล้ว
ข้อสังเกตที่เกี่ยวกับปฏิกิริยา	: สารดูดความชื้น รวมกับน้ำเกิดความร้อน ไม่เข้ากันกับฟอสฟอรัส pentoxide, ลิเทียม, ฟลูออรีน, ฟลูออไรด์, แอมโมเนีย + ไนโตรเจน, 2,4,6-trinitrotoluene, แอมโมเนีย, กรด, ไฮเดรียมซัลเฟต + น้ำ, ไฮโดรเจนเปอร์ออกไซด์, อีทิลเมอร์คิวเรียม คลอเร, ไฮเดรียมซัลไฟด์, สังกะสี, แคลเซียมไฮดรอกไซด์ ไฮเดรียมคาร์บอนเลจะถูกย่อยสลายโดยกรดที่มีฟอง ทาปฏิกิริยาอย่างรุนแรงกับ F2, Lithium และ 2,4,6-trinitrotoluene ไฮเดรียมเริ่มสลายตัวที่อุณหภูมิ 400 องศาเซลเซียส เพื่อพัฒนา CO ₂
ข้อควรระวังที่เกี่ยวกับการเกิดควัน	: สารละลายไฮเดรียมคลอไรด์เข้มข้นมีฤทธิ์กัดกร่อนเล็กน้อยกับเหล็ก
การเกิดปฏิกิริยาพอลิเมอร์ไรเซชัน	: ไม่เกิดขึ้น

11. ข้อมูลพิษวิทยา (Toxicological Information)

ผู้ป่วน : การสูดดม การนำเข้าในร่างกลาง

ความเป็นพิษต่อสัตว์:

ค่า LC50 ดังต่อไปนี้มีค่าประมาณบนพื้นฐานของการได้รับสาร 4 ชั่วโมง
ของปากหนูเนื่องพ่นความเป็นพิษ (LD50): 4090 mg / kg
ความเป็นพิษเฉียบพลันของฝุ่นในหนู (LC50): 1200 mg / ms 2 ชั่วโมง
ผลเรื้อรังคอมพิวเตอร์อาจทำให้เกิดอันตรายต่อตัวต่างๆ ดังต่อไปนี้
ระบบทางเดินหายใจส่วนบน, ผิวหนัง, ดวงตา

	MMSVS GROUP HOLDING CO.,LTD	
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	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

5. นวัตกรรมการต่อสู้เพลิง (Fire Fighting Measure)

ความไวไฟของผลิตภัณฑ์	: ไม่ติดไฟ
อุณหภูมิที่ติดไฟได้เอง	: ไม่สามารถใช้งานได้
จุดวาบไฟ	: ไม่สามารถใช้งานได้
ขีดจำกัดไวไฟ	: ไม่สามารถใช้งานได้
ผลิตภัณฑ์ของการเผาไหม้	: ปัสเตอร์ NaO เมื่อให้ความร้อนเพื่อการสลายตัว
อันตรายจากอ็อกซิไดซ์ในการแสดงของสารต่างๆ	: ไม่สามารถใช้งานได้
อันตรายจากการระเบิดเมื่อมีสารต่างๆ	: ความเสี่ยงจากการระเบิดของผลิตภัณฑ์
เมื่อมีผลกระทบทางกล	: ไม่สามารถใช้งานได้
ความเสี่ยงของการระเบิดของผลิตภัณฑ์ในกรณีที่มีการทิ้งประจุไฟฟ้าสถิต	: ไม่มี
ก๊าซพิษและค่าความ	: ไม่สามารถใช้งานได้
ข้อสังเกตที่เกี่ยวกับอันตรายจากอ็อกซิไดซ์	: ไฮเดรียมคาร์บอนสามารถถูกไหม้และเผาไหม้อย่างรุนแรงเมื่อสัมผัสกับฟลูออไรด์ ไฮเดรียมคาร์บอนเลในการผลิตต่อกับฟลูออรีนที่สลายตัวที่อุณหภูมิปกติโดยมีการลุกไหม้
ข้อสังเกตที่เกี่ยวกับอันตรายจากการระเบิด	: ทาปฏิกิริยากับโลหะอุณหภูมิเย็นร้อนแดง ไฮเดรียมคาร์บอนเล + แอมโมเนียอาจจะระเบิดได้

6. นวัตกรรมเมื่อมีการอุบัติเหตุรั่วไหล (Accidental release Measure)

การรั่วไหลขนาดเล็ก : ใช้เครื่องมือที่เหมาะสมในการใส่ของรั่วไหลลงในภาชนะกำจัดขยะ ถ้าจำเป็นให้ใช้สารดักจับให้เป็นกลาง โดยต้องจากรดอะซิดิก จากนั้นนำความสะอาดโดยฉีดน้ำบนพื้นผิวที่มีการปนเปื้อนและนำไปทิ้งตามวิธีการทางของหน่วยงานท้องถิ่นและระดับภูมิภาค
การรั่วไหลขนาดใหญ่ : ใช้ตัวเพื่อใช้วัตถุลงในถังกำจัดของเสียโดยต้องจากรดอะซิดิก จากนั้นนำความสะอาดโดยฉีดน้ำบนพื้นผิวที่มีการปนเปื้อนและสามารถถ่ายทอดสารได้ตามระบบสุขภาพ
วิธีป้องกันภัยของบุคคล

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

ปฏิบัติการจัดการระงับที่เหมาะสม เพื่อลดการสัมผัสผิวหนังและดวงตาให้น้อยที่สุด และป้องกันไม่ให้หายใจเอาฝุ่นเข้าไป
วิธีการทำความสะอาดหลังการปนเปื้อน หรือรั่วไหล
กาว, เบริวในถุงและรองการกำจัด. หลีกเลี่ยงการทำให้ฝุ่นฟุ้งกระจาย. ระบอบอากาศในบริเวณนั้น และล้างตาจนกระทั่งการท
รั่วไหลหลังจากเก็บสารออกหมดแล้ว

7. การใช้และการจัดเก็บ (Handling and Storage)

ข้อควรระวัง : ออากินอาหาร อ่างดูดฝุ่น สวมชุดป้องกันที่เหมาะสม ในกรณีที่มีการถ่ายเทอากาศไม่เพียงพอความเสี่ยงที่
เหมาะสมอุปกรณ์ทางเดินหายใจ หากกลิ่นกลิ่นเข้าไปให้พบแพทย์ทันทีและหากกรณีหรือหาก หลีกเลี่ยงการสัมผัสกับผิวหนัง
และดวงตา เก็บให้ห่างจากความไม่กรองออกันร่นกรด
ข้อปฏิบัติการใช้การ
คาบเหมาะสำหรับการปฏิบัติที่ปลอดภัย : หลีกเลี่ยงการสูดดม หลีกเลี่ยงการสัมผัสกับดวงตา, ผิวหนัง และเสื้อผ้า หลีกเลี่ยงการ
ได้รับสารเป็นเวลานานหรือซ้ำหลายครั้ง
การเก็บรักษา
สภาวะสำหรับการเก็บ : ปิดให้สนิท
สิ่งที่ต้องเป็นพิษ : สารดูดความชื้น

8. การควบคุมการสัมผัส/ การป้องกันส่วนบุคคล (Exposure Control/ Personal Protection)

การควบคุมเชิงวิศวกรรม : สึกบ่มนัยและอ่างล้างตา ต้องมีเครื่องระบายอากาศ
สัญลักษณ์ทั่วไป : กางให้สะอาดหลังการสัมผัส
การคุ้มครองส่วนบุคคล : แวนดา Splash เสื้อคลุมป้องกันกร๊อบ เครื่องช่วยหายใจ ให้แน่ใจว่าได้ใช้เครื่องช่วยหายใจที่ผ่านการ
รับรอง / รับรองแล้วหรือเทียบเท่า ลงมือป้องกันสารเคมี
การป้องกันส่วนบุคคลในกรณีที่มีการรั่วไหลขนาดใหญ่ :
สวมแว่นตา Splash ชุดสูทนิรภัยเต็มตัว เครื่องช่วยหายใจ รองเท้าบูท ถุงมือ ควรใช้เครื่องช่วยหายใจในตัวเพื่อหลีกเลี่ยง
การสูดดมของผลิตภัณฑ์ จุดป้องกันที่แนะนำอาจไม่เพียงพอ ปกษาศูนย์ช่วยชาญก่อนที่จะจัดการเรื่องนี้

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

อันตรายเฉพาะ

อุปกรณ์ป้องกัน : ถุงมือ เสื้อหุ้มปฏิบัติการ เครื่องช่วยหายใจป้องกันฝุ่น ให้แน่ใจว่าได้ใช้เครื่องช่วยหายใจที่ผ่านการรับรอง / รับรองแล้วหรือเทียบเท่า สวมเครื่องช่วยหายใจที่เหมาะสมเมื่อการระบายอากาศไม่เพียงพอ แว่นตา Splash

16. ข้อมูลอื่นๆ (Other Information)

ข้อมูลที่ใช้ไว้ในเอกสารนี้จะช่วยอำนวยความสะดวกด้านข้อมูลความปลอดภัยที่ถูกต้อง ทั้งในด้านการเก็บรักษา การขนส่ง และอันตรายที่เกิดขึ้นกับปฏิบัติงาน

	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

ผลกระทบอื่น ๆ ต่อคน: เป็นอันตรายในกรณีที่ถูกผิวหนัง (ระคายเคือง), เมื่อกินเข้าไป, สูดดม (ปลอคนวน)
ข้อสังเกตพิเศษเกี่ยวกับความเป็นพิษต่อสัตว์ : LD₅₀ (ค่าสุดท้ายเสียชีวิตที่ทดสอบ) [ชาย] - ทางเดิน: ช่องปาก; ปริมาณ: 714 มล./กก
ข้อสังเกตพิเศษเกี่ยวกับผลกระทบที่อาจเกิดขึ้นกับมนุษย์: อาจทำให้เกิดผลต่อระบบสืบพันธุ์ที่ไม่พึงประสงค์จากข้อมูลการทดสอบในสัตว์

ผลกระทบที่อาจเกิดขึ้นต่อสุขภาพ

ผิวหนัง : ทำให้เกิดการระคายเคืองที่ผิวหนังกับผลไหม้ที่อาจเกิดขึ้นกับความเข้มข้นหรือความถี่ที่สัมผัส และระยะเวลาที่สัมผัส
ดวงตา : ทำให้เกิดการระคายเคืองตาและผลไหม้ที่อาจเกิดขึ้น อาจมีสารละลายเข้มข้นการบาดเจ็บที่กระจกตา (ความอื่นส่วนของกระจกตา)
การกลืนกิน : การกลืนกินอาจติดเยื่อเมือกอาจทำให้เกิดอาการระคายเคืองต่อผิวหนังทางเดินอาหารส่งผลให้มีอาการคลื่นไส้ อาเจียนท้องร่วงกระหายน้ำอาจขึ้นอยู่กับความเข้มข้นและจำนวนที่กินอาจส่งผลต่อระบบหัวใจและหลอดเลือด
การสูดดม : ฝุ่นอาจทำให้เกิดการระคายเคืองในทางเดินหายใจและเมื่อมีอาการไอและหายใจสั้น ๆ (หายใจไม่ออก), อาการบวมที่บ่งบอก

12. ข้อมูลทางนิเวศวิทยา (Ecological Information)

ความเป็นพิษต่อระบบนิเวศน์ : ไม่สามารถใช้ได้
BOD5 และ COD : ไม่สามารถใช้ได้
ผลกระทบจากการย่อยสลายทางชีวภาพ : อาจเป็นไปได้ว่าผลิตภัณฑ์ที่ย่อยสลายในธรรมชาติอาจเป็นอันตราย อย่างไรก็ตามอาจเกิดผลกระทบที่ย่อยสลายได้ในระยะยาว
ความเป็นพิษของผลิตภัณฑ์จากการย่อยสลายทางชีวภาพ : ผลิตภัณฑ์ที่ย่อยสลายมีความเป็นพิษน้อยกว่าตัวผลิตภัณฑ์
ข้อสังเกตพิเศษเกี่ยวกับสิ่งแวดล้อมจากการย่อยสลายทางชีวภาพ : ไม่พบ



บริษัท ไทยปิโตรเลียมซัพพอร์ท จำกัด
THAI PETROLEUM SUPPORT COMPANY LIMITED

CERTIFICATE OF ANALYSIS

PRODUCT	: Benzalkonium
BATCH NO	: 2001151030
QUANTITY (NET WEIGHT)	: 60,000 KGS
ANALYSIS DATE	: January 15, 2020
MANUFACTURING DATE	: January 15, 2020
EXPIRY DATE	: January 15, 2022

THIS IS TO CERTIFY THAT WE, THE UNDERSIGNED, HAVE INSPECTED THE QUALITY OF MENTIONED GOODS AND FOUND THE RESULTS OF INSPECTION AS FOLLOWS :

TESTING CONTENTS ANALYSIS		
ITEM	STANDARD	TEST RESULTS
Appearance	Clear colorless liquid	Clear colorless liquid
Purity / Active content %	25-30%	Pass
PH	7.00-7.50	7.10
Specific gravity	0.95-1.05	1.00%

Issue by:
THAI PETROLEUM SUPPORT CO., LTD.

Authorized Signature



	MMSVS GROUP HOLDING CO.,LTD	
	เอกสารข้อมูลความปลอดภัย (Safety Data Sheet)	แก้ไขครั้งที่ : 00 วันที่อนุมัติใช้ : 21/5/2018
	HYDROCHLORIC ACID 35% (กรดไฮโดรคลอริก)	

13. ข้อเสนอแนะในการกำจัด (Disposal Consideration)

การกำจัดของเสียโดยทั่วไปตามกฎหมายข้อบังคับด้านสิ่งแวดล้อมของรัฐบาลกลางรัฐและท้องถิ่น
ห้องกำจัดของเสียโดยทั่วไปตามกฎหมายข้อบังคับด้านสิ่งแวดล้อมของรัฐบาลกลางรัฐและท้องถิ่น

14. ข้อมูลเกี่ยวกับการขนส่ง (Transport Information)

การจัดหมวดหมู่ DOT : ไม่ใช้รหัสควบคุม DOT (สหรัฐอเมริกา)
การระบุ : ไม่สามารถใช้งานได้
ข้อมูลพิเศษที่สหภาพรับการขนส่ง : ไม่สามารถใช้งานได้

15. ข้อมูลเกี่ยวกับข้อกำหนด (Regulatory Information)

กฎระเบียบของรัฐบาลกลางและรัฐ: ขึ้นอยู่กับ TSCA 8 (b); โซเดียมคาร์บอเนต
ข้อมูลอื่น ๆ : EINECS: ผลิตภัณฑ์อยู่ในบัญชีสินค้าทางสิ่งแวดล้อมของสหภาพยุโรป
การจำแนกประเภทอื่น ๆ :

WHMIS (แคนาดา) : CLASS D-2B: สารก่อให้เกิดพิษอื่น ๆ (TOXIC)
DSCG (EEC):
R36 / 37 / 38- ระคายเคืองต่อระบบทางเดินหายใจและผิวหนัง
S22- ห้ามสูดดมฝุ่น
S26- เมื่อเข้าตาให้ล้างออกด้วยน้ำปริมาณมากและไปพบแพทย์

HMIS (สหรัฐฯ):

อันตรายต่อสุขภาพ: 2, อันตรายจากไฟไหม้: 0, ปฏิกริยา: 1, การป้องกันส่วนบุคคล: E

NFPA (สมาคมป้องกันอัคคีภัยแห่งชาติ)

สุขภาพ: 2, ความไวไฟ: 0, ปฏิกริยา: 1

Benzalkonium Chloride

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

Eyes contact

Immediately flush eyes with water for at least 15 minutes while holding eyelids open. Get medical attention

Skin Contact

For skin contact flush with large amounts of water. Get medical attention or advice. Immediately take off all contaminated clothing. Wash contaminated clothing before reuse.

Inhalation

If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms persist, get medical attention. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Seek medical attention.

Ingestion

If the material is swallowed, get immediate medical attention or advice. Do not induce vomiting. Notes to Physician: If the product is ingested, probable mucosal damage may contraindicate the use of gastric lavage. Treat the affected person appropriately. Inhalation: Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation

Irritation of nose, throat and airway

Ingestion

May cause discomfort if swallowed.

Skin Contact

Prolonged skin contact may cause redness and irritation.

Eye Contact

May cause temporary eye irritation

4.3 Indication of any immediate medical attention and special treatment needed

Get medical attention if any discomfort continues.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Extinguishing Media

Water spray, foam, dry powder or carbon dioxide

5.2 Special hazards arising from the substance or mixture

Hazardous Combustion Products

When heated, vapors/gases hazardous to health may be formed.

Benzalkonium Chloride

Specific Hazards

Fire or high temperatures create. Vapors/gases/fumes are travel long distance, ignite, and flash back.

5.3 Advice for firefighters

Special Fire Fighting Procedures

Containers close to fire should be removed immediately or cooled with water.

Protective Measures in Fire

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES

Emergency Action: Isolate spill or leak area immediately. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. Wear appropriate personal protective equipment during clean up. Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Small Spills: Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal. Use clean non-sparking tools to collect absorbed material.

Large Spills: Dike ahead of liquid spill for later disposal. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA. Surfaces may become slippery after spillage. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet

SECTION 7. HANDLING AND STORAGE

Handling Procedures

Avoid contact with skin and eyes. Avoid breathing vapors or mists of this product. Keep this product from heat, sparks, or open flame. Wash thoroughly after handling. As with all chemicals, good industrial hygiene practices should be followed when handling this material.

Storage Procedures

DO NOT CONTAMINATE WATER, FOOD OR FEED BY STORAGE OR DISPOSAL. Keep this material in a cool, well-ventilated place. Do not handle or store near an open flame, heat or other sources of ignition. Precautions for safe handling.

7.1 Specific end uses

The identified uses for this product are detailed in Section 1.2.



Technical Data Sheet

Benzalkonium Chloride

Product Information

Chemical Name	Benzyl-C12-C18-alkyldimethylammoniumchloride
CAS #	68424-85-1
Formula	
Molecular Weight	283.88
SG	0.98 g/l
Flash point	152 degree celcius
Pour point	-12 degree celcius

Specification

Item	Standard 1
Appearance	Clear colorless liquid
Purity/Active content	25-30%
pH	7-7.5
Specific gravity	0.95-1.05 g/l

Applications

- Double combo product (Corrosion inhibitor, Biocidal) Provide corrosion inhibition for drill string, tubular goods, and downhole tool by forming a film.
- Use in solid free completion or workover brine. Initial treatment are in range of 0.25-1%.

Limitation

- Ineffective with ZnBr2 brine
- Incompatible with Glutaraldehyde
- Maximum temperature stable are 150 degree celcius.



THAI PETROLEUM SUPPORT COMPANY LIMITED

5/15 @AREA BUILDING, UNIT 6A1, 6th FLOOR,

SOI BUPPHA-BURI, CHONG NON-SI, YANNAWA, BANGKOK 10120 THAILAND

SAFETY DATA SHEET Benzalkonium Chloride

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Name Benzalkonium Chloride

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Oil well drilling fluid additive. Oil well completion fluid additive.

1.3. Details of the supplier of the safety data sheet

Supplier

1.4 Emergency Contact: +(66)-2-080-5624

1.5 Information Contact: +(66)-2-080-5624

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (67/548/EEC) Not classified.

2.2. Label elements

Risk Phrases NC Not classified

Safety Phrases NC Not classified

2.3. Other hazards

Not Classified as PBT/vPvB by current EU criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	Weight % - range
BENZALKONIUM CHLORIDE	68424-85-1	25-30

The Full Text for all R-Phrases and Hazard Statements is Displayed in Section 16

Composition Comments

The data shown is in accordance with the latest EC Directives.

Benzalkonium Chloride

12.3 Bio accumulative potential
Bio accumulative potential
No data available on bioaccumulation

Partition Coefficient
Partition coefficient
n-octanol/water: ~3.0

12.4 Mobility in soil
Mobility
The product is soluble in water

12.5 Results of PBT and vPvB assessment
Not Classified as PBT/vPvB by current EU criteria.

12.6 Other adverse effects
None known

SECTION 13. DISPOSAL CONSIDERATION

Disposal Instructions:

PESTICIDE DISPOSAL - Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

CONTAINER DISPOSAL - Do not reuse empty container. Triple rinse empty container with water. Return metal drum then offer for reconditioning or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities. Plastic containers may be disposed of in a sanitary landfill, incinerated, or if allowed by local authorities, by burning. If burned, stay out of smoke. Offer for recycling if available. Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements.

SECTION 14. TRANSPORT INFORMATION

DOT Classification

Class 8: Corrosive material
Identification: Corrosive liquid, Organic, n.o.s. (N-alkyl dimethyl benzylammoniumchloride)
UN No.: 3265
Packing Group: III
Special Provisions for Transport: Not available.

IATA
Shipping Name: CORROSIVE LIQUIDS, TOXIC, N. O.S. (N-alkyl dimethyl benzyl ammonium chloride)
Hazard Class: 8
UN Number: 3265
Packing Group: III

Benzalkonium Chloride

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Ingredient Comments
NUI - Nuisance dust, WEL TWA 4mg/m3 Respirable Dust, 10 mg/m3 Total Dust.

8.2 Exposure controls

Protective Equipment



Engineering Measures

Provide adequate ventilation. Observe occupational exposure limits and minimize the risk of inhalation of dust.

Respiratory Equipment

If ventilation is insufficient, suitable respiratory protection must be provided. Use respiratory equipment with particle filter, type P2.

Hand Protection

For prolonged or repeated skin contact use suitable protective gloves. Rubber gloves are recommended.

Eye Protection

Wear dust resistant safety goggles where there is danger of eye contact.

Other Protection

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Clear liquid
Odour	Odourless
Vapor pressure	Not eliminated or unknown
Vapor density	Estimated heavier than air
Viscosity	25 cps@25 °C
Evaporation rate	Estimated slower than Ethyl ether
pH value	6-9 at 10% solution

9.2 Other information

Not relevant.

Benzalkonium Chloride

SECTION 10. STABILITY AND REACTIVITY

10.1 Chemical Stability

Stable under normal conditions.

10.2 Chemical stability

Stable under normal temperature conditions and recommended use.

10.3 Conditions to avoid

Keep away from heat, sparks, or open flame.

10.4 Incompatible materials

This product may react with strong oxidizing agents, anionic compound.

10.5 Hazardous decomposition products

Upon decomposition, this product may yield oxides of nitrogen and ammonia.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Toxicity (Oral LD50) 500-5000 mg/kg Rat

Inhalation

Dust may irritate respiratory system or lungs. Ingestion
May cause discomfort if swallowed. Gastrointestinal symptoms, including upset stomach.

Skin Contact

Prolonged and frequent contact may cause redness and irritation.

Eye Contact

Particles in the eyes may cause irritation and smarting.

Route of entry

No route of entry noted.

Target Organs

No specific target organs noted.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Acute Toxicity - Fish	LC50 96 hours 1100 mg/l
Acute Toxicity - Aquatic	EC50 48 hours 1020 mg/l
Invertebrates	
Acute Toxicity - Aquatic Plants	EC50 72 hours 2200 mg/l

12.2 Persistence and degradability

Degradability

There are no data on the degradability of this product.



บริษัท ไทยปิโตรเลียมซัพพอร์ต จำกัด

THAI PETROLEUM SUPPORT CO., LTD.

Material Safety Data Sheet Hydrochloric Acid, 15-36%**1. Identification**

Product Identifier	Hydrochloric Acid, 15-36%
Other Means of Identification:	
Product Code	507-USA-TMI
Recommended Use	Metal processing, pH adjustment for water treatment
Synonyms	Muriatic Acid, 20-22 Degrees Baumé Muriatic Acid, Aqueous Hydrogen Chloride
Manufacturer/Importer/Supplier/Distributor Information:	
Supplier name	THAI PETROLEUM SUPPORT COMPANY LIMITED
Address	NO.5/13 @NANA BUILDING, ROOM 6A1, 6TH FLOOR, 501 BUPPHA BURI, CHONG NONSI, YAN NAWA, BANGKOK 10110, THAILAND.
Telephone	662-287-3077
E-mail	contact@boppetro.com

2. Hazard(s) Identification

Physical Hazards	Corrosive to Metals	Category 1
Health Hazards	Acute Toxicity, Inhalation	Category 1
	Acute Toxicity, oral	Category 1
	Serious Eye Damage	Category 1
	Skin Corrosion	Category 1
	Respiratory Sensitization	Category 1
Environmental Hazards	Not classified	
OSHA Defined Hazards	Not classified	

Label Elements



Signal Word DANGER

Hazard Statements
Fatal if inhaled (mist, vapor).
Fatal if swallowed.
Causes serious eye damage.
Causes severe burns and eye damage.
May cause allergic or asthmatic symptoms or breathing difficulties if inhaled.
May be fatal if swallowed and enters airway.
May be corrosive to metals.



Storage

Never add water to this product. When diluting with water, always add acid to water and add it slowly. Avoid mixing with alkalis. Keep away from incompatible materials such as oxidizing agents, organic materials, metals, alkalis, moisture. May corrode metallic surfaces. Do not wash down the drain.

Keep container tightly closed when not in use. Keep away from heat and flame. Do not store in direct sunlight. Store in a cool, dry, well-ventilated area away from incompatible substances such as hydroxides, amines, alkalis, or metals, such as copper, brass, zinc, potassium, and sodium. Restrict access to storage areas.

Hydrogen, a highly flammable gas, can accumulate to explosive concentrations inside metal containers in storage. Metal storage containers should be vented on a regular basis by trained personnel only.

The ideal storage temperature for hydrochloric acid is 19-27 °C (50-80 °F). Do not expose sealed containers to temperatures above 40 °C (104 °F).

For indoor storage, floors should be acid resistant, electrical equipment should be flameproof and protected against corrosive action. Wood and other organic materials should not be used on floors, structural materials, and ventilation systems in the storage areas.

Equipment Compatibility

Storage drums must be coated with an acid resistant material. Rubber-lined steel, PVC/FRP, FRP, Hastelloy C-276, Inconel 625, and tantalum are the most commonly used corrosion-resistant materials of construction at room temperature. Rubber, glass, plastic, and ceramic ware are also resistant to corrosion. Vented containers must be used and must be kept closed when not being used. Containers should have a safety relief valve. Care should be taken to release any internal pressure slowly. Use corrosion-resistant transfer equipment when dispensing.

8. Exposure Controls/Personal Protection

Engineering Controls

Under normal conditions of use, natural ventilation should effectively remove and prevent buildup of any vapors/mist/dust generated from the handling of this product. Indoors, use only in a chemical fume hood. In poorly ventilated outdoor areas, provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value and below irritation levels.

Ensure that eyewash stations and safety showers are readily available in the immediate work area. Do not delay immediately flushing with water upon exposure.

Exposure Guidelines

White exposure limits have been established for hydrogen chloride gas, exposure limits for hydrochloric acid have not been established. Avoid repeated or prolonged exposure to vapor or mist without appropriate respiratory protection. The higher the concentration, the more vapor/mist potential in air.

CAS #	Chemical Name	OSHA PEL	ACGIH TLV (8-hr TWA)	NIOSH	IDLH
7647-01-0	Hydrogen Chloride	5 ppm (Ceiling) (7 mg/m ³)	2 ppm (Ceiling) (3 mg/m ³)	5 ppm (Ceiling) (7 mg/m ³)	50 ppm
7732-18-5	Water	None	None	None	None

ACGIH limit is based on the risk of acute irritation [ACGIH 1991, p. 773]

NIOSH limit is based on the risk of eye, mucous membrane, and skin irritation [NIOSH 1992]

Personal Protective Equipment (PPE)

Eye / Face Protection

Wear splash-resistant chemical safety goggles and a full face shield.

Skin Protection

Wear impervious protective clothing, including boots, gloves, and lab coat, apron or full body suit, as appropriate, to prevent skin contact. A chemical protective acid-resistant full-body encapsulating suit and respiratory protection may be required in some operations.

Respiratory Protection

No personal respiratory protective equipment is normally required.

Up to 50 PPM

Use NIOSH-approved respirator with an acid gas cartridge or combination type approved for hydrogen chloride. If aerosol or mist involved, use a filter with the cartridge.



EMERGENCY

Gas mask with canister to protect against hydrogen chloride or powered air-purifying respirator with cartridge(s) to protect against hydrogen chloride.

Supplied Air Respirator (SAR), or full-facepiece self-contained breathing apparatus (SCBA).

OR planned entry into unknown concentration or IDLH conditions:

Positive pressure, full facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA.

ESCAPE

Gas mask with acid gas canister or escape-type SCBA.

Personal Hygiene

If liquid contacts the skin, workers should flush the affected areas immediately with plenty of water, followed by washing with soap and water. Remove contaminated clothing immediately. Keep contaminated clothing in closed containers. Discard or launder before re-wearing. Persons laundering the clothes should be informed of the hazardous properties of hydrochloric acid, particularly its potential for causing irritation.

Workers should not eat, drink, use tobacco products, apply cosmetics, or take medication in areas where a solution containing hydrogen chloride is handled, processed, or stored. A worker who handles hydrochloric acid should thoroughly wash hands, face, and hair with soap and water before eating, using tobacco products, using toilet facilities, applying cosmetics, or taking medication.

Personal Protection

In Case of Small Spill

Face shield with splash goggles or full facepiece respirator equipped with acid gas cartridge for acid vapors. Impervious clothing, boots, and gloves.

Personal Protection

In Case of Large Spill

Full body splash and vapor protection. Impervious boots and gloves. Self-contained breathing apparatus. Suggested protective clothing might not be sufficient; consult a specialist.

Resistance of Materials for Protective Clothing

To evaluate the use of PPE materials with hydrogen chloride, users should consult the best available performance data and manufacturers' recommendations. Significant differences have been demonstrated in the chemical resistance of generically similar PPE materials (e.g., butyl) produced by different manufacturers. In addition, the chemical resistance of a mixture may be significantly different from that of any of its pure components. Breakthrough times are obtained under conditions of continuous contact, generally at room temperature. Evaluate resistance under conditions of use and maintain clothing carefully.

Material for Hydrogen Chloride	PPE Use	HCl < 30% Recommended Use	HCl 37% Recommended Use	Comments
Butyl Rubber	Gloves, Boots, Suits	> 8 hrs	> 8 hrs	
Natural Rubber	Gloves	> 8 hrs	> 4 hrs	Gloves > 0.3 mm
Neoprene Rubber	Gloves, Boots, Suits	> 8 hrs	> 4 hrs	Gloves > 0.3 mm
Nitrile Rubber	Gloves, Boots, Suits	> 8 hrs	> 4 hrs	Gloves > 0.3 mm
Viton™	Gloves, Suits	> 8 hrs	> 8 hrs	Gloves > 0.3 mm
Teflon™	Gloves, Boots, Suits	> 8 hrs	4 hrs	
Barriade	Suits	> 8 hrs	> 8 hrs	
Trelchem™ HPS	Suits	> 4 hrs	> 4 hrs	
Trelchem™ VPS	Suits	> 4 hrs	> 4 hrs	
Tychem™ SL Saranex™	Suits	> 8 hrs	> 8 hrs	
Tychem™ CPF 3	Suits	> 8 hrs	> 8 hrs	
Tychem™ P	Suits	> 8 hrs	> 8 hrs	
Tychem™ BR or LV	Suits	> 8 hrs	> 8 hrs	
Tychem™ Responder™	Suits	> 8 hrs	> 8 hrs	
Tychem™ TK	Suits	> 8 hrs	> 8 hrs	
Polyvinyl chloride	Gloves, Boots, Suits	> 4 hrs	> 4 hrs	Gloves > 0.3 mm

Prevention

Do not breathe mist/vapors.

Avoid skin contact.

Keep container tightly closed.

Wear respiratory protection, protective gloves, and eye/face protection.

Use only in well-ventilated area.

Store container tightly closed in cool/well-ventilated area.

Wash thoroughly after handling.

3. Composition/Information on Ingredients

Chemical Name	Common Name and Synonyms	CAS Number	% by Weight
Hydrogen Chloride	Muriatic Acid	7647-01-0	15-36
Water		7732-18-5	Balance

4. First Aid Measures

General Information

Corrosive effects on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures is essential.

Eye Contact

Rinse immediately with plenty of water for at least 20 minutes holding eyelids apart. Remove any contact lenses. Get medical attention immediately.

Skin Contact

Immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. If skin is only irritated and symptoms do not persist, wash with a disinfectant soap. If skin is burned, get medical attention immediately. During transport apply compresses of cold water, if available. Wash clothing separately before reuse. Discard heavily contaminated shoes or clothing.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen, if available. If not breathing, give artificial respiration. A one-way pocket mask will prevent cross-contamination to the provider. Get medical attention immediately. Symptoms may appear up to 48 hours after exposure.

Ingestion

Do NOT induce vomiting. Immediately give large quantities of water or milk, if available. If vomiting does occur, give fluids again. Never give anything by mouth to an unconscious person. Call a physician or the nearest Poison Control Center.

Notes to Physician

Treat symptomatically and supportively focusing on the respiratory and cardiovascular functions. No specific antidote exists. Symptoms of pulmonary edema, such as shortness of breath, can be delayed for several hours after exposure.

5. Fire-Fighting Measures

Flammability

Not flammable, but reacts with most metals to form flammable Hydrogen gas.

Flash Point

Not applicable

Flammable/Explosive Range

Not applicable

Auto-Ignition Temperature

Not applicable

Sensitivity to Mechanical Impact

Not sensitive

Sensitivity to Static Discharge

Not sensitive

Decomposition Temperature

This product will not decompose at temperatures below 1500 °C (2730 °F).

Suitable Extinguishing Media

Substance is non-flammable so extinguisher should be appropriate for acid and the burning material. For large fires, an all-purpose AFFF foam may be used. For small fires, use dry chemical or carbon dioxide. If only water is available, use it in the form of a fog. Water fog is also effective for controlling vapors.

Unsuitable Extinguishing Media

Do not use carbon dioxide if cyanides are involved in a fire. Do NOT use straight streams of water.

Specific Hazards Arising From the Chemical

This product is corrosive, and presents a significant inhalation and contact hazard to fire-fighters. Irritating and toxic gases or fumes may be released during a fire.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH-approved or equivalent, and full protective gear apparatus.

Fire Fighting Equipment/Instructions

Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. If possible, prevent run-off water from entering storm drains, bodies of water, or other environmentally sensitive areas.

Fire and Explosion Hazards

Reacts with active metals (potassium, sodium, calcium, powdered aluminum, zinc, magnesium) to liberate flammable hydrogen gas which can form explosive mixtures. Explosive concentrations of hydrogen may accumulate inside metal equipment.

Combustion and Thermal Decomposition Products

Hydrogen chloride, chlorine, and hydrogen gas.

Evacuation

If tank, rail car, or cargo trailer is involved in a fire, isolate for 1/2 mile in all directions and consider initial evacuation for 1/2 mile in all directions.

6. Accidental Release Measures

Personal Precautions

Keep unnecessary personnel away until clean-up has been completed. Ensure adequate ventilation. Wear adequate personal protective equipment (PPE). (Section 8 Exposure Controls for Specific PPE information). Do not touch spilled material.

Environmental Precautions

All spills on land involving hydrochloric acid should be contained, if possible, to prevent entry into bodies of water or sewer systems and into low lying areas like basements.

Methods for Containment

ELIMINATE all ignition sources (no smoking, flames, sparks or flames in immediate area). Stop leak if this can be done without risk. Dike the spilled material, where this is possible, using sand, dirt, or similar material.

Methods for Cleaning Up

Small Spills

Cover with an inert dry material (earth, sand, or other non-combustible material). Use non-sparking tools to collect material and place in a loosely covered plastic container for later disposal. Do not get water inside container.

Large Spills

As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (165 feet). Build dikes far ahead of the spill to contain the liquid for later reclamation or disposal using inert material such as sand, earth, foamed polyurethane, or foamed concrete. Absorb the bulk of the liquid with fly ash or cement powder. Neutralize with recommended materials, taking care to avoid any foaming or splattering that may occur from the neutralizing reaction. Make sure all liquid has been thoroughly contacted and absorbed by the dry materials. Transfer absorbed spill material and contaminated soil to a suitable chemical waste container. Ensure adequate decontamination of tools and equipment following clean up. Washing down of spills with water is not recommended as this tends to spread the contamination and increases the likelihood of percolating the acid down through the soil and/or of uncontrolled flow of acid into sewers, streams, or other waters. Do not allow spill material to contact any acid soluble sulfide wastes (such as in sewers) because of the danger of evolving hydrogen sulfide gas. Do not put water directly on leak or spill area. Use water spray curtain to divert vapor drift that is beyond spill area. Call for assistance on disposal.

Deactivating Chemicals

Lime, limestone, sodium carbonate (soda ash), sodium bicarbonate. Absorbent materials which have been tested and recommended for concentrated hydrochloric acid are anionic polycrylamide, nonionic polycrylamide, and hydroxyethylcellulose.

Waste Disposal

See Section 13 Disposal Considerations.

7. Handling and Storage

Handling

Take precautions to avoid personal contact. Prevent release of vapor or mist. Ensure adequate ventilation in handling areas. Ensure water drenching facilities are close to the handling area. Inspect containers for leaks before handling. Do not allow smoking or food consumption while handling or in storage areas. Wash well after use.



Component	IARC	NTP	OSHA	NIOSH	California Prop 65
Hydrochloric Acid CAS 7647-01-0	Group 3 not classifiable as to its carcinogenicity to humans	No	No	No	No
Water CAS 7732-18-5	No	No	No	No	No

Summary of Human Studies 10 ppm - recognition odor in air and maximal allowable for prolonged exposure.
35 ppm - causes irritation of throat.
50-100 ppm - can be barely tolerated for 1 hr (severe irritation and breathing difficulty occurs).
1,300-2,000 ppm - lethal for brief exposures of a few minutes by causing pulmonary edema.
Workers chronically exposed to hydrogen chloride did not exhibit the pulmonary function changes observed in nine subjects exposed to similar concentrations, which suggests that workers become acclimated to hydrogen chloride.
Dental discoloration and erosion of exposed incisors may occur on prolonged exposure to low concentrations.

Acute Exposure Effects on Humans

Skin Corrosion/Irritation	Corrosive. Contact with aqueous solutions causes burns of the skin and mucous membranes; the severity of the burns depends on the concentration of the solution. Burns may progress to ulcerations and lead to keloid and retractile scarring. Frequent contact of the skin with aqueous solution may cause dermatitis. Exposure to hydrochloric acid can produce burns on the skin and mucous membranes, the severity of which is related to the concentration of the solution. Subsequently, ulceration may occur, followed by keloid and retractile scarring. Contact with the eyes may produce reduced vision or blindness. Frequent contact with aqueous solutions of hydrochloric acid may lead to dermatitis.
Eye Damage/Irritation	Corrosive. Contact with aqueous solutions is corrosive to the eyes and can cause severe eye irritation/conjunctivitis, burns, corneal necrosis, reduced vision, irreversible eye injury, or blindness. Vapor or mist may cause irritation and severe burns. May cause painful sensitization to light. Degree of damage is proportional to concentration involved.
Inhalation	The greatest impact is on the upper respiratory tract. May cause coughing, hoarseness, inflammation and ulceration of the respiratory tract, chest pain, and pulmonary edema. Irritating and potentially corrosive to the respiratory tract and lungs. Exposure to high concentrations can rapidly lead to swelling and spasm of the throat and suffocation. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation of hydrochloric acid vapors and mists produces nose, throat, and laryngeal burning, and irritation, pain and inflammation, coughing, sneezing, choking sensation, shortness of breath, hoarseness, laryngeal spasms, upper respiratory tract edema, bronchial constriction, bronchitis, chest pains, as well as headache, and palpitations. Inhalation of high concentrations can result in corrosive burns, necrosis of bronchial epithelium, constriction of the larynx and bronchi, nasopharyngeal perforation, glottal closure, occur, particularly if exposure is prolonged. May be fatal if inhaled.
Ingestion	May cause severe burns of the mucous membranes, mouth, esophagus, and stomach, with pain, nausea, vomiting, and diarrhea reported in humans. May be fatal if swallowed. Causes irritation and burning, edema of the glottis, ulceration, or perforation of the esophagus and digestive tract and resultant peritonitis, gastric hemorrhage and infection. Can also cause nausea, vomiting (with "coffee ground" emesis), diarrhea, thirst, difficulty swallowing, salivation, chills, fever, uneasiness, shock, stricture and stenosis (esophageal, gastric, pyloric). May affect behavior (agitation), the cardiovascular system (weak rapid pulse, tachycardia), respiration (shallow respiration), and urinary system (kidneys - renal failure, nephritis).
Chronic Effects on Humans	Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation that leads to frequent attacks of bronchial infection and may produce ulceration of the nose, mouth and gum. Acute, repeated exposure via inhalation or ingestion can also cause erosion of tooth enamel. May cause damage to the following organs: kidneys, liver, mucous membranes, upper respiratory tract, skin, eyes, and circulatory system.



Sensitization	May cause painful sensitization to light after repeated or significant exposure. No skin sensitization has been reported.
Subchronic Effects	Chronic inhalation exposure caused hyperplasia of the nasal mucosa, larynx, and trachea and lesions in the nasal cavity in rats.
Delayed Effects	No data available.
Effects on Animals	Acute animal tests in rats, mice, and rabbits, have demonstrated hydrochloric acid to have moderate to high acute toxicity from inhalation and moderate acute toxicity from oral exposure. Pulmonary irritation, lesions of the upper respiratory tract, and laryngeal and pulmonary edema have been reported in rodents acutely exposed by inhalation.

Acute Toxicity to Humans Data:

Parameter	Concentration	Exposure Time	Species	Ingredient
LC ₅₀	1300 ppm	0.5 hr	human, inhalation	Hydrochloric Acid, concentrated
LD ₅₀	2857 ug/kg		human, oral	HCl

Acute Toxicity to Animals Data:

Parameter	Concentration	Exposure Time	Species	Ingredient
LC ₅₀	3124 ppm	1 hr	rat, inhalation	Hydrogen Chloride
LC ₅₀	1108 ppm	1 hr	mouse, inhalation	HCl
LC ₅₀	4701 ppm	0.5 hr	rat, inhalation	Hydrogen Chloride gas
LD ₅₀	>5010 mg/kg	-	rabbit, dermal	
LD ₅₀	800 mg/kg	Acute	rabbit, oral	Hydrochloric Acid, concentrated
LC ₅₀	4413 ppm	0.5 hr	rabbit, inhalation	HCl

Test Animal	Results
Rabbit Eye	Hydrochloric acid is injurious only at concentrations having acidity below pH 3. Contact with 0.25N to 1N acid for 20 seconds resulted in some scarring of rabbit corneas. 5 mg for 30 seconds caused mild irritation.
Rabbit Skin	0.5 mL of 17% HCl for 4 hours caused corrosive burns.

Epidemiology	No information available.
Mutagenicity	Ames test - negative. Hydrochloric acid has produced mutagenic effects in bacterial and insect test systems, and in one in vitro mammalian cell test (hamster lung cells). HCl was negative in another in vitro mammalian cell test. The significance of the positive reports is questionable since pH (acidity) can influence the results of short-term tests.
Reproductive Effects	In rats exposed to hydrochloric acid by inhalation (450 mg/m ³ for 1 hour), severe dyspnea, cyanosis, and altered estrus cycles have been reported in dams, and increased fetal mortality and decreased fetal weight have been reported in the offspring.
Teratogenicity	No information available.
Aspiration Hazard	Leads to a pulmonary inflammatory response.
Target Organs	Skin, eyes, respiratory tract, lungs, gastrointestinal system, teeth
Neurological Effects	No information available.
Synergistic Effects	No information available.
Other information	Persons suffering from skin and respiratory diseases should take extra care to avoid exposure to hydrochloric acid.

12. Ecological Information

Ecotoxicity	This material is expected to be toxic to aquatic life. Toxicity is primarily associated with pH.
Environmental Effects	No ecological problems are expected when the product is handled and used with due care. Large discharges may cause acidification of water and may be fatal to aquatic organisms, fish and plants. The concentration of hydrochloric acid that was found to be injurious to crops (mrigable) is 350 mg/L.



Silver Shield 4H™	Gloves	>4 hrs	> 4 hrs
4H (Polyethylene/Ethylene Vinyl Alcohol)	Gloves	>4 hrs	> 4 hrs
Polyethylene	Gloves, Boots, Suits	Use for short periods < 4 hrs	Use for short periods < 1 hr
Polyvinyl Alcohol	Gloves	Not Recommended	Not Recommended

Community Emergency Planning Emergency Response Planning Guidelines (ERPG):
ERPG 1 = 3 ppm
ERPG 2 = 20 ppm
ERPG-3 = 150 ppm

9. Physical and Chemical Properties

Appearance	Clear to light yellow
Physical State	Liquid
Color	Colorless to light yellow
Odor	Pungent, irritating (strong)
Odor Threshold	0.77 ppm is odor detection if person is focused on perceiving it.
5 ppm (7 mg/m³) - About 50% of population will detect when distracted.	
pH	Less than 1
Acidity	Very strong acid
Molecular Weight	36.46
Molecular Formula	H-Cl
Melting Point / Freezing Point	-43 °C (-45.4 °F)
32%	-32.22 °C (-26.0 °F)
Boiling Point	84 °C (183.2 °F) @ 760 mmHg
32%	61.11-63.33 °C (142-146 °F)
36%	Hydrochloric acid solutions of greater than 28% are very volatile and can readily release high concentrations of hydrogen chloride gas.
Flash Point	None. See Section 5
Flammability	See Section 5
Flammability Limits (Lower/Upper)	Not applicable
Auto-Ignition Temperature	Not applicable
Vapor Pressure	23.5 mmHg (3.13 kPa) @ 25 °C
32%	-76 mmHg @ 20 °C
36%	
Vapor Density (Air = 1)	1.267
Volatility by Volume	100%
Volatility Organic Compounds	Zero
Specific Gravity	32% 1.1593 @ 20 °C
36%	1.1828 @ 16 °C
Relative Density (lbs/gal)	32% 9.657 @ 20 °C
36%	9.979 @ 20 °C (1.198 kg/m ³)
Solubility (in water)	100% in all proportions
Solubility in Other Liquids	Very soluble in ethanol, methanol, dioxane and tetrahydrofuran; insoluble in hydrocarbons, e.g. n-hexane
Emulsifiable in Water	Yes
Specific Heat	32% 2.55 kJ/(kg K)



Partition Coefficient: n-octanol/water Log P_{ow} = 0.3 (30% aqueous solution)	
Critical Temperature	Not available
Viscosity-Dynamic	
30%	1.71 mPa.s (or centipoises) @ 20 °C
32%	1.8 mPa.s (or centipoises) @ 20 °C
Surface Tension	
17%	71.75 mN/m (71.75 dynes/cm)
23.7%	70.55 mN/m (70.55 dynes/cm)
Oxidizing Properties	None
Dielectric Constant	6.2 pKa @25 °C
Dielectric Constant	Approximately 78.30 @25 °C (77 °F)
Henry's Law Constant	Hydrochloric acid water solutions do not obey Henry's law at all measured concentrations; however 2.04 x 10 ⁶ mol/L atm (4.90 x 10 ⁻¹⁰ m ³ atm/mol) has been reported. This means that hydrochloric acid is expected to be essentially non-volatile from water surfaces.
Conversion Factor	1 ppm = 1.49 mg/m ³ ; 1 mg/m ³ = 0.67 ppm @25 °C (760 torr) (calculated)

10. Stability and Reactivity

Chemical Stability	The product is stable under normal conditions of use.
Corrosivity	Extremely corrosive in presence of aluminum, copper and its alloys, stainless steel (304), stainless steel (316). Non-corrosive in presence of glass. It attacks nearly all metals (mercury, gold, platinum, tantalum, silver, and certain alloys are exceptions). Severe corrosive effect on brass and bronze.
Conditions to Avoid	Avoid heat, flames, sparks and other sources of ignition. Contact with water may produce a strong exothermic reaction with spattering. Contact with metals may evolve flammable hydrogen gas. Hydrogen chloride may react with cyanide, forming lethal concentrations of hydrocyanic acid.
Never add water to acid. Acid evaporates creating very corrosive environment. Avoid contact of metal ladders or other metal objects in confined spaces containing product.	
Incompatible Materials	Highly reactive with aluminum, metals, metal oxides, calcium & sodium hypochlorite, bases, brass, bronze, calcium carbide, amines, carbonates, and alkaline materials. Incompatible with materials such as cyanides, sulfides, sulfites, sulfuric acid, and formaldehyde.
Hazardous Decomposition Products	When heated to decomposition emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine vapors and flammable hydrogen gas.
Polymerization	HCl itself does not polymerize. Reaction of HCl with aldehydes and epoxides can cause polymerization.
Possibility of Hazardous Reactions	Reacts with most metals and evolves highly flammable hydrogen. Reacts with oxidizing agents and sulfuric acid liberating toxic Chlorine gas. Reacts violently (moderate reaction with heat of evolution) if water is added to the product. Hydrogen chloride gas is emitted when this product is in contact with sulfuric acid.

11. Toxicological Information

See Section 2 Hazards Identification for additional health effects information.	
Carcinogenicity	There is inadequate evidence for the carcinogenicity of hydrochloric acid in humans and in experimental animals.



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TSCA Proposed Test Rules, 4(a)	CAS# 7647-01-0 (Hydrogen Chloride Gas)
TSCA Significant New Use Rule 5(a)	None of the components are on this list.
TSCA, Section 12b	None of the components are on this list.
CERCLA Reportable Quantity (RQ)	5000 pounds (2270 kg) for CAS# 7647-01-0 (Hydrochloric Acid)
Section 302 - Extremely Hazardous Substances	CAS# 7647-01-0, Hydrogen Chloride gas only, TPQ 500 lbs
Section 311 - Hazardous Chemical	Yes (Hydrogen Chloride gas and solution)
SARA 312/313	CAS # 7647-01-0 (Hydrogen Chloride and solution) Immediate (Acute) Hazard Yes Delayed Hazard No Fire Hazard No Pressure Hazard No Reactivity Hazard No
EPCRA Section 313	This material contains Hydrochloric acid (CAS# 7647-01-0, 32 to 36%) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373, if it is in aerosol form (including mists, vapors, gas, fog, and other airborne forms of any particle size).
STATE REGULATIONS:	
State Regulations that Apply	Hydrogen chloride (CAS 7647-01-0) can be found for: California Director's List of Hazardous Substances New Jersey Environmental Hazardous Substance Florida Hazardous Substance List Massachusetts Extraordinarily Hazardous Substance Minnesota Hazardous Substance List Rhode Island Hazardous Substance List
State Right-To-Know	Illinois, Massachusetts, New Jersey, Pennsylvania
California Prop 65	This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.
California No Significant Risk Level	No information available.
CANADA	This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and this MSDS contains all required information.
DSL/NDSL	CAS# 7647-01-0 (Hydrogen Chloride) is listed on Canada's DSL List. CAS# 7732-18-5 (Water) is listed on Canada's DSL List.
WHMIS Classification	Class D1A - Immediate and serious effects - Very Toxic Class E - Corrosive Liquid
Ingredient Disclosure List	CAS# 7647-01-0 (Hydrogen Chloride), meets criteria for disclosure at 1% or greater.
European Economic Community (EEC) Information	
EINECS	231-595-7

16. Other information, including date of preparation or last revision

Issue Date:	06-01-2015	Version # 01
Revision History:	06-01-2015	Initial version
HMS® Rating	HMS® is a registered trade and service mark of the American Coatings Association	
Health	3	
Flammability	0	
Physical hazard	1	



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NFPA Rating:	NFPA Hazard Scale: 0 - Minimal
	1 - Slight
	2 - Moderate
	3 - Serious
	4 - Severe

ACRONYMS:

ACGIH	American Conference of Governmental Industrial Hygienists
BCF	Bioconcentration Factor
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)
CFR	Code of Federal Regulations
CHEMTREC	Chemical Transportation Emergency Center
DOT	Department of Transportation (USA)
DSL	Domestic Substances List (Canada)
EPCRA	Emergency Planning and Community Right-to-Know
ERG	Emergency Response Guidelines
ERPG-1	The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing other than mild transient adverse health effects or perceiving a clearly defined, objectionable odor
ERPG-2	The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action
ERPG-3	The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to 1 hr without experiencing or developing life-threatening health effects.
IARC	International Agency for Research on Cancer
IDLH	Immediately Dangerous to Life and Health - the maximum airborne concentration from which one could escape (within 30 minutes) without any escape-impairing symptoms or any irreversible health effects.
IMDG	International Maritime Dangerous Goods
LC50	Lethal Concentration - median dose at which 50% of test animals die from inhalation
LCLo	Lethal Concentration Lowest - lowest concentration in air observed to cause death
LD50	Lethal Dose - median dose at which 50% test animals die from oral or dermal exposure
NDSL	Non-Domestic Substances List (Canada)
NIOSH	National Institute of Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Health and Safety Administration
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
RCRA	Resource Conservation and Recovery Act
RMP	Risk Management Plan
RQ	Reportable Quantity
SARA	US EPA Superfund Amendments and Reauthorization Act
TDG	Transport of Dangerous Goods (Canada)
TLm	Average threshold limit
TLV	Threshold Limit Value
TPQ	Threshold Planning Quantity
TQ	Threshold Quantity
TSCA	Toxic Substances Control Act
TWA	Time Weighted Average airborne concentration for a worker in an 8 hour day
WHMIS	Workplace Hazardous Materials Identification System (Canada)



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THE PESTICIDE REPORT Environmental Fate	When released into the soil, this material is not expected to be biodegraded and may leak into groundwater where it will dissociate almost completely into the hydronium ion. It is not expected to accumulate in the food chain. If released into the water, the water pH will be decreased.																																								
Mobility in Soil	Upon transport through the soil, hydrochloric acid will dissolve some of the soil materials (especially those with carbonate bases) and the acid will neutralize to some degree. Significant amounts will transport to the ground water table.																																								
Aquatic Toxicity	<table><tr><th>Parameter</th><th>Concentration</th><th>Exposure Time</th><th>Species</th><th>Ingredient</th></tr><tr><td>TLm</td><td>282 mg/l</td><td>96 hr</td><td>mosquito fish, fresh water</td><td>HCl</td></tr><tr><td>LC50</td><td>21,900 ug/l</td><td>96 hr</td><td>fathead minnow</td><td>HCl</td></tr><tr><td>LC50</td><td>10 mg/l</td><td>24 hr</td><td>trout</td><td>HCl</td></tr><tr><td>LC50</td><td>100 - 330 mg/l</td><td>48 hr</td><td>shrimp, saltwater</td><td>HCl</td></tr><tr><td>LC50</td><td>176 mg/l</td><td>48 hr</td><td>gold fish, saltwater</td><td>HCl</td></tr><tr><td>LC50</td><td>240 mg/l</td><td>48 hr</td><td>shore crab</td><td>HCl</td></tr><tr><td>LC50</td><td>10 mg/l</td><td>24 hr</td><td>trout</td><td>HCl</td></tr></table>	Parameter	Concentration	Exposure Time	Species	Ingredient	TLm	282 mg/l	96 hr	mosquito fish, fresh water	HCl	LC50	21,900 ug/l	96 hr	fathead minnow	HCl	LC50	10 mg/l	24 hr	trout	HCl	LC50	100 - 330 mg/l	48 hr	shrimp, saltwater	HCl	LC50	176 mg/l	48 hr	gold fish, saltwater	HCl	LC50	240 mg/l	48 hr	shore crab	HCl	LC50	10 mg/l	24 hr	trout	HCl
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LC50	10 mg/l	24 hr	trout	HCl																																					
Plant Toxicity	Chronic plant toxicity = 100 ppm.																																								
Persistence and Degradability	Rapidly hydrolyzes when exposed to water.																																								
Partition Coefficient: n-octanol/water	See Section 9.																																								
BCF	No information available																																								

13. Disposal Considerations

Waste Codes	Test waste material for corrosivity, D002 (Corrosive Waste), prior to disposal.
Disposal Instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies.
Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Dispose in accordance with all applicable regulations.	
Waste from Residues and Unused Products	Reuse or reprocess, if possible. As produced, the product meets the RCRA definition of corrosive with D002 waste code. Processing, use, or contamination of this product may change the waste management options.
Contaminated Packaging	Do not re-use empty containers for other substances. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport Information



Label



Placard



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	DOT	CANADA TDG
UN Number	1789	1789
Proper Shipping Name	Hydrochloric Acid, 32-36%	Hydrochloric Acid Solution, 32-36%
Hazard Class	8	8
Packing Group	II	II
RQ or ERAP	5,000 lbs (2,270 kg) - about 500 gallons	3000 L (ERAP)
Marine Pollutant	No	No
ERG	157	

IMDG (Water)

Basic Shipping Requirements:

UN Number	UN1789
Proper Shipping Name	Hydrochloric Acid Solution, (32-36%)
Hazard Class	8
Packing Group	II
Marine Pollutant	No

Additional Information:

Vessel Stowage	C - On Deck only cargo or passenger
EMS	F-A, S-B

ICAO/IATA (Air)

Basic Shipping Requirements:

UN Number	UN1789
Proper Shipping Name	Hydrochloric Acid (32-36%)
Hazard Class	8
Packing Group	II

Additional Information:

Packaging Instruction:	809 - 1 L passenger 813 - 30 L cargo
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Excepted Quantities

Y809 (excepted quantities), inner packaging net - 30 mL (1 oz.); outer aggregate - 500 mL (0.1 gal). Documentation: Dangerous Goods in Excepted Quantities and Excepted Quantity mark (label).

De Minimis

1 mL (0.03 oz.) inner packaging net; 100 mL (3.36 oz.) outer aggregate.

15. Regulatory Information

Clean Air Act 112(f), RMP	No for this product. Applicable for HCl 37% or greater in solution.
Clean Air Act	CAS# 7647-01-0 is listed as a hazardous air pollutant (HAP).
Class 1 Ozone Depletor	None
Class 2 Ozone Depletor	None
Clean Water Act	CAS# 7647-01-0 is listed as a Hazardous Substance under the CWA.
Priority Pollutants	None
Toxic Pollutants	None
OSHA PSM (Highly Hazardous)	CAS# 7647-01-0 (Hydrogen Chloride Gas and Hydrochloric Acid, Anhydrous) is considered highly hazardous by OSHA with a 5,000 lbs TQ
US FEDERAL REGULATIONS:	
OSHA	This product is known to be a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200
TSCA Inventory 8(b)	Hydrogen Chloride, CAS# 7647-01-0 Water, CAS# 7732-18-5
TSCA H&S Data Reporting List 8(d)	None of the components are on this list.

CERTIFICATE OF ANALYSIS

Packaging

General supply 1 MT bulk bag, also supply in 25 kg or 50 kg sacks.

Storage & Handling

Always refer to the Material Safety Data Sheet (MSDS) for detailed information on handling and disposal.

Safety

Always refer to the Material Safety Data Sheet (MSDS) for detailed information on safety.

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchant ability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall we be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if we have been advised of the possibility of such damages.

Thai Petroleum Support Co., Ltd.

Tel :
Fax :

PRODUCT	: XANTHAN GUM
BATCH NO	: 36200268
QUANTITY (NET WEIGHT)	: 5250 KGS
ANALYSIS DATE	: March16, 2020
MANUFACTURING DATE	: March16, 2020
EXPIRY DATE	: March15, 2022

THIS IS TO CERTIFY THAT WE, THE UNDERSIGNED, HAVE INSPECTED THE QUALITY OF MENTIONED GOODS AND FOUND THE RESULTS OF INSPECTION AS FOLLOWS :

TESTING CONTENTS ANALYSIS

ITEM	STANDARD	TEST RESULTS
Viscosity 1% solution in 1% KCL	1200-1600cps	1400cpc
PH 1% solution	6.0-8.0	6.71
Loss on drying	15% Max	13.28%
Ash	13% Max	6.24%
Particle size	100% through 60 mesh (250micron) 95% Min through 80 mesh (180micron)	100% 95.5%
V1/V2	1.02-1.45	1.04
Nitrogen	1.5% Max	Pass
Ethanol and Isopropanol	500 ppm Max	125 ppm
Pyruvic acid	1.5% Max	3.5%
Heavy metal	20 ppm Max	Pass
Lead	2 ppm Max	Pass
Arsenic	3 ppm Max	Pass

Issue by:
THAI PETROLEUM SUPPORT CO., LTD.

Authorized Signature



THAI PETROLEUM SUPPORT COMPANY LIMITED

SAFETY DATA SHEET
XANTHAN GUM

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Name XANTHAN GUM

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses Oil well drilling fluid additive. Oil well completion fluid additive.

1.3. Details of the supplier of the safety data sheet

Supplier

1.4 Emergency Contact: +(66)-2-080-5624

1.5 Information Contact: +(66)-2-080-5624

SECTION 2. HAZARDS IDENTIFICATION

Static charges generated by emptying package in or near flammable vapors may cause flash fire.

May form flammable dust-air mixtures.

May cause mild eye irritation.

May cause skin irritation by mechanical abrasion.

Inhalation of dust may cause respiratory tract irritation.

Surfaces subject to spills may become slippery.

POTENTIAL HEALTH EFFECTS: Repeated ingestion may cause an allergic reaction in susceptible individuals.

Repeated or prolonged skin contact may cause allergic dermatitis in susceptible individuals.

Refer to Section 5 for Hazardous Combustion Products, and Section 10 for Hazardous Decomposition/Hazardous Polymerization Products.

SECTION 3. COMPOSITION INFORMATION ON INGREDIENTS

3.1. Substances

Component	CAS-No	Weight % - range
Xanthan gum	11138-66-2	100

The Full Text for all R-Phrases and Hazard Statements is Displayed in Section 16

Composition Comments

The data shown is in accordance with the latest EC Directives.



Technical Data Sheet

Xanthan Gum

Product Information

Chemical Name	Xanthan gum
CAS #	11138-66-2
Formula	C ₃₅ H ₄₇ O ₂₃
SG	1.6 g/l

Specification

Item	Result
Appearance	White powder
Brookfield LV (1.5 RPM).cp	1950-2200
pH	7.4
300 rpm dial reading.cp	>65

Applications

1. Use as a viscosifier in water base mud and completion brine fluid

Limitation

- Effectiveness are reduced in high salinity,
- Temperature limit are 120 degree celcius
- Not tolerant to high calcium and high hardness

XANTHAN GUM

8.2 Exposure controls

Protective Equipment



Engineering Measures

Provide adequate ventilation. Observe occupational exposure limits and minimize the risk of inhalation of dust.

Respiratory Equipment

If ventilation is insufficient, suitable respiratory protection must be provided. Use respiratory equipment with particle filter, type P2.

Hand Protection

For prolonged or repeated skin contact use suitable protective gloves. Rubber gloves are recommended.

Eye Protection

Wear dust resistant safety goggles where there is danger of eye contact.

Other Protection

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Cream powder
Colour	White to Off white
Odour	Odourless
Relative density (water=1)	0.7-0.8
Auto ignition temperature	>200 °C
Decomposition temperature	>145 °C
pH as a solution 1%	6-8

9.2 Other information

Not relevant.

SECTION 10. STABILITY AND REACTIVITY

HAZARDOUS DECOMPOSITION PRODUCTS

None known.

XANTHAN GUM

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

Ingestion

Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Get medical attention if any discomfort continues.

Skin Contact

Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye Contact

Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

4.2 Most important symptoms and effects, both acute and delayed

Inhalation

Irritation of nose, throat and airway.

Ingestion

May cause discomfort if swallowed.

Skin Contact

Prolonged skin contact may cause redness and irritation.

Eye Contact

May cause temporary eye irritation.

4.3 Indication of any immediate medical attention and special treatment needed

Get medical attention if any discomfort continues.

SECTION 5. FIREFIGHTING MEASURES

5.1 Extinguishing media

There is no restriction on the type of extinguisher which may be used. Use extinguishing media suitable for surrounding area.

5.2 Hazardous Combustion Product

Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

XANTHAN GUM

HAZARDOUS POLYMERIZATION

Not anticipated under normal or recommended handling and storage conditions.

GENERAL STABILITY/CONSIDERATIONS

Stable under recommended handling and storage conditions.

INCOMPATIBLE MATERIALS

None known.

SECTION 11. TOXICOLOGICAL INFORMATION

CARCINOGENICITY INFORMATION: Not listed as a carcinogen by NTP. Not regulated as a carcinogen by OSHA. Not evaluated by IARC.

REPORTED HUMAN EFFECTS PRODUCT/SIMILAR PRODUCT: A single case of allergic dermatitis has been reported after repeated long-term skin contact. A single case of anaphylaxis after ingestion has been reported in medical literature. Due to the physical nature of this material, may cause eye, skin and respiratory irritation.

REPORTED ANIMAL EFFECTS PRODUCT/SIMILAR PRODUCT: Reported to cause rabbit eye irritation after exposure to dust. Low order of oral toxicity based on acute and chronic studies in several species.

MUTAGENICITY/GENOTOXICITY INFORMATION

PRODUCT/SIMILAR PRODUCT: Not mutagenic in Ames assay or chromosome aberration test.

SECTION 12. ECOLOGICAL INFORMATION

Sugar-based compounds (saccharides), including polysaccharides are generally easily decomposed by biodegradation. Not all polysaccharides decompose with equal rapidity, and polysaccharides are also synthesised by microorganisms during, for example, the compost maturation phases. Water-insoluble species such as cellulose take longer to decompose and those with a significant degree of branching also take longer.

SECTION 13. DISPOSAL CONSIDERATIONS

WASTE/ DISPOSAL

Landfilling in a permitted solid or hazardous waste facility is recommended. Handling, transportation, and disposal of material should be conducted in a manner to prevent a nuisance dust hazard. Fully containerize the material before handling, and protect from exposure to the outdoors. Ensure there are no restrictions on disposing of bulk or semi-bulk quantities of waste material. Disposal should be in accordance with all Federal, State and local regulations.

XANTHAN GUM

5.3 Special Fire Fighting

Solid which exhibits difficult combustion or is difficult to ignite.

Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion.

Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust (420 micron or less) may burn rapidly and fiercely if ignited; once initiated larger particles up to 1400 microns diameter will contribute to the propagation of an explosion.

A dust explosion may release large quantities of gaseous products; this in turn creates a subsequent pressure rise of explosive force capable of damaging plant and buildings and injuring people.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Minor spill:

Clean up all spills immediately.

Avoid contact with skin and eyes.

Wear impervious gloves and safety glasses.

Use dry clean up procedures and avoid generating dust.

Major spill:

Clear area of personnel and move upwind.

Alert Fire Brigade and tell them location and nature of hazard.

Control personal contact with the substance, by using protective equipment and dust respirator.

Prevent spillage from entering drains, sewers or water courses.

SECTION 7. HANDLING AND STORAGE

GENERAL MEASURES: Ground all equipment. Blanket vessel with inert gas when emptying bags where flammable vapors may be present. Ground operator and pour material slowly into conductive, grounded chute. Store in a cool, dry, well ventilated area. Keep container closed when not in use.

MATERIALS/ OR CONDITIONS TO AVOID: Avoid conditions that generate dust; product may form flammable dust-air mixtures. Avoid emptying package in or near flammable vapors; static charges may cause flash fire. Keep away from heat, flame, sparks and other ignition sources. Do not store in direct sunlight or expose to UV radiation.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Ingredient Comments

NUI - Nuisance dust, WEL TWA 4mg/m³ Respirable Dust, 10 mg/m³ Total Dust.

XANTHAN GUM

SECTION 14. TRANSPORT INFORMATION

GENERAL This product is not subject to DOT regulations.

For specific information regarding transportation of this product, please call the Hercules representative at (905) 632-7861. Transport information: not regulated by IMO/IMDG.

SECTION 15. REGULATORY INFORMATION

CHEMICAL INVENTORIES

U.S. TSCA: The components of this product are included on the TSCA Inventory.

SARA TITLE III - SECTIONS 302/304

This product is not an Extremely Hazardous Substance subject to reporting under 40CFR355.

SARA TITLE III - SECTION 311 AND 312 NHH:

Not a health hazard HC-3: Fire hazard SARA TITLE III =

SECTION 313

This product does not contain any chemicals subject to reporting under Section 313 of Title III of the Superfund Amendments and Reauthorization Act and 40CFR372.

CERCLA This product does not contain any chemicals subject to reporting as a CERCLA Hazardous Substance under 40CFR302.4.

RCRA

This product is not a hazardous waste as listed in 40CFR261.33. It does not exhibit any of the hazardous characteristics listed in 40CFR261, Subpart C

SECTION 16. OTHER INFORMATION

References: Not available.

Other Special Considerations: Not available.

Created: 3 August 2018

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