

ภาคผนวก 29ข

เอกสารการควบคุมน้ำหนักของรถบรรทุก



**DOWA METALS MINING (THAILAND) CO.,**  
7/200 Moo 6, Anusorn 2, Bangkok Industrial Estate (Bangkok) Maprang Road, Rayong 21150  
Tel: 039-010714 Fax: 039-0107650 www.dowa.co.th เลขที่จดทะเบียนการค้า: 214-55-01271

**ขายให้/SOLD TO: NS-Siam United Steel Co., Ltd.**  
12 Soi G2, Pakorn Songkhroha Rd.,  
Maprangphut, Muang Rayong, Rayong 21150  
Tel: 039-687079-80 Fax: 039-687032

CUSTOMER CODE	S/M CODE	PURCHASE ORDER NO.	TERM OF PAYMENT		DATE (DD-MM-YY)
			DATE	AMOUNT	
PRODUCT CODE	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT	
FG-12A30-00	TAILORED ZINC 30-00	392			
1	231213-15	899			
2	231213-16	899			
3	231213-17	901			
4	231213-18	895			
5	231213-19	903			
6	231213-20	899			
7	231213-21	903			
8	231213-22	907			
9	231213-23	895			
10	231213-24	891			
11	231213-25	894			
12	231213-26	891			
13	231213-27	894			
14	231213-28	891			
15	231213-29	902			
16	231213-30	893			
17	231213-31	894			
18	231213-32	893			
19	231213-33	894			
20	231213-34	893			
21	231213-35	902			
22	231213-36	893			
23	231213-37	894			
24	231213-38	897			
25	231213-39	897			
26	231213-40	897			
27	231213-41	890			
28	231213-42				
รวม/Total			25,055		

<input type="checkbox"/> Delivery to the customer and return copy	<input checked="" type="checkbox"/> The customer receive by themselves	วันที่ Date	17/11/24
ผู้รับสินค้า The customer receive by themselves		วันที่ Date	19-01-67
ผู้ส่งสินค้า The customer receive by themselves		วันที่ Date	19/11/24

**DOWA METALS MINING (THAILAND) CO., LTD**  
7/200 Moo 6, Anusorn 2, Bangkok Industrial Estate (Bangkok) Maprang Road, Rayong 21150  
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Tel: 039-687079-80 Fax: 039-687032

CUSTOMER CODE	S/M CODE	PURCHASE ORDER NO.	TERM OF PAYMENT		DATE (DD-MM-YY)
			DATE	AMOUNT	
PRODUCT CODE	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT	
FG-12A30-00	TAILORED ZINC 30-00	392			
1	240110-24	899			
2	240110-25	894			
3	240110-26	901			
4	240110-27	899			
5	240110-28	903			
6	240110-29	890			
7	240110-30	898			
8	240110-31	902			
9	240110-32	903			
10	240110-33	893			
11	240110-34	903			
12	240110-35	904			
13	240110-36	904			
14	240110-37	904			
15	240110-38	901			
16	240110-39	902			
17	240110-40	906			
18	240110-41	891			
19	240110-42	903			
20	240110-43	906			
21	240110-44	901			
22	240111-01	902			
23	240111-02	904			
24	240111-03	904			
25	240111-04	903			
26	240111-05	993			
27	240111-06	899			
28	240111-07	897			
รวม/Total			25,203		

<input type="checkbox"/> Delivery to the customer and return copy	<input checked="" type="checkbox"/> The customer receive by themselves	วันที่ Date	26-09-67
ผู้รับสินค้า The customer receive by themselves		วันที่ Date	26/02/2024
ผู้ส่งสินค้า The customer receive by themselves		วันที่ Date	26/02/2024

เลขที่ NO.	DMNT-20240319-6	วันที่ DATE	19/03/2024
REFER PO No	4030135310	REFER S/O No.	

ขายให้/SOLD TO: NS-Siam United Steel Co., Ltd.  
12 Soi G2, Pakorn Songkhroha Rd.,  
Mapthaphut, Muang Rayong Rayong 21150  
ติดต่อ คุณอาทิตย์ 038-687079-90  
วันที่ส่งสินค้า/DELIVERY DATE: 19/03/2024

CUSTOMER CODE	SYM CODE	PURCHASE ORDER NO.	TERM OF PAYMENT		DUE DATE	
		4030135310				
รหัสสินค้า PRODUCT CODE	รายการสินค้า DESCRIPTION		หน่วยสินค้า KGS.	จำนวน QUANTITY	ราคาหน่วย UNIT PRICE	จำนวนเงิน AMOUNT
FG-TZN30-00	TAILORED ZINC 30-00					
1	240222-18	Kgs.	914			
2	240222-19	Kgs.	920			
3	240222-20	Kgs.	923			
4	240222-21	Kgs.	917			
5	240222-22	Kgs.	918			
6	240222-23	Kgs.	925			
7	240222-24	Kgs.	919			
8	240222-25	Kgs.	923			
9	240222-26	Kgs.	927			
10	240222-29	Kgs.	903			
11	240222-30	Kgs.	923			
12	240222-31	Kgs.	927			
13	240222-32	Kgs.	920			
14	240222-33	Kgs.	903			
15	240222-34	Kgs.	921			
16	240222-35	Kgs.	917			
17	240222-36	Kgs.	897			
18	240222-37	Kgs.	903			
19	240222-38	Kgs.	918			
20	240222-39	Kgs.	922			
21	240222-40	Kgs.	923			
22	240223-01	Kgs.	903			
23	240223-02	Kgs.	912			
24	240223-03	Kgs.	910			
25	240223-04	Kgs.	910			
26	240223-05	Kgs.	897			
27	240223-06	Kgs.	907			
28	240223-07	Kgs.	909			
รวม/Total				25,611		

<input type="checkbox"/> Delivery to the customer and return copy	<input checked="" type="checkbox"/> The customer receive by themselves	รวมเงิน TOTAL
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วันที่ Date	19/03/24	วันที่ Date	19-03-67	วันที่ Date	19/03/24
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เลขที่ NO.	DMNT-20240422-5	วันที่ DATE	22/04/2024
REFER PO No	4030137090	REFER S/O No.	

ขายให้/SOLD TO: NS-Siam United Steel Co., Ltd.  
12 Soi G2, Pakorn Songkhroha Rd.,  
Mapthaphut, Muang Rayong Rayong 21150  
ติดต่อ คุณอาทิตย์ 038-687079-90  
วันที่ส่งสินค้า/DELIVERY DATE: 22/04/2024

CUSTOMER CODE	SYN CODE	PURCHASE ORDER NO.	TERM OF PAYMENT		DUE DATE
		4030137090			
รหัสสินค้า PRODUCT CODE	รายการสินค้า DESCRIPTION	หน่วยสินค้า KGS.	จำนวน QUANTITY	ราคาหน่วย UNIT PRICE	จำนวนเงิน AMOUNT
FG-TZN30-00	TAILORED ZINC 30-00				
1	240326-11	Kgs.	891		
2	240326-12	Kgs.	886		
3	240326-13	Kgs.	884		
4	240326-14	Kgs.	897		
5	240326-15	Kgs.	898		
6	240326-16	Kgs.	891		
7	240326-17	Kgs.	888		
8	240326-18	Kgs.	899		
9	240326-19	Kgs.	895		
10	240326-20	Kgs.	892		
11	240326-21	Kgs.	895		
12	240326-22	Kgs.	898		
13	240326-23	Kgs.	897		
14	240326-24	Kgs.	894		
15	240326-25	Kgs.	886		
16	240326-26	Kgs.	893		
17	240326-27	Kgs.	886		
18	240326-28	Kgs.	886		
19	240326-29	Kgs.	886		
20	240326-30	Kgs.	894		
21	240326-31	Kgs.	900		
22	240326-32	Kgs.	886		
23	240326-33	Kgs.	886		
24	240326-34	Kgs.	900		
25	240326-35	Kgs.	892		
26	240326-36	Kgs.	890		
27	240326-37	Kgs.	889		
28	240326-38	Kgs.	891		
รวม/Total				24,977	

<input checked="" type="checkbox"/> Delivery to the customer and return copy	<input type="checkbox"/> The customer receive by themselves	รวมเงิน TOTAL
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วันที่ Date	22/04/24	วันที่ Date	22-04-67	วันที่ Date	22/04/24
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**DOWA METALS MINING (THAILAND) CO., LTD.**  
7/35 Moo 6, Amphai Estate (Rayong) Mueang Rayong, Rayong 21140  
Tel. 033-017414 Fax. 033-017498 www.dowa.co.th เลขประจำตัวผู้เสียภาษี 020555021371

**ขายให้/SOLD TO: NS-Siam United Steel Co., Ltd.**  
12 Soi G2, Pakorn Songkhroha Rd.,  
Mapleplut, Muang Rayong, Rayong 21150  
ติดต่อ คุณดาวิทย์ 038-687079-80  
วันที่ส่งสินค้า/DELIVERY DATE: 23/05/2024

CUSTOMER CODE	SYM CODE	PURCHASE ORDER NO.	TERM OF PAYMENT	DUPLICATE
		4030184077		
PRODUCT CODE	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
FG-TZ30-00	TAILORED ZINC 30-00			
1	240411-11	909		
2	240411-12	906		
3	240411-13	899		
4	240411-14	912		
5	240411-15	912		
6	240411-16	901		
7	240411-17	902		
8	240411-18	899		
9	240411-19	902		
10	240411-20	898		
11	240412-01	898		
12	240412-02	902		
13	240412-03	899		
14	240412-04	898		
15	240412-05	887		
16	240412-06	903		
17	240412-07	897		
18	240412-08	892		
19	240412-09	898		
20	240412-10	904		
21	240412-11	900		
22	240412-12	898		
23	240412-13	897		
24	240412-14	894		
25	240412-15	905		
26	240412-16	895		
27	240412-17	898		
28	240412-18	906		

รวม/Total 25,175

☒ Delivery to the customer and return copy ☐ The customer receive by themselves

Date 23/05/24 23/05/24

**DOWA METALS MINING (THAILAND) CO., LTD.**  
7/35 Moo 6, Amphai Estate (Rayong) Mueang Rayong, Rayong 21140  
Tel. 033-017414 Fax. 033-017498 www.dowa.co.th เลขประจำตัวผู้เสียภาษี 020555021371

**ขายให้/SOLD TO: NS-Siam United Steel Co., Ltd.**  
12 Soi G2, Pakorn Songkhroha Rd.,  
Mapleplut, Muang Rayong, Rayong 21150  
ติดต่อ คุณดาวิทย์ 038-687079-80  
วันที่ส่งสินค้า/DELIVERY DATE: 21/06/2024

CUSTOMER CODE	SYM CODE	PURCHASE ORDER NO.	TERM OF PAYMENT	DUPLICATE
		4030140026		
PRODUCT CODE	DESCRIPTION	QUANTITY	UNIT PRICE	AMOUNT
FG-TZ30-00	TAILORED ZINC 30-00			
1	240513-10	907		
2	240513-11	895		
3	240513-12	891		
4	240513-13	898		
5	240513-14	898		
6	240513-15	896		
7	240513-16	894		
8	240513-17	900		
9	240513-18	901		

รวม/Total 8,080

☐ Delivery to the customer and return copy ☒ The customer receive by themselves

Date 21/06/24 21/06/24





ภาคผนวก 30ข

เอกสารการอบรมด้านการจราจร







**ด้วยความห่วงใย DOWA**  
เพราะคุณ คือ ครอบครัวของเรา

<b>191</b> แจ้งเหตุด่วน เหตุร้าย	<b>199</b> แจ้งเหตุเพลิงไหม้ ลักขโมยข้าวบ้าน		
<b>1669</b> ศูนย์ให้บริการ ทางการแพทย์	<b>1554</b> สถานี การแพทย์ฉุกเฉิน	<b>1646</b> หน่วยแพทย์ผู้ชีวิตร วชิรพยาบาล	<b>1646</b> ศูนย์เอราวัณ สำนักงานแพทย์
<b>1197</b> แจ้งเหตุเกิดเหตุ ปัญหาการจราจร	<b>1193</b> บก.02 ศูนย์ควบคุม และจัดการจราจร	<b>1543</b> ตำรวจทางหลวง	<b>1543</b> อุบัติเหตุ บนทางด่วน
<b>1137</b> ศูนย์วิทยุ ขอความช่วยเหลือ	<b>1644</b> จก.100	<b>1677</b> สวพ.91	<b>1677</b> ร่วมด้วยช่วยกัน

<b>เมาไม่ขับ</b>	<b>คาดเข็มขัด นิรภัย</b>	<b>ขับช้าๆ ไม่ประมาท</b>	<b>สวมหมวก กันน็อค</b>
<b>ไม่เล่น โทรศัพท์</b>	<b>ขับรถตาม ไฟจราจร</b>	<b>ไม่ขับรถ ย้อนศร</b>	<b>ถ้าว่าง ให้หยุดพัก</b>



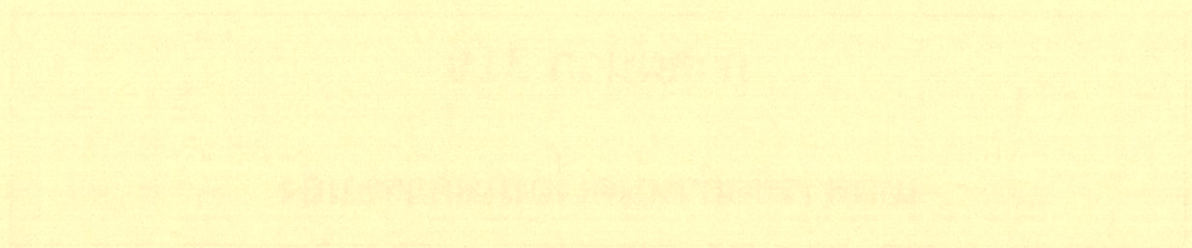


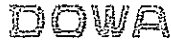


ภาคผนวก 31ข

เอกสารข้อกำหนดเงื่อนไขการขนส่ง







Dowa metals&mining(Thailand).co.,ltd

ข้อกำหนดเงื่อนไขการขนส่งผลิตภัณฑ์

- 1 กำหนดเวลารถขนส่งเข้ารับผลิตภัณฑ์ที่โรงงาน ได้ตั้งแต่เวลา 04:00-06:00 และ 08:00-14:00
- 2 กำหนดเวลารถขนส่งผลิตภัณฑ์ออกจากโรงงาน ได้ตั้งแต่เวลา 08:00-15:00
- 3 ต้องขนถ่ายด้วยอุปกรณ์สำหรับขนถ่ายในขบวนสินค้าขึ้น-ลงจากรถบรรทุก ทุกครั้ง
- 4 หลังยกสินค้าขึ้นรถบรรทุกเสร็จต้องคลุมผ้าใบให้มิดชิด(สำหรับรถ10ล้อขึ้นไป)
- 5 ตรวจสอบสายรัดและรัดสายรัดให้แน่นทุกสายด้วยอุปกรณ์รัดสายที่ไม่ชำรุด ก่อนออกจากโรงงานทุกครั้ง
- 6 สำหรับรถ6ล้อที่มีตู้ปิดจะต้อง ปิดประตูและล็อกกลอนประตูทุกบานก่อนออกจากโรงงาน

ข้อกำหนดเงื่อนไขการรับวัตถุดิบ(Cathode/Aluminum Ingot)

- 1 กำหนดเวลารถขนส่งเข้าส่งวัตถุดิบที่โรงงานได้ตั้งแต่เวลา 04:00-06:00
- 2 กำหนดเวลารถขนส่งออกจากโรงงานหลังโหลดวัตถุดิบเสร็จ 09:00-12:00



Shipping Section



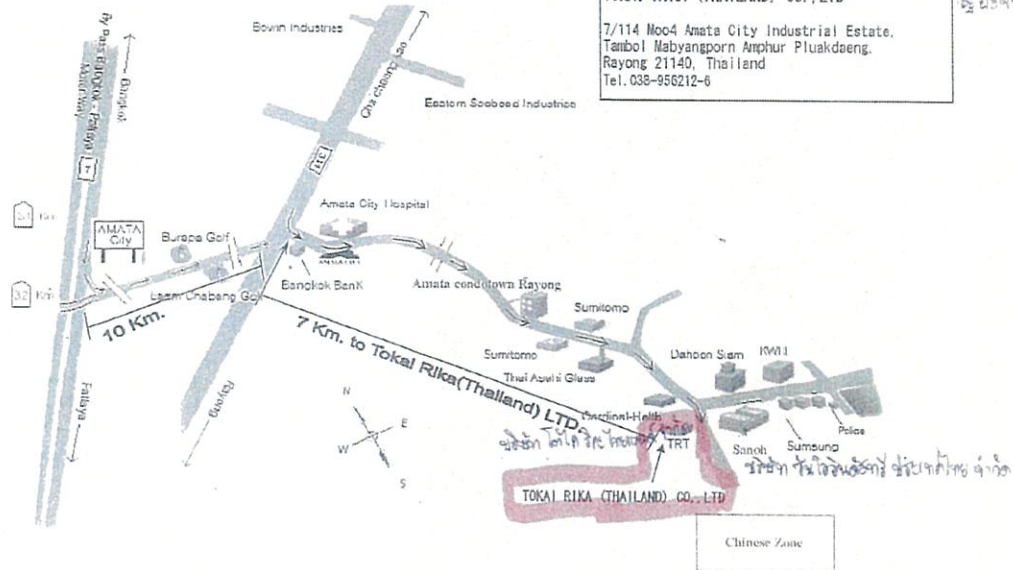


ภาคผนวก 32ข

ตัวอย่างเอกสารแสดงเส้นทางในการขนส่ง

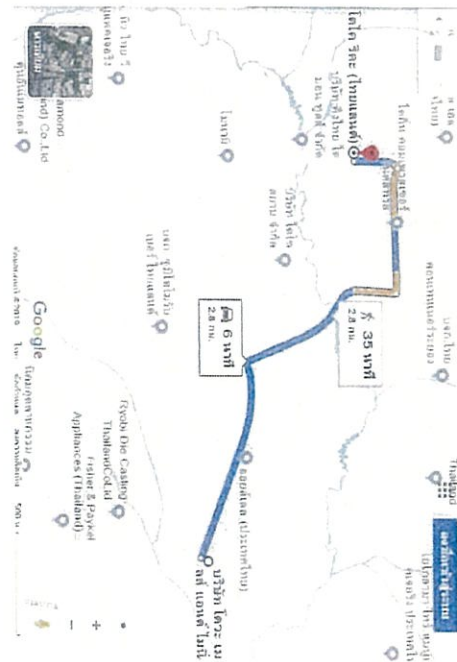


# TOKAI RIKI (THAILAND) CO.,LTD LOCATION MAP



TOKAI RIKI (THAILAND) CO., LTD

7/114 Moo4 Amata City Industrial Estate,  
Tambol Mabyangporn Amphur Pluakdaeng,  
Rayong 21140, Thailand  
Tel. 038-956212-6



จุดนำทาง : บริษัท โตไก ริกะ ไทยแลนด์ จำกัด  
ที่ตั้ง : 7/114 หมู่ 4 นิคมอุตสาหกรรมระยองที่ดินตำบลบางยาง อำเภอปลวกแดง  
จังหวัดระยอง 21140 โทรศัพท์ 0-3895-6212-6



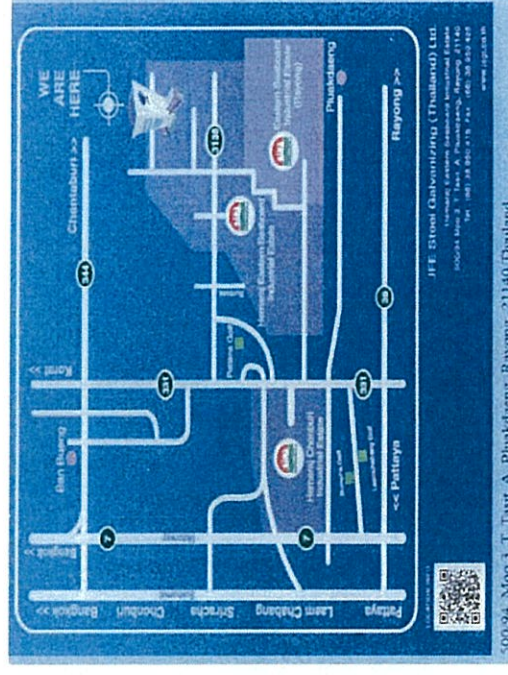
ผู้จำหน่าย : บริษัท เจเอฟที สตีล กัลวาไนซิง (ประเทศไทย) จำกัด

ที่ตั้ง : 500/94, หมู่ 3 ตำบล ตาสีหิ อําเภอลองแคง จังหวัดระยอง ประเทศไทย 21140

โทรศัพท์ 033-010-715-18



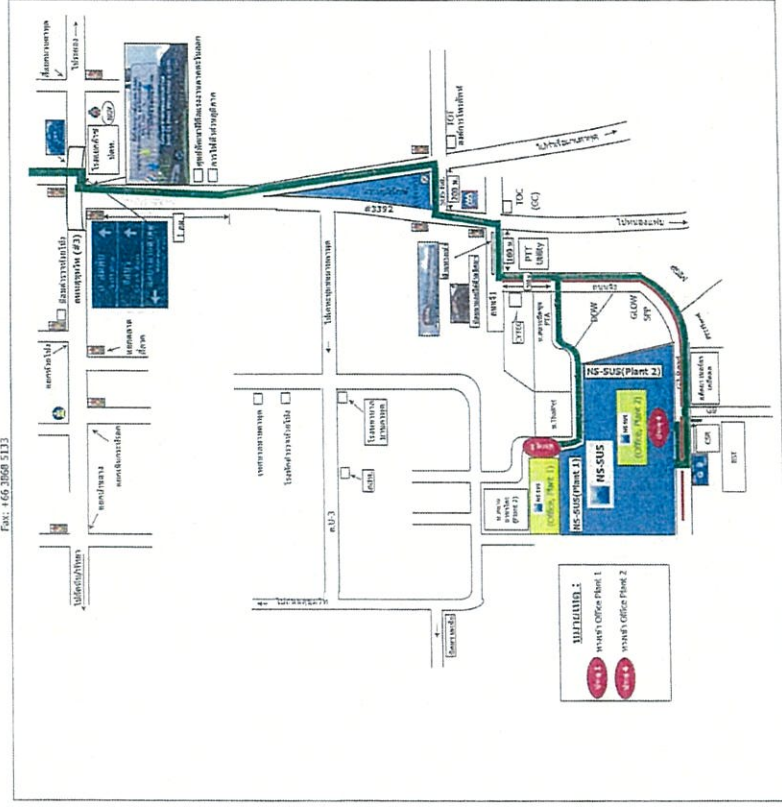
แผนที่ บริษัท เจเอฟที สตีล กัลวาไนซิง (ประเทศไทย) จำกัด



แผนที่ บริษัท อีเอส-สยามยูไนเต็ดสตีล จำกัด

# **NS-Siam United Steel Co., Ltd.**

NS-SUS  
บริษัท อีเอส-สยามยูไนเต็ดสตีล จำกัด  
ถนนสายเอเชีย-กรุงเทพฯ (บางนา)  
12 ซอย 12 ถนนสายเอเชีย-กรุงเทพฯ (บางนา)  
โทรศัพท์ 0-3865-5144 / 0-3865-5155  
โทรสาร 0-3865-5133  
Company Name NS-Siam United Steel Co., Ltd.  
Address (Emsart) Eastern Industrial Estate (Mapleland)  
12, Soi 12, Pakon Songkroin Road, Mapleland Sub District, Bang Na District, Bangkok 10150 Thailand  
Tel: 666 3865 5144 / 666 3865 5155  
Fax: 666 3865 5133



ลูกค้าหลัก : บริษัท อีเอส-สยามยูไนเต็ดสตีล จำกัด  
ที่ตั้ง: 12 ซอย 12 ถนนสายเอเชีย-กรุงเทพฯ (บางนา)  
เขต/ตำบล เมืองระยอง จังหวัด ระยอง รหัสไปรษณีย์ 21150  
โทรศัพท์ 038-685-144 038-685-155







ภาคผนวก 33ข

เอกสารความปลอดภัยด้านเคมีภัณฑ์ (SDS)

THE UNIVERSITY OF CHICAGO

THE UNIVERSITY OF CHICAGO PRESS

# SAFETY DATA SHEET

Print Date: May 13, 2019

## Section 1: Product & Company Information

Product Identifier: Sodium Thiosulfate Solution 29 – 30%

Other Means of Identification  
Product Number: No data available

Recommended Use and Restrictions on Use  
Recommended Use: No data available  
Restrictions on Use: No data available

Manufacturer / Importer / Supplier / Distributor  
Information

Company Name: Chemtech Innovation Co., Ltd.33327 Moo 2,  
Address: Kapayngphon, Phakdaeng, Rayong 21140

## Section 2: Hazards Identification

GHS Hazard Classification(s)  
Not classified as hazardous according to OSHA Hazard Communication Standard 29 CFR 1910.1200 (HazCom 2012).

Physical Hazard(s)  
Not classified

Health Hazard(s)  
Not classified

Environmental Hazard(s)  
Not classified

Label Elements  
Signal Word  
No signal word

Hazard Symbol(s)  
No symbol

Hazard Statement(s)  
Not applicable

Precautionary Statements  
General  
Not applicable

Prevention  
Not applicable

Response  
Not applicable

Storage  
Not applicable

Disposal  
Not applicable

Hazard(s) not otherwise classified (HNOC)  
None known

# SAFETY DATA SHEET

Print Date: May 13, 2019

## Section 3: Composition/Information on Ingredients

Mixture	Chemical Identity <sup>2</sup>	Common Name/Synonym(s)	CAS # <sup>1</sup>	Weight %	Impurity or Stabilizing Additive
Sodium Thiosulfate			7772-98-7	29 – 30%	No

- 1 Information regarding the composition and the percent ranges of the mixtures, ingredients are not presented as it Confidential Business Information (CBI). Where a medical emergency exists (as determined by medical professional), timely disclosure of CBI is assured. The information omitted pertains to only the names of the substances and the concentration in the mixture (product) and can only be requested by a doctor/physician or Local/State/Provincial or Federal Authority
- 2 Non-hazardous ingredients are not presented as to protect the proprietary formula of the product
- 3 "—" indicates ingredient is a mixture and contains multiple ingredients or may have no identifying CAS number

## Section 4: First-Aid Measures

### General Information

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Wash contaminated clothing before reuse.

### Inhalation

Move to fresh air immediately. If breathing is difficult, give oxygen. Seek medical attention, if you feel unwell.

### Skin Contact

Remove contaminated clothing and wash exposed area thoroughly with soap and water. Seek medical attention, if you feel unwell.

### Eye Contact

Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Check for and remove any contact lenses. Seek medical attention, if you feel unwell.

### Ingestion

If swallowed, DO NOT induce vomiting. Rinse mouth. If conscious give 1 to 8 ounces of water to dilute material. Seek medical attention, if you feel unwell.

### Most important symptoms/effects, acute and delayed

Symptoms  
No data available

Indication of immediate medical attention and special treatment needed

### Hazards

No data available.  
Treatment  
No data available.

## Section 5: Fire-Fighting Measures

General Fire Hazards  
No data available.

### Suitable (and Unsuitable) Extinguishing Media

Suitable Extinguishing Media  
Use extinguishing media appropriate for surrounding fire.  
Unsuitable Extinguishing Media  
No data available.

### Specific Hazards Arising from the Chemical

When subjected to excess heat, product releases additional sulfur dioxide gas.

### Special Protective Equipment and Precautions for Firefighters

Special Fire-Fighting Equipment Procedures  
Use water spray to keep containers cool and knock down fumes.

### Special Protective Equipment for Fire-Fighters

As in any fire, wear self-contained breathing apparatus pressure-demand (OSHA/NIOSH approved or equivalent) and full protective gear.

## Section 6: Accidental Release Measures

### Personal Precautions, Protective Equipment and Emergency Procedures



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No data available.

## Methods and Materials for Containment and Clean-Up

Steps should be taken to contain spilled liquids and prevent discharges to streams or sewer systems.

## Notification Procedures

No data available.

## Environmental Precautions

No data available.

## Section 7: Handling and Storage

### Precautions for Safe Handling

Handle all chemicals with respect. Keep separated from incompatible substances. Handle only with equipment, materials and supplies specified by their manufacturer as being compatible and appropriate for use with this product.

### Conditions for Safe Storage, including any incompatibilities

Store at appropriate temperature to protect from freezing or crystallization. Consult the appropriate SDS Product Bulletin for temperature recommendations. Do not store this material near food, animal feed or drinking water. Store in well-ventilated area. Store away from excessive heat (e.g. steam pipes, radiators), and from reactive materials. Keep container tightly closed when not in use.

## Section 8: Exposure Controls/Personal Protection

### Control Parameters

#### Occupational Exposure Limits

The product does not contain any relevant quantities of hazardous materials with critical values that have to be monitored in the workplace.

#### Biological Limit Values

The product does not contain any relevant quantities of hazardous materials with assigned biological limit values.

### Appropriate Engineering Controls

No data available.

### Individual protection measures, such as personal protective equipment (PPE)

Good general ventilation typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Eye wash facilities and emergency shower must be available when handling this product.

#### Eye/Face Protection

Wear safety glasses with side shields (or goggles) and a face shield.

#### Skin Protection

##### Hand Protection

Wear appropriate chemical resistant gloves.

##### Other

Wear appropriate chemical resistant clothing.

#### Respiratory Protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, canister or canister. Contact health and safety professional or manufacturer for specific information.

### Hygiene Measures

When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated footwear that cannot be cleaned. Wash hands before breaks and immediately after handling the product. Wash contaminated clothing before reuse. Avoid contact with eyes, skin, and clothing.

## Section 9: Physical and Chemical Properties

### Appearance:

Physical State:

Liquid

Color:

Colorless to Amber

Odor:

Sulfur Like

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Order Threshold: No data available.

pH:

8.0 – 11.0

### Melting Point/Freezing Point:

147°/-10°C

### Initial Boiling Point and Boiling Range:

217°/103°C Estimated

### Flash Point:

No data available.

### Evaporation Rate (butyl acetate = 1):

No data available.

### Flammability (solid, gas):

No data available.

### Upper/Lower Limit on Flammability or Explosive Limits

No data available.

### Flammability Limit – Upper

No data available.

### Flammability Limit – Lower

No data available.

### Explosive Limit – Upper

No data available.

### Explosive Limit – Lower

No data available.

### Vapor Pressure:

No data available.

### Relative Density (air = 1):

1.26 to 1.50 @ 77°/25°C

### Solubility(ies):

Dilutable

### Solubility (other):

No data available.

### Partition coefficient (n-octanol/water):

No data available.

### Auto-Ignition Temperature:

No data available.

### Decomposition Temperature:

No data available.

### Viscosity:

No data available.

### Other Information:

158.1

Molecular Weight:

Na<sub>2</sub>SO<sub>3</sub>

Formula:

## Section 10: Stability and Reactivity

### Reactivity

No data available.

### Chemical Stability

Material is stable under normal conditions.

### Possibility of Hazardous Reactions

No data available.

### Conditions to Avoid

Avoid exposure to excessive heat of dried materials and contact with strong acids.

### Incompatible Materials

Avoid contact with the following Strong acids.

### Hazardous Decomposition Products

If dried material is overheated, decomposition may yield sulfur dioxide – toxic fumes.

## Section 11: Toxicological Information

### Information on routes of exposure

Ingestion: May be harmful if swallowed.

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.

Skin Contact: May cause irritation.

Eye Contact: May cause irritation.

### Information on Toxicological Effects

Acute Toxicity (List all possible routes of exposure)

Oral

No data available.

Dermal

No data available.

Inhalation

No data available.

Repeated Dose Toxicity

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No data available.

**Skin Corrosion/Irritation**  
No data available.

**Serious Eye Damage/Eye Irritation**  
No data available.

**Respiratory/Skin Sensitization**  
No data available.

**Carcinogenicity**  
IARC Monographs on the Evaluation of Carcinogenic Risks to Humans  
No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**US National Toxicology Program (NTP) Report on Carcinogens**  
No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.  
**US OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)**  
No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Germ Cell Mutagenicity**

**In Vitro**

No data available.

**In Vivo**

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.

**Other Effects**

No data available.

## Section 12: Ecological Information

**Ecotoxicity**

**Acute Hazards to the Aquatic Environment**

**Fish**

No data available.

**Aquatic Invertebrates**

Sodium Thiosulfate NOEC (Daphnia magna, 48 h): 520 mg/l

**Toxicity to Aquatic Plants**

No data available.

**Chronic Hazards to the Aquatic Environment**

**Fish**

No data available.

**Aquatic Invertebrates**

No data available.

**Toxicity to Aquatic Plants**

No data available.

**Persistence and Degradability**

**Biodegradation**

There are no data on the degradability of this product.

**BOD/COD Ratio**

No data available.

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**Bioaccumulative Potential**  
Bioconcentration Factor (BCF)  
No data available on bioaccumulation.  
Partition Coefficient n-octanol / water (log Kow)  
No data available.

**Mobility in Soil**

No data available.

**Other Adverse Effects**

No data available.

## Section 13: Disposal Considerations

**Disposal Instructions**

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This material and its container must be disposed of as hazardous waste. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container. Dispose of contents/container in accordance with local/regional/national/international regulations.

**Contaminated Packaging**

Handle contaminated packages in the same way as the substance itself. Empty containers may retain hazardous residue and explosive vapors. Keep away from heat, sparks, and flames. Do not cut, puncture, or weld on or near this container. Follow label warnings until container is thoroughly cleaned or destroyed.

## Section 14: Transportation Information

**US Department of Transportation (DOT)**

This material is not regulated as a hazardous material for transport by the U.S. Department of Transportation in accordance with 49 CFR 172.101.

## Section 15: Regulatory Information

**US Federal Regulations**

**Toxic Substance Control Act (TSCA), Chemical Substance Inventory, Section 8(b)**

This product or ingredient(s) are listed on the TSCA inventory. Any impurities present in this product are exempt from listing.

**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Hazardous Substance List (40 CFR 302.4)**

No chemical(s) in this material are subject to the reporting requirements of CERCLA.

**Clean Air Act (CAA), Section 112(r)**

No chemical(s) in this material are subject to the reporting requirements of CAA.

**Emergency Planning and Community Right-To-Know Act (EPCRA)**

**EPCRA 302 Extremely Hazardous Substance**

No chemical(s) in this material are subject to the reporting requirements of SARA Title III, Section 302.

**EPCRA 304 Emergency Response Notification**

No chemical(s) in this material are subject to the reporting requirements of SARA Title III, Section 304.

**EPCRA 311/312 Emergency and Hazardous Materials Reporting**

Fire Hazard: No

Sudden Release of Pressure: No

Reactive: No

Acute (Immediate) Health Hazard: No

Chronic (Delayed) Health Hazard: No

**EPCRA 313 Toxic Chemical Release Inventory (TRI) Reporting**

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

**US State Regulations**

**California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65)**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**Important Note:** Due to the changing nature of regulatory requirements, the information in this document should NOT be considered all inclusive or authoritative. Users should make their own investigations to determine the suitability of the information for their particular purposes. International, Federal, State and Local regulations should be consulted to determine compliance with all required reporting requirements.

## Section 16: Other Information

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## Hazardous Materials Identification System (HMIS®) Classification

Health Hazard: 1  
Chronic Health Hazard: 1  
Flammability: 0  
Reactivity: 0  
(Hazard Rating: 0 – Minimal / 1 – Slight / 2 – Moderate / 3 – Serious / 4 – Severe)

## National Fire Protection Association (NFPA 704) Rating

Health Hazard: 1  
Fire Hazard: 0  
Special: N/A  
(Hazard Rating: 0 – Minimal / 1 – Slight / 2 – Moderate / 3 – Serious / 4 – Severe)

Prepared By: Regulatory Manager

Version #: 001

Issue Date: August 26, 2015

Revision Date: -

Revisions: -

## Key to Abbreviations and Acronyms

ATE - Acute Toxicity Estimate	ACGIH - American Conference of Industrial Hygienists
BCF - Bioconcentration Factor	AHA - American Industrial Hygiene Association
EC50 - Effective concentration, 50%	BB - Biological Exposure Indices
IDHL - Immediately Dangerous to Life and Health	CAS - Chemical Abstracts Service
Kg - Kilogram	DOT - US Department of Transportation
L - Liter	EPA - US Environmental Protection Agency
lb - Pound	GHIS - Globally Harmonized System of Classification and Labeling of Chemicals
LC50 - Lethal Concentration, 50%	IARC - International Agency for Research on Cancer
LD50 - Lethal Dose, 50%	IATA - International Air Transport Association
mg - milligram	IBC - Intermediate Bulk Container
ml - milliliter	IMDG - International Maritime Dangerous Goods
N/A - Not Applicable	NIOSH - National Institute for Occupational Safety and Health
N/D - Not Determined	NTP - National Toxicology Program
PEL - Permissible Exposure Limit	OSHA - US Occupational Health and Safety Administration
REL - Recommended Exposure Limit	SARA - US EPA Superfund Amendments and Reauthorization Act
STEL - Short-term Exposure Limit	TSCA - US EPA Toxic Substances Control Act
TWA - Time weighted average	UN - United Nations

## References

HSD8® - Hazardous Substances Data Bank

## Disclaimer

The information in this SDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS. The conditions or methods of handling, storage, use, and disposal of the product are beyond our control and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.



## 8981 PIRCHY COOLING WATER TREATMENT

### APPLICATION:

Mineral crystallization on cooling system heat transfer surfaces is the chief cause for cooling system failures. Loss of heat conduction causes loss of cooling efficiency and may cause excessive energy consumption. If mineral deposits are formed high compressor pressures or temperatures will cause the refrigeration equipment to consume higher electrical energy. In process cooling unit processes loose efficiency. In either case loss of efficiency can lead to a complete system shut down.

### SAFETY AND HANDLING PROCEDURE:

This product is a slightly alkaline liquid. It can be handled using the standard precautionary procedures associated with industrial chemicals of this type

### FEEDING TECHNIQUE:

Inject directly in to the condenser water recirculating line or the basin of the cooling tower.

### CONTROL:

Maintain a residual of 2 to 6 parts per million of active 8981 in the system at all times. Contact your local representative for further information on analytical testing

### DOSAGE:

Initially change the system at the rate of 26 ounces per 1,000 gallons of system capacity. Maintain system treatment by feeding 8981 at the rate of 4 to 6 ounces per 1,000 gallons of make-up water.

### PHYSICAL PROPERTIES:

pH of 1% Solution.....6.0  
Pounds-per-Gallon.....8.5  
Physical Appearance.....Clear Liquid  
Odor.....Mild  
Flash Point.....NA

8981 is formulated to meet cooling tower needs for high mineral control and service requirements. Especially, cooling lowers where the make-up water has high mineral content. It's exceptional ability to hold high concentrations of minerals (such as calcium and magnesium) in solution prevents damage due to new mineral deposit formation. 8981 is slightly alkaline for use in pH neutral waters where pH and oxygen corrosion control is needed, but, is

## MATERIAL SAFETY DATA SHEET

**PRODUCT: 8981**

### SECTION I : MANUFACTURER INFORMATION.

### SECTION II : INGREDIENT INFORMATION.

Ingredient	CAS Number	% By Weight	OSHA	ACGIH LV
Phosphonic acid	6419-19-9	< 15	NA	NA
Carboxylate polymer, non-hazardous	None	< 15	NA	NA
Acrylic polymer, non-hazardous	None	< 15	NA	NA
Sodium hydroxide	1310-73-2	< 5	2 mg/m3	2 mg/m3
Potassium hydroxide	1310-50-3	1.0-3.0	2 mg/m3	2 mg/m3

### SECTION III - HAZARDS IDENTIFICATION.

**EYES.** This material will cause severe eye irritation upon direct contact. Exposure to vapor, mist or dust will also be irritating.

**SKIN.** This material will cause irritation and/or burning of skin. Prolonged or repeated contact may cause irreversible damage. Persons with pre-existing skin disorders may be more susceptible to the affects of this material.

**INGESTION** ingestion of this material will cause damage to tissues contact Small amounts of this product Aspirated into the respiratory system during ingestion or vomiting may cause pulmonary injury.

**INHALATION** Inhalation may cause irritation of the mucous membranes and respiratory tract Symptoms may include coughing, bloody nose, and sneezing. Severe overexposures may cause Lung damage.

CARCOCCAXTCTIY: LARC:N NTP:N OSHA: N

### SECTION IV - EMERGENCY AND FIRST AND HAZARD

**EYES,** Flush with large amounts of fresh water for 15 minutes, lifting upper and lower lids occasionally. Contact a physician immediately for further direction.

**SKIN:** remove contaminated clothing and launder before reuse, Flush exposed with large Amounts of fresh water.

**INGESTION:** Do not induce vomiting. Give several glasses of water for dilution affect. If vomiting

Administer additional fluids. Never give anything by mouth to an unconscious person. Contact

a Physician immediately for further instructions.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** None known.

#### SECTION V- FIRE FIGHTING MEASURE,

Flash Point (closed cup, °F) : NA

**EXTINGUISHING MEDIA :** Foam, dry chemical, water spray.

**SPECIAL FIRE FIGHTING PROCEDURES ,** firefighters should wear appropriate protective equipment including respiratory protection as condition warrant stop spill / release if it can be done without risk.

Move undamaged container from fire area if it can be done without risk. Water spray may be useful in cooling equipment and containers exposed to heat and flame. Avoid spreading burning material with water used for cooling purposes.

**UNUSUAL FIRE** a explosion hazards, None know.

#### SECTION VI - ACCIDENTAL REREASE INFORMATION:

Spill response. Only trained personnel with proper protective gear should be permitted in the area. stop spill at source, reclaim material if possible for reuse. Containerize contaminated material for disposal after all visible trace have been removed, flush area thoroughly with water. Dispose of all waste in accordance with local status and federal regulations. Care must be taken when using or disposing of chemical materials and for their containers to prevent environmental contamination. water handling procedure. see section XII

#### SECTION VII - HANDLING AND STORAGE:

**Handling Procedures:** Eyewash fountain recommended in work area. Do not use pressure to empty container. Do not cut, grind, weld, or drill on or near this container. Container, even when empty, can contain product and vapor, always obey hazard warning and handle empty container as if were full. Storage procedures: Store this material in a cool, dry, Well ventilated area away from heat and all source of ignition, Keep container tightly closed when not in use. Store only in approved containers that have been properly labeled, Protect container from physical damage.

#### SECTION VIII - EXPOSURE CONTROLS CHEMICAL PROTECTION.

**EYE protection.** use safety glasses. Where contact is likely. splash-proof chemical goggles

are recommended. if vapor cause eye discomfort Use a full-face respiration

**SKIN PROTECTION:** Impervious gloves, apron, face shield, and boots should be worn when handling this material. Respiratory protection. Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required. Use an approved air - purifying respirator. When exposure guidelines may be greatly exceeded use an approved positive pressure self-contained breathing apparatus.

**ENVIRONMENTAL CONTROLS,** Maintain airborne concentrations below the exposure guidelines.

Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations.

**HYGIENIC PROCEDURES:** Never touch face with hands or gloves that may be contaminated with Product. Wash thoroughly with soap and water after handling product.

#### SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES:

Specific gravity, 1280

% Volatile : 50+

Solubility: complete in water.

Apparent and odor, Clear, light tan color, mild odor,

#### SECTION X - STABILITY AND REACTIVITY:

**General:** This product is considered a stable material under normal and anticipated storage and Handling conditions.

**INCOMPATIBILITY:** Strong oxidisers, acidic materials.

**HAZARDOUS DECOMPOSITION PRODUCTS,** buffer compounds.

#### SECTION XI - Toxicological information.

Toxicological properties of this chemical mixture have not been thoroughly investigated.

#### SECTION XII – Ecological properties,

Ecological properties of this chemical mixture have not been thoroughly investigated.

#### SECTION XIII - Disposal properties.

Dispose of all wastes in accordance with local, local, and federal regulations.

SECTION XIV - TRANSPORTATION INFORMATION:

Caustic alkali liquids. (potassium & sodium hydroxide), UN 1719,II

RQ (Ib8), 5000

SECTION XV - REGULATION INFORMATION:

Osha status, This product is considered hazardous under the criteria of the federal OSHA

Hazard communication standard, 29 CFR 1910. 1200.

SARA HAZARD CATEGORY:

Acute : Y Chronic: N

Reactive: N

Fire: N

R-O-P: N

SECTION XVI - OTHER INFORMATION:

Demis rating: Health : 2

Flammability: 0

Reactivity: 0

Personal Protection : C

DISCLAIMER: The information on this material safety Data Sheet the last information and data

That we have on hazards, properties, and handling of this product under the recommended

Conditions of use. As the use of this material is subject to conditions beyond the sellers control.

Seller makes no warranty express or implied as to this material or its use other than is a chemical

Analysis when packed. The total liability of seller shall be limited to the purchase

Price of the product.

DATE PREPARED : 12/12/96

DATE PRINTED : 01/14/97





## Safety Data Sheet

Sodium Hydroxide 50%

## Section 1. Identification of the Substance or Mixture and of the Supplier

- Product name : Sodium Hydroxide 50%
- Synonyms : Caustic Soda
- Formula : NaOH
- Molecular Weight : 39.947 AMU

**Recommended use and restrictions on use:** Industrial use or laboratory chemicals**Supplier :**

- Chemtech Innovation Co., Ltd.
- 333/37 Moo 2, T. Mapyangphong, Pluckdaeng 21140
- Emergency Telephone No: 033-650-796

## Section 2. Hazards Identification

**Classification of the substance or mixture GHS-US classification :**

- Skin corrosion / irritation Category 1B
- Serious eye damage / eye irritation Category 1
- Acute hazards to the aquatic environment Category 3

**Label elements:****Signal word :** Danger**Hazard statements:**

- Causes severe skin burns and eye damage
- Serious eye damage
- Harmful to aquatic life

**Other hazards:** Not assigned.**Prevention:**

- P260 : Do not breathe the mist, vapors, spray.
- P264 : Wash hands thoroughly after handling.
- P273 : Avoid release to the environment.
- P280 : Wear protective gloves, protective clothing, eye protection, face protection.
- P301 + 330 + 331 : IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

- P303 + 361 + 353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P305 + 351 + 338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P310 : Immediately call a POISON CENTER or doctor/physician.
- P363 Wash contaminated clothing before reuse.
- P405 Store locked up.

## Section 3. Composition/Information on Ingredients

No.	Composition	CAS No.	Weight Percent (%)
1	Sodium Hydroxide	1310-73-2	50
2	Water	7732-18-5	50

## Section 4. First Aid Measures

- Ingestion:** If material is ingested, immediately contact a physician or poison control centre. Have victim rinse mouth thoroughly with water. Do not induce vomiting without medical advice. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Skin contact:** Take off contaminated clothing and shoes immediately. Wash off immediately with plenty of water. Keep warm and in a quiet place. Get medical attention immediately. Wash clothing separately before reuse.
- Inhalation:** Move to fresh air. If breathing is difficult, give oxygen. Get medical attention immediately.
- Eye contact:** SPEED IS ESSENTIAL: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. In the case of difficulty of opening the lids, administer an analgesic eye wash (oxypuprocaine). Consult a physician. Continue rinsing eyes during transport to hospital.

## Section 5. Fire Fighting Measures

- Unsuitable extinguishing media: Do not spray directly with water.
- Suitable extinguishing media: Dry powder, carbon dioxide, foam, water mist
- Special hazards arising from the substance or mixture: exothermic reaction (may explode)
- Advice for firefighters: SCBA

## Section 6. Accidental Release Measures

**Personal precautions:** Evacuate people from chemical spill area, move fire source. Do not touch the chemical directly. Do not inhale the chemical, Prohibit action that generates heat or sparks.**Personal protective equipment :** Use of personal protective equipment (e.g., gloves, masks, eyewear).**Environmental precautions:** Prevent further leakage or spillage if safe to do so. Do not contaminate water.

**Methods and material for containment and cleaning up:**

- neutralize with acid solution.
- Take up liquid spill into absorbent material, e.g.: sand, saw dust, kieselguhr. Scoop absorbed substance into closing containers.

**Section 7. Handling and Storage****Precautions for safe handling:**

- Wear appropriate protective equipment (Reference: Article 8)
- To avoid contact with chemicals.
- Use only in well-ventilated areas.
- To avoid thermal decomposition, do not overheat.

**Conditions for safe storage, including incompatibilities:**

- Keep container closed.
- Keep in a well-ventilated place.
- Store in a dry area
- Keep cool.

**Section 8. Exposure Controls/Personal Protection****Control parameters :**

- ACGIH ACGIH Ceiling : 2 mg/m<sup>3</sup> (Sodium Hydroxide)
- OSHA OSHA PEL (TWA) : 2 mg/m<sup>3</sup> (Sodium Hydroxide)
- IDLH US IDLH : 10 mg/m<sup>3</sup> (Sodium Hydroxide)
- NIOSH NIOSH REL (ceiling) : 2 mg/m<sup>3</sup> (Sodium Hydroxide)

**Appropriate engineering controls:** Provide appropriate exhaust ventilation at machinery.**Individual protection measures:**

- **Respiratory protection:** In case of insufficient ventilation, wear suitable respiratory equipment.
- **Eye protection:** Chemical-resistant goggles or a full-face shield must be worn.
- **Hand protection:** Impervious gloves
- **Hygiene measures:** Take off contaminated clothing and shoes immediately.  
Wash contaminated clothing before re-use.  
When using, do not eat, drink or smoke.  
Wash hands before breaks and at the end of workday.  
Handle in accordance with good industrial hygiene and safety practice.

**Section 9. Physical and Chemical Properties**

- **Physical State:** Liquid
- **Color :** Colorless
- **Odour :** None
- **Odor threshold:** No data
- **pH :** 14
- **Melting/freezing point:** 12 C

- **Boiling point :** 143 C
- **Flash point :** No data
- **Evaporation rate:** < 1
- **Flammability (solid, gas):** No data
- **UEL/LEL (%) :** No data
- **UEL/LFL (%) :** 1.2 hPa (20 C)
- **Vapor density:** No data
- **Relative density:** 1.5
- **Water solubility:** miscible
- **Partition coefficient n-Octanol/Water :** No data
- **Autoignition temperature:** No data
- **Thermal Decomposition :** No data
- **Viscosity :** 79 mPa (20 C)
- **Specific gravity :** 1525 kg/m<sup>3</sup>

**Section 10. Stability and Reactivity**

- **Reactivity:** Violent exothermic reaction with water (moisture); (increased) risk of fire. On heating: release of corrosive gases/vapours. Absorbs the atmospheric CO<sub>2</sub>. Violent exothermic reaction with (some) acids. May be corrosive to metals. Reacts with (some) metals: release of highly flammable gases/vapours (hydrogen).
- **Chemical stability:** Stable under normal conditions. Absorbs atmospheric CO<sub>2</sub>. Hygroscopic. Not established.
- **Possibility of hazardous reactions :** React with organic matter and exothermic reactions occur when mixed with acid
- **Conditions to avoid :** Direct sunlight. Extremely high or low temperatures.
- **Incompatible materials:** Strong acids, metals.
- **Hazardous decomposition products:** Sodium oxide. Thermal decomposition generates : Corrosive vapors.

**Section 11. Toxicological Information**

- Skin corrosion/irritation : Causes severe skin burns and eye damage.
- Serious eye damage/irritation : Causes serious eye damage.
- ATE US (dermal) : 1350 mg/kg body weight (Sodium Hydroxide)

**Section 12. Ecological Information****Toxicity:**

- Ground water pollutant; harmful to fishes. Harmful to invertebrates (Daphnia). pH shift.
- LC50 fish 1 : 45.4 mg/l (Sodium Hydroxide)

**Persistence and degradability :** No data available.**Section 13. Disposal Considerations**

**Waste disposal methods and Contaminated packaging:** In accordance with local and national regulations.

## Section 14. Transport Information

- ADR/RID: UN1824, SODIUM HYDROXIDE SOLUTION, Class 8
- IATA: UN1824, SODIUM HYDROXIDE SOLUTION, Class 8
- IMDG: UN1824, SODIUM HYDROXIDE SOLUTION, Class 8



## Section 15. Regulatory Information

- Hazardous Substance Act B.E. 2535
- Factory Act B.E. 2535
- Notification of the Department of Industrial Works on Chemical and Hazardous Substance Storage Handbook B.E.
- Occupational Safety, Health and Environment Act B.E. 2554

## Section 16. Other Information

- NFPA



- Revision date: 10/05/2565

Chemtech  
Innovation





## Safety Data Sheet

The content and format of this SDS is accordant with GHS standard.

### 1. Identification of the substance/preparation and of the company/undertaking

**.Product name:** Zinc Dross., Zinc Dust  
**.Recommended use of the chemical and restrictions on use:** Materials of zinc smelter.  
Uses advised against: Do not use it in an application which may contaminate food or do harm to health.  
**.Manufacturer:** DOWA METALS & MINING (THAILAND) CO., LTD.  
**.Address:** 7/395 Moo 6, Amata City Industrial Estate (Rayong), T.Mahayangporm, A.Pluakdaeng, Rayong 21140 Thailand  
Tel: +66-33-010-714  
Fax: +66-33-017-648  
Email: info@dmmt.co.th  
**.Further information obtainable from:** DOWA METALS & MINING (THAILAND) CO., LTD.  
**.Information in case of emergency:**  
Tel.: +66-33-010-714

### 2. Hazards identification

**Hazards Classification:**

**Physical hazards :**  
Not classified.

**Health hazards :**

Acute toxicity (oral)- Category 4  
Skin corrosion/irritation- Category 2  
Serious eye damage/eye irritation - Category 2A  
Toxic to reproduction-Category 2  
Specific target organ toxicity following single exposure-Category 1 (lung, general toxicity), Category 3  
Specific target organ toxicity following repeated exposure-1 (lung, inhalation)

**Environmental hazards :**

Acute hazards to the aquatic environment-Category 1  
Chronic hazards to the aquatic environment-Category 1

**Signal word: Danger**  
**Symbol :**



**.Hazard Statement:**

H302: Harmful if swallowed.  
H315: Causes skin irritation.  
H319: Causes serious eye irritation.  
H335: May cause respiratory irritation.  
H361: Suspected of damaging fertility or the unborn child.  
H370: Causes damage to organs (lung, general toxicity).  
H372: Causes damage to organs (lung, inhalation) through prolonged or repeated exposure.  
H400: Very toxic to aquatic life.  
H410: Very toxic to aquatic life with long lasting effects.

### .Precautionary Statements:

P260: Do not breathe dust/fume/gas/mist/vapours/spray.  
P264: Wash hands thoroughly after handling.  
P270: Do not eat, drink or smoke when using this product.  
P271: Use only outdoors or in a well-ventilated area.  
P273: Avoid release to the environment.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.

### .Response Precautionary Statements:

P301+P317: IF SWALLOWED: Get medical help.  
P330: Rinse mouth.  
P332+P317: If skin irritation occurs: Get medical help.  
P362: Take off contaminated clothing and wash before reuse.  
P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305+P351+P338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do-continue rinsing.  
P337+P317: If eye irritation persists: Get medical help.  
P308+P316: IF exposed or concerned: Get emergency medical help immediately.  
P391: Collect spillage.

### .Storage precautionary statements :

P403+P233: Store in a well-ventilated place. Keep container tightly closed.  
P405: Store locked up.

### .Disposal precautionary statements :

P501: Dispose of contents/container according to relevant local and national regulations.

### 3. Composition/information on ingredients

**Product description:** substance ( ), preparation/mixture (✓)

Ingredients	CAS number	EC number	% by weight
Zinc	7440-66-6	231-175-3	75.0%
Zinc Oxide	1314-13-2	215-222-5	15.0%
Chlorine	7782-50-5	231-959-5	5.0%
Aluminium Oxide	1344-28-1	215-691-6	5.0%

### 4. First aid measures

**Persons using this product should consult a physician or other medical professional if an accident involving this product results in injury. Specific first-aid measures are as follows:**

**.Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
**.Skin contact:** Immerse in cool water/wrap in wet bandages. If skin irritation occurs: get medical advice/attention.  
Take off contaminated clothing and wash before reuse.  
**.Eyes contact:** Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do-continue rinsing. If irritation persists, get medical attention.  
**.Ingestion:** Rinse mouth. Induce vomiting immediately under professional instructions. Never give anything to unconscious persons. Call a POISON CENTER or doctor/physician if you feel unwell.  
**.Acute effect and delayed effect:** Acute effect: It causes serious eye irritation and skin irritation. Inhaling powder may cause respiratory irritation. Delayed effect: Suspected of damaging fertility or the unborn child. It causes damage to organs (lung, inhalation) through prolonged or repeated exposure.  
**.Personal protective equipment:** Wear protective gloves/protective clothing/eye protection/face protection. Wear Respirators and safety goggles when working in a dusty environment or exposure limits are exceeded.  
**.Indication of immediate medical attention and treatment needed:** Treat according to symptoms.

### 5. Fire-fighting measures

**.Suitable extinguishing media:** Co-ordinate firefighting measures to the fire surroundings water spray, foam, dry chemical powder, CO<sub>2</sub>, dry sand.  
**.Unsuitable extinguishing media:** Water jet.  
**.Special hazards arising from the chemical:** No specific fire or explosion hazard.  
**.Special fire-fighting method and protective equipment for fire-fighters:**  
 Advice for firefighters May emit irritating, corrosive and toxic fumes in case of fire.  
 Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.  
 This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

### 6. Accidental release measures

**.Personal precautions, protective equipment and emergency procedures:**  
**For non-emergency personnel:**  
 Personal precautions: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas.  
 Keep unnecessary and unprotected personnel from entering.  
 Do not touch or walk through spilt material.  
 Avoid breathing dust. Provide adequate ventilation.  
**For emergency responders:**  
 Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.  
**.Environmental precautions:**  
 Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.  
**.Methods and material for containment and cleaning up:**  
 Move containers from spill area. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Vacuum or sweep up material and place in a designated, labelled waste container.  
 Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.  
**.Preventive measures of secondary disaster:**  
 Remove all ignition sources promptly (prohibition of smoking, spark, flame in the vicinity).

### 7. Handling and storage

**.Technical measures:**  
 In the storage area, install adequate light and ventilation systems to handle hazardous materials.  
 Keep away from sources of ignition such as open flame, static discharge, electric sparks, etc.  
**.Precautions for safe handling:**  
 Wear protective gloves/protective clothing/eye protection/face protection.  
 Avoid contact with eyes and skin.  
 Do not breathe dust/fume/gas/mist/vapours/spray.  
 Do not inhale or swallow.  
 Do not eat, drink or smoke when using this product.  
 Use only outdoors or in a well-ventilated area.  
 Contaminated work clothing should not be allowed out of the workplace.  
 Wash hands thoroughly after handling.  
 Avoid release to the environment.  
**.Conditions for safe storage, including any incompatibilities:**  
 Ground all storage containers and use non-sparking tools, equipment.  
 Store in a cool and dark place, away from incompatible materials.  
 Keep away from strong oxidants, acids, alkalis, sulphur, etc.  
 The storeroom should be equipped with proper facilities for accidental leakage.  
 Store in a well-ventilated place. Keep container tightly closed.  
 Store locked up.

### 8. Exposure controls/personal protection

Control parameters:	OSHA PEL-TWA	ACGIH TLV-TWA
<b>.Ingredients</b>	No data available	No data available
Zinc (CAS: 7440-66-6)	No data available	No data available
Zinc Oxide (CAS: 1314-13-2)	5mg/m <sup>3</sup> (fume)	2mg/m <sup>3</sup>
Chlorine (CAS: 7782-50-5)	3 mg/m <sup>3</sup>	0.5ppm
Aluminium Oxide (CAS: 1344-28-1)	10mg/m <sup>3</sup> (total dust)	10mg/m <sup>3</sup> (total dust)

**.Engineering Controls:**  
 Handle the product only under conditions where sufficient ventilation is provided.  
 Install eye washer and safety shower near handling and storage area.

**.Personal Protective Equipment (for workers):**  
**.Protection of Hands:**  
 Rubber or polyethylene (throwaway) gloves.



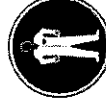
**.Protection of Eyes:**  
 Safety goggles, safety spectacles with side shields, or face shield.



**.Respiratory Protection:**  
 Use an approved respirator (dust-proof) if exposure limits are exceeded or if irritation or other symptoms occur.



**.Protection of Body:**  
 Wear work clothes or other suitable long-sleeved protective clothing and safety shoes.



**.General protective and hygienic measures:**  
 Keep away from foodstuffs, beverages and feed.  
 Wash hands before breaks and at the end of work.  
 Avoid contact with eyes and skin.  
 Do not eat, drink or smoke when using this product.

## 9. Physical and chemical properties

General Information	
Form	Powder
Colour	Gray, ochre
Odour	Odourless
pH Value	No data available
Boiling Range	907°C (zinc)
Melting point/Melting range	420 °C (zinc)
Flash point	Not applicable
Flammable/Explosive Limits-Lower Vol %	No data available
Flammable/Explosive Limits-Upper Vol %	No data available
Specific density	No data available
Relative Vapour density	Not applicable
Vapour pressure	Not applicable
Vapour density	Not applicable
Solubility/Miscibility	Insoluble in water.
n-octanol/Water Partition Coefficient	No data available
Auto-ignition temperature	No data available
Decomposition Temperature	No data available
Viscosity	Not applicable
Odour Threshold Value	No data available
Evaporation Rate	Not applicable
Flammability (solid, gas, etc.)	No relevant classification

## 10. Stability and reactivity

**.Reactivity:** This product is considered to be a non-reactive material under normal and anticipated storage and handling conditions.

**.Chemical stability:** This product is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**.Possibility of hazardous reactions:** It can react violently with strong oxidants, reducing agents, acids, alkalis and sulphur which may result in fire.

**.Conditions to Avoid:** Dust generating and heating.

**.Incompatible materials:** Strong oxidants, reducing agents, acids, alkalis, sulphur, etc.

**.Hazardous decomposition products:** It may release toxic and irritating fume and gas (hydrogen) during thermal decomposition.

## 11. Toxicological information

**.Product Toxicity Data:**

Ingredients	CAS No.	LD 50 /LC 50 (Median lethal dose)
Zinc	7440-66-6	Acute toxicity (Oral) LD50 > 2.000mg/kg (rat) Data source: OECD TG 401
Aluminum oxide (Al2O3)	1344-28-1	Acute toxicity (Oral) LD50 > 5.000mg/kg (rat) Data source: IUCLID (2000)
Zinc Oxide	1314-13-2	Acute toxicity (Oral) LD50 > 5.000mg/kg (rat) Data source: EU-AR (2004)
Chlorine	7782-50-5	Acute toxicity (Oral) LC50: 146ppm (rat) Data source: (EHC 21 (1982), ACGIH (2005))

**.Serious eye damage/eye irritation:** This product is classified as Category 2A.

**.Skin corrosion/irritation:** This product is classified as Category 2

**.Respiratory /Skin sensitizer:** No relevant classification.

**.Germ cell mutagenicity:** No relevant classification.

**.Carcinogenicity:** No relevant classification.

**.Reproductive Toxicity:** This product is classified as Category 2

**.STOT-single exposure:** Category 1 (lung, general toxicity), Category 3 (respiratory irritation)

**.STOT-repeated exposure:** Category 1 (lung, inhalation)

**.Aspiration hazard:** No classification for this product.

**.Effects on or via lactation:** No classification for this product.

## 12. Ecological information

**.Ecotoxicity:**

Zinc (CAS:7440-66-6):

72h-ErC50=0.15mg/L (Pseudokirchneriella subcapitata)

ZincOxide (CAS: 1314-13-2):

48h-LC50= 0.122 mg/L (Daphnia magna)

Chlorine (CAS: 7782-50-5):

96h-LC50=14µg/L (Rainbow trout)

**.Persistence and Degradability:** This product is not easily degradable.

**.Bioaccumulative Potential:** No data available.

**.Mobility in Soil:** No data available.

## 13. Disposal considerations

After solidification by heating, incinerate as the plastic waste in accordance with applicable local, regional and international regulations and standards.

Consult a certified waste trader for professional instructions when disposing or transport the waste to a certificated waste trader for disposal.

Empty containers should be disposed as hazardous waste as residual may remain in it.

Used container should be recycled after cleaning or dispose of in compliance with related laws and local regulations.

## 14. Transport information

**DOT/Air-Transportation- IATA/CAO/Sea-Transportation-IMO/IMDG.:**

**.Proper Shipping Name:** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

**.Hazard Class:** 9

**.UN Code:** 3077

**.Packing Group:** III

**.Packing Group Symbol:**



**.Marine Pollutant (Yes/No):** YES

**.Environmental hazards:** Very toxic to aquatic life with long lasting effects.

**.Special precautions for user:**

Check whether the package is completed or sealed before transporting; make sure no damage of packages and prevent goods from falling down during transporting; the transport vehicle should be equipped with facilities for fire-fighting and accidental release handling; do NOT transport this product together with incompatible substances; stay away from fire and areas of high temperature during stopovers.

**.Transport in bulk according to Annex II of MARPOL 73/78 and IBC code:** Not applicable.



#### 15. Regulatory information

##### Thailand:

##### System of Hazard Classification and Communication of Hazardous Substances 2012 (DIW):

Acute toxicity (oral)- Category 4, Skin corrosion/irritation- Category 2, Serious eye damage/eye irritation-Category 2A, Toxic to reproduction-Category 2, Specific target organ toxicity following single exposure-Category 1 (lung, general toxicity) Category 3 (respiratory irritation), Specific target organ toxicity following repeated exposure-1 (lung, inhalation) , Acute hazards to the aquatic environment-Category 1, Chronic hazards to the aquatic environment-Category 1

.The Enhancement and Conservation of the National Environmental Quality Act B.E 2535: This product is very toxic to aquatic life with long lasting effects. Avoid release into environment. Disposal of wastes must comply with relevant local or national regulations.

.Land Transportation of Hazardous Substances BE2456: The transportation must strictly comply with transport laws and regulations.

##### Other relevant laws and regulations:

.TSCA (Toxic Substance Control Act): All ingredients with specific CAS numbers are listed in the U.S. Toxic Substances Control Act Chemical Substance Inventory List.

##### Clean Water Act:

Zinc (CAS: 7440-66-6) and Zinc Oxide (CAS: 1314-13-2) are listed as Hazardous Substances under the CWA.

Zinc (CAS: 7440-66-6) is listed as Priority Pollutants under the CWA.

.Carcinogenicity categories: No relevant classification.

.REACH Regulation Annex XVII Regulation List: Not listed.

.REACH Regulation Annex XIV Authorization List: Not listed.

#### 16. Other information

**DISCLAIMER:** This information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other material. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use.

##### References:

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)

.Ninth revise edition , UNITED NATIONS , New York and Geneva, 2021.

European Chemicals Agency (ECHA).

GHS SDS Instruction

The final DENR (Department of Environment and Natural Resources) Administrative Order No. 29 Draft.

##### Full description of some acronyms:

GHS-Globally Harmonized System of Classification and Labelling of Chemicals

CAS-Chemical Abstracts Service

EINECS-European Inventory of Existing Commercial Chemical Substances

IMO-International Maritime Organization

IMDG-International Maritime Dangerous Goods

IATA-International Air Transport Association

ICAO-International Civil Aviation Organization

TSCA-Toxic Substance Control Act

OSHA-Occupational Safety and Health Administration

ACGIH-American Conference of Governmental Industrial Hygienists

The issuing date of the latest version: December 13, 2023

SDS Version: 4.0



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## SAFETY DATA SHEET

### SECTION 1. MATERIAL IDENTIFICATION AND INFORMATION

TRADE NAME:	QEMI DF 210 SX
PRODUCT DESCRIPTION:	Silicone Defoamer
FORMULA:	Proprietary
GENERAL USE :	Foam Control for Industrial Application
COMPANY:	Hydro Solution Co.,Ltd. Tel. 02-006-1988 Line@HS89

HMIS			
H	II	F	1
		R	0
		PPE	R

### SECTION 2. COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS / COMPONENTS	CAS REG. NO.	WT %	HAZARDOUS
Polydimethylsiloxane Compound	8050-81-5	10	

### SECTION 3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:	-
POTENTIAL HEALTH EFFECTS:	
EYE :	Direct contact may cause temporary irritation. Avoid eye contact with product at all times.
SKIN :	Effects of short-term exposure are expected to be minimal. Some individuals may experience irritation and discomfort to skin. Avoid prolonged and unnecessary skin contact with product.
INGESTION :	Effects of ingesting small quantities are expected to be minimal. Never taste or swallow product.
INHALATION :	Not expected to be an inhalation hazard. Avoid prolonged exposure to product vapors.
CHRONIC :	No known applicable information.



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เลขประจำตัวผู้เสียภาษี Tax ID : 0105550015926

### SECTION 4. FIRST AID MEASURES

EYE CONTACT :	Immediately flush eyes with a direct stream of water for at least 15 minutes while forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. Get prompt medical attention if irritation develops.
SKIN CONTACT :	Flush skin with water and wash with mild soap and water. Seek medical attention if irritation develops or rash occurs. Remove contaminated clothing and wash before reuse.
INGESTION :	No first aid should be needed. Seek medical attention if large quantities are consumed. Do not induce vomiting except by physician's order. If spontaneous vomiting is inevitable, prevent aspiration by keeping victim's head below the knees.
INHALATION :	No first aid should be needed.
NOTE TO PHYSICIAN :	Treat according to person's condition and specifics of exposure.

### SECTION 5. FIRE FIGHTING MEASURES

FLASH POINT :	None
AUTOIGNITION TEMPERATURE :	Not determined
EXTINGUISHING MEDIA :	Dry chemical, Carbon dioxide, and foam.
FIRE FIGHTING PROCEDURES :	Use water spray to cool containers exposed to flames. Do not enter enclosed or confined workspaces without proper protective equipment. Fire fighting personnel should wear respiratory protection (positive pressure if available). If leak or spill has not ignited, use water spray to disperse the vapors.
LOWER EXPLOSION LIMITS (%) :	-
UPPER EXPLOSION LIMITS (%) :	-
UNUSUAL FIRE HAZARDS :	None known

### SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS :	Use personal protective equipment.
ENVIRONMENTAL PRECAUTIONS :	Build dike to contain flow. Remove free liquid. Contain spill and keep from entering waterways
METHODS FOR CLEANING UP :	Absorb on inert material. Shovel, sweep, or vacuum spill and place in closed container for disposal according to local, state, and federal regulations.



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Tel. 02-006-1988 E-mail : info@hdsolutionthailand.com Line@HSS9  
เลขประจำตัวผู้เสียภาษี Tax ID : 0105550015926

SECTION 7. HANDLING AND STORAGE	
HANDLING PRECAUTIONS :	Keep container tightly closed when handling or storing. Do not dilute product with water and store in diluted form. Exercise good personal and industrial hygiene. Avoid unsanitary conditions, usage, and storage.
STORAGE REQUIREMENTS :	Store this product below 43 degree celsius in a cool, dry, well-ventilated area away from direct sources of heat, moisture, or sunlight. Do not store near strong oxidizing materials. Preferentially store about 25 degree celsius. Protect product from freezing.
SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION	
ENGINEERING CONTROLS	Local Ventilation :None should be needed.
PERSONAL PROTECTIVE EQUIPMENT	
Eye Protection :	Always wear eye protection. Goggles or safety glasses with side shields are recommended.
Hand Protection :	Neoprene rubber or other chemical resistant material such as nitrile or viton may be used.
Skin and body Protection :	Wear chemically-resistant protective clothing
Respiratory Protection :	No respiratory protection should be needed.
Hygiene Measures :	Washing at mealtime and end of shift is adequate.
SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES	
APPEARANCE :	0°C Off white creamy liquid
ODOR:	MELTING POINT : Very little odor
pH (As is):	SOLUBILITY IN WATER, %: 7.00 - 8.50
pH (10% Solution):	VOLATILE BY VOLUME, % 7.00 - 9.00
SPECIFIC GRAVITY, WATER=1:	EVAPORATION RATE, N (BuAe=1) : 1,000-1,200
VISCOSITY, cps (20 rpm):	VAPOR DENSITY, (AIR=1) : 50 - 200
SECTION 10. STABILITY AND REACTIVITY	
CHEMICAL STABILITY:	100 °C Stable under normal temperature and pressure.
MATERIALS TO AVOID :	Strong oxidizing materials.
CONDITION TO AVOID :	See section 7.
HAZARDOUS DECOMPOSITION PRODUCTS :	Incomplete combustion may produce carbon monoxide and other asphyxiants.
HAZARDOUS POLYMERIZATION :	Hazardous polymerization will not occur.



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SECTION 11. TOXICOLOGICAL INFORMATION	
ACUTE ORAL TOXICITY :	Not applicable
ACUTE DERMAL TOXICITY :	Not applicable
ACUTE INHALATION TOXICITY :	Not applicable
SKIN IRRITATION :	-
EYE IRRITATION :	-
SENSITIZATION :	-
CARCINOGENICITY MUTATION :	No
SECTION 12. ECOLOGICAL INFORMATION	
ECOTOXICITY :	Complete information is not yet available.
PERSISTENCE AND DEGRADABILITY :	Complete information is not yet available.
BIOACCUMULATION POTENTIAL :	Complete information is not yet available.
ENVIRONMENTAL FATE :	Complete information is not yet available.
SECTION 13. DISPOSAL CONSIDERATIONS	
WASTE DISPOSAL METHODS :	RCRA (hazard Class (40 CFR 261):When a decision is made to discard this material, as received, it is classified as a hazardous waste? No. State or local laws may impose additional regulatory requirements regarding disposal.
EMPTY CONTAINER WARNINGS :	Empty containers may contain product residue. Follow MSDS and label warnings even after they have been emptied.
SECTION 14. TRANSPORT INFORMATION	
SHIPPING NAME :	N/A
Bill of Lading Description : NOT REGULATED BY THE DEPARTMENT OF TRANSPORTATION	
NOT REGULATED BY THE DEPARTMENT OF TRANSPORTATION	
OCEAN SHIPMENT (IMDG):Not subject to IMDG code.	
HAZARD CLASS :	-
UN NUMBER :	-
PACKING GROUP :	-
LABEL REQUIRED :	-



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SECTION 15. REGULATORY INFORMATION	
EPA REGULATIONS:	Contents of this MSDS comply with OSHA Hazard Communication Standard 29 CFR 1910.1200. TSCA Status :All chemical substances in this material are included on or exempted from listings on the TSCA Inventory of Chemical Substances. EPA SARA Title III Chemical Listings:Section 302 Extremely Hazardous Substances . None/Section 302 Extremely Hazardous Substances : None/Section 312 Hazard Class : None
SECTION 16. OTHER INFORMATION	
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 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.	





## CENTRAL GLASS Co., Ltd.

Issued: December 28,1995  
Revised: June 23, 2010

# Safety Data Sheet

### 1. Chemical Product and Company Identification

Product name: Ammonium Chloride(tablet)  
Product code: CKC-2620  
General Use: Industrial use  
Product Description: No information  
SDS No.: CKC-2620  
Manufacturer  
Company Name: Central Glass Co., Ltd.  
Address: Kowa Hitotsubashi Bldg., 3-7-1 Kanda Nishikicho, Chiyoda-ku, Tokyo 101-0054, Japan  
Section concerned : Chemicals Sales Department  
Phone : +81-3-3259-7307  
Fax : +81-3-3259-7398  
Emergency Number : +81-3-3259-7307

### 2. Hazard identification

#### GHS classification

Acute Toxicity (Oral): Category 4  
Skin Corrosion/Irritation: Category 3  
Eye Irritation: Category 2A-2B  
Reproductive Toxicity: Category 2  
Specific target organ systemic toxicity(single exposure):

Specific target organ systemic toxicity(Repeated exposure): Category 3(Respiratory tract irritant)  
Category 1(Systemic toxicity)

#### GHS label elements

##### Symbol



##### Signal word

Danger

##### Hazard statement

May be harmful if swallowed  
Causes mild skin irritation  
Causes serious eye irritation  
Suspected of damaging fertility or the unborn child  
May cause respiratory irritant

Causes damage to organs(Through prolong or repeated exposure)

##### Precautionary statements

##### Prevention

Do not handle until all safety precautions have been read and understood.  
Use personal protective equipment as required.  
Do not eat,drink or smoke when using this product.

Wash hands thoroughly after handling

Wear protective gloves/protective clothing/eye protection/face protection

Use this product only outside or well-ventilated area.

##### Response

If swallowed: Call a POISON CENTER or doctor/physician if you feel unwell.

If skin irritation: Get medical advice/attention

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses,if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

If inhaled: Call a POISON CENTRE or doctor/physician if you feel unwell

Call a doctor/physician if you feel unwell

##### Storage

Store locked up

##### Other hazards

Causes eye irritation.

Oral toxicity is low, but if instill into blood vessel, highly-virulent reaction.

Regulated effluent standard as ammonium ion.( Follow regulations in your country)

This product is stable under normal conditions, but it is danger when it react with specific materials. And thermal decomposition can lead to release of irritating and toxic gases and vapors..

### 3. Composition, Information on Ingredients

Substance/mixture : Substance  
Chemical name : Ammonium Chloride  
Synonym : Not available  
Chemical Formula : NH<sub>4</sub>Cl  
Component and composition : 95%min  
CAS NO : 12125-02-9  
EEC NO : 235-186-4

### 4. First Aid Measures

Inhalation : Move to fresh air. If breathing is irregular or stopped, administer artificial respiration. If symptoms arise, call a physician

Skin contact : Wash off immediately with plenty of water. Consult a physician if necessary.

Eye contact : Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes. Keep eye wide open while rinsing. If symptoms persist, call a physician.

Ingestion : If swallowed do NOT induce vomiting.

If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

Observe the patient carefully.

Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.

Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.

Seek medical advice.

General advice: If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance. Do not get in eyes, on skin, or on clothing.

### 5. Fire-fighting Measures

Flammable properties: Not flammable

Extinguishing media Suitable:

Not flammable, but thermal decomposition can lead to release of irritating and toxic gases and vapors. So evacuate to safer places.

#### Special protection of fire-fighters:

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### 6. Accidental Leakage Measures

Personal precautions: Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation.

Environmental precautions: Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Sweep up and shovel into suitable containers for disposal.

### 7. Handling and Storage

Handling : Ensure adequate ventilation. Wear personal protective equipment. Avoid dust formation. Avoid contact with skin, eyes and clothing. Do not breathe vapors/dust.

Storage : Keep containers tightly closed in a cool, well-ventilated place. Keep out of the reach of children.

Incompatible products: Alkali,HCN

Packaging materials suitable : Except copper or copper alloy(including brass)

### 8. Exposure Control, Personal Protections

Exposure limits : Not available

Exposure guidelines : TW A(8h) 10mg/禁

Engineering control : Ensure adequate ventilation, especially in confined areas.

Personal Protection

Eye/Face Protection : Tightly fitting safety goggles.

Skin and Body Protection : Long sleeved clothing. Protective gloves.

Respiratory Protection : When workers are facing concentrations above the exposure limit (dust) they must use appropriate certified respirators.

### 9. Physical and Chemical Properties

Appearance : Grainy / White

Odor : None

Odor threshold : Not available

pH : 5.0-6.0(1% Solution)

Melting point/melting range : No data available

Freezing point : No data available

Initial boiling point : No data available

Boiling point/boiling range : Not available

Flammability: Flash point : Not determined

Evaporation rate : No data available

Flammability : Not available

J.Flammability limits in air : Not flammable

Explosive properties : Not available

Oxidizing properties : Not available

Vapor pressure : 3.48MPa(520℃)

Vapor density : No data available

Specific gravity : 1.53

Water solubility : 37.4g/100gH<sub>2</sub>O(20℃)

Solubility : Soluble in alcohol, Insoluble in acetone

Partition coefficient:n-octanol/water:

: No data available

Auto-ignition temperature : No data available

Decomposing temperature : Not available

Viscosity : No data available

### 10. Stability and Reactivity

Stability : Stable under normal conditions.

Reaction with alkali create NH<sub>3</sub>.

Conditions to avoid

: Exposure to air or moisture over prolonged periods.

Temperatures above 330℃.

Materials to avoid : Copper, Copper alloy(including brass)

Hazardous reaction/decomposition products:

Explosive reaction with potassium chlorate or bromine trifluoride; Reacts violently with bromine pentafluoride. Reaction with hydrogen cyanide may create explosive nitrogen trichloride.

### 11. Toxicological Information

Acute toxicity

: LD<sub>50</sub> 1,650mg/kg(Rat Oral)

LD<sub>50</sub> 30mg/kg(Rat Injection into a muscle)

LD<sub>50</sub> 1,439mg/kg(Mouse Abdominal cavity)

: Mild irritation

Skin irritation : Severe eye irritant

Eye irritation : No data available

Sensitization : No data available

Repeated dose toxicity : No data available

Chronic toxicity : No data available

Mutagenicity : No data available

Carcinogenicity : No data available

Reproductive and developmental toxicity:

: No data available

Others : No information

### 12. Ecological Information

Ecotoxicity

: No information

Mobility : No information

Persistence and degradability: No information

Bioaccumulative potential : No information

Other adverse effects : Ammonium ion causes eutrophication .

Follow regulations or regulated effluent standard in your country.

### 13. Disposal Considerations

Methods of disposal

: Should not be released into the environment.Dispose of contents / container in accordance with local regulation.

Contaminated packaging : Dispose on in accordance with federal, state, and regulation.

Follow all regulations in your country.

### 14. Transport Information

UN Classification : Not available

UN Number : Not available

Follow all regulations in your country.

#### 15. Regulation

Follow all regulations in your country

#### 16. Other Information

Contact us

Manufacturer	: Central Glass Co., Ltd.
Address	: Kowa Hitotsubashi Bldg., 3-7-1 Kanda Nishikicho, Chiyoda-ku, Tokyo 101-0054, Japan
Section concerned	: Chemicals Sales Department
Phone	: +81-3-3259-7304
Fax	: +81-3-3259-7488

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## Safety Data Sheet

Prepared on : June 3, 2013  
Revised on :  
Issue date :

## Z-21-50

(Refinement flux for zinc and zinc alloy)

Characteristics

- 1) This flux combines with the zinc and other metallic present in the dross on the top of the melting furnace and suspended as fine particles in the melt.
- 2) The dissolution yield improves remarkably if this Flux is used, and there is a result of the reduction in cost and the saving resource.
- 3) It is easy to remove the slag from the surface of molten zinc alloys, because slag becomes dry.
- 4) Smoke is a little, and work is easy.
- 5) Because the reaction of the flux is rapid, processing time may be short.

Usage

- 1) When it melted, zinc alloy is stirred from the under up beforehand please.
- 2) When molten zinc alloys temperature becomes specified temperature (above the 420°C), please add this flux. And it keeps it for several minutes.
- 3) Afterwards, blend molten zinc alloys and slag and flux, please agitate sufficiently.
- 4) Remove the slag the surface on the molten zinc alloys, after metal separates from slag with mixing
- 5) The standard amount of use is 0.2wt% in weight of molten zinc alloys, but amount of use depends on cleanness of molten zinc alloys.

FOUNTEC CO., LTD  
Shin Tokyo bldg 3-1 Marunouchi,  
3-chome, Chiyodaku Tokyo Japan

## 1 Company identification

## Trade name : Z-21-50 ( Flux for Zinc )

Name of company : FOUNTEC CO.,LTD.  
Location : Marunouchi 3-3-1, Chiyoda-Ku, Tokyo  
Telephone number : 03-5218-8291  
Fax number : 03-3214-8091  
Email : fountec@fountec.co.jp  
Emergency Contacts : Engineering Dept., FOUNTEC CO., LTD.  
Telephone number : 052-218-1271  
Email : k.ichikawa@fountec.co.jp  
Recommended use : Flux for Zinc

## 2 Hazards identification

## GHS classification of the single substance

## Physical hazards

	Explosives	Combustible/Flammable Gases	Combustible/Flammable Aerosols	Combustion-supporting Gases	Gases under pressure	Flammable Liquids	Combustible Solids	Self-reactive Substances	Pyrophoric Liquids
Zinc chloride	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not classified	Not applicable	Not applicable
Silica sand (Silica)	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not classified	Not applicable	Not applicable

## Physical hazards

	Pyrophoric Solids	Self-heating Substances	Water-reactive Combustible Substances	Oxidizing Liquids	Oxidizing Solids	Organic Peroxides	Metal Corrosives
Zinc chloride	Not classified	Not classified	Not classified	Not applicable	Not classified	Not applicable	Classification not possible
Silica sand (Silica)	Not classified	Not classified	Not classified	Not applicable	Classification not possible	Not applicable	Classification not possible

## Health/Environmental hazards

	Acute toxicity (Oral)	Acute toxicity (Dermal)	Acute toxicity (Inhalation: Gases)	Acute toxicity (Inhalation: Steam)	Acute toxicity (Inhalation: Dust, Mist)	Skin corrosion/irritation	Serious eye damage/eye irritation	Respiratory sensitization	Skin sensitization
Zinc chloride	Category 4	Category 2	Not applicable	Classification not possible	Category 1A-1C	Category 1	Classification not possible	Classification not possible	Classification not possible
Silica sand (Silica)	Classification not possible	Classification not possible	Not applicable	Not applicable	Classification not possible	Classification not possible	Classification not possible	Classification not possible	Classification not possible

## Health/Environmental hazards

	Germ cell mutagenicity	Carcinogenicity	Reproductive toxicity	Specific target organ systemic toxicity (Single exposure)	Specific target organ systemic toxicity (Repeated exposure)	Aspiration hazard	Hazards to the aquatic environment (Acute)	Hazards to the aquatic environment (Chronic)	Hazardous to the ozone layer
Zinc chloride	Category 2	Classification not possible	Category 2	Category 1 (Respiratory, Liver, pancreas)	Category 1 (Respiratory, Lung, Liver)	Classification not possible	Category 1	Category 1	—
Silica sand (Silica)	Not classified	Category 1A	Classification not possible	Category 1 (Respiratory, Kidney)	Category 1 (Respiratory, Kidney)	Classification not possible	Classification not possible	Classification not possible	—

## Labels

	Symbol	Signal word	Hazard statement
Zinc chloride			
Acute toxicity (Oral)		Warning	Harmful if swallowed
Acute toxicity (Dermal)		Danger	Fatal in contact with skin
Acute toxicity (Inhalation; Dust, Mist)		Danger	Fatal if inhaled
Skin corrosion/irritation		Danger	Causes severe skin burns and eye damage
Serious eye damage/eye irritation		Danger	Causes serious eye damage
Germ cell mutagenicity		Warning	Suspected of causing genetic defects
Reproductive toxicity		Warning	Suspected of damaging fertility or the unborn child
Specific target organ systemic toxicity (Single exposure)		Danger	Causes damage to organs (Respiratory, Liver, pancreas)
Specific target organ systemic toxicity (Repeated exposure)		Danger	Causes damage to organs (Lung, Liver) through prolonged or repeated exposure
Hazardous to the aquatic environment (Acute)		Warning	Very toxic to aquatic life
Hazardous to the aquatic environment (Chronic)		Warning	Very toxic to aquatic life with long lasting effects
Silica sand (Silica)			
Carcinogenicity		Danger	May cause carcinogenesis
Specific target organ systemic toxicity (Single exposure)		Danger	Causes damage to organs (Respiratory)
Specific target organ systemic toxicity (Repeated exposure)		Danger	Causes damage to organs (Respiratory, Kidney) through prolonged or repeated exposure

## 3 Composition/information on ingredients

Chemical substance/Mixture	: Mixture
CAS Number and UN number	: Not available.
Chemical name	: Sodium Potassium Chlorine Fluorine Silicon Oxygen Zinc
Chemical symbol	: Na K Cl F Si O Zn
Content	: — — 23~29% — 20~26% 24~30% 21~27% Contains zinc chloride 50%. (CAS No. 7646-85-7, Official Gazette Notice through Ref. No. 1-264)

## 4 First aid measures

Inhalation	: Gargle with clean water, and flush nasal cavity with water, and obtain medical treatment as required.
Skin contact	: Wash skin with water.
Eye contact	: Immediately flush eyes with large amounts of water, and obtain medical treatment as required.
Ingestion	: Vomit to evacuate stomach, wash stomach with large amounts of clean water, and obtain medical treatment as required.
Notes	: Tell your doctor the use single substance.

## 5 Fire fighting measures

Extinguishing media	: Dry sands and/or large amount of water.
Distinctive Hazard	: The product itself is nonflammable but may generate harmful gas when heated.
Special protective for fire fighters	: In the extinction work, an appropriate protective equipment (gloves, glasses, and mask) has to be worn.

## 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures	: Put on protective equipment.
Environmental precautions	: Not diffuse into the atmosphere.
Methods and Materials for containment and cleaning up	: Sweep collected, stored in plastic bags to avoid moisture.

## 7 Handling and storage

Handling	
Technical measure	: Be sure to wear appropriate tools and equipment suitable to protect body and clothes from direct contact, and wash body and clothes after handling.
Safety treatment notes	: Handle in a well-ventilated place or with local dust precipitator installed. Powders of zinc chloride irritate mucous membranes and erode metals. Be sure to wear appropriate tools and equipment suitable to protect body and clothes from direct contact, and wash body and clothes after handling.
Contact aversion	: Handling to avoid moisture. Do not use the combined flux and mixed with other products.
Storage	
Technical measure	: To prevent theft, stored in a locked warehouse.
Incompatible substances	: Water and moisture
Appropriate safekeeping condition	: After use, sealed and stored at low temperature to avoid moisture. Store in a dry, cool and dark place free from leaking of rainwater because it is hygroscopic.
Packaging materials	: None

## 8 Exposure controls / Personal protection

Occupational exposure limits	: No specifications by ACGIH as well as by JSOH (Japan Society for Occupational Health). JSOH's requirement for gas:5ppm(HCL)
Facilities and equipment	: Handle in a well-ventilated place or with local dust precipitator installed.
Protective tools and equipment	
Respirator protection	: Dust respirator
Hand protection	: rubber gloves
Eye protection	: safety goggles
Skin and body protection	: Long sleeve protective clothing and safety shoes.

## 9 Physical and chemical properties

Appearance	: (Grayish) White powder and grain mixture
pH (10% water solution)	: ---
Specific gravity	: ---
Solubility(in water)	: ---

## 10 Stability and reactivity

Reactivity/Stability	: The products is stable in 300°C or less for heal. When it is exposed to the atmosphere, it does a moisture absorption rapidly.
Possibility of hazardous reactions	: Zinc chloride, the main ingredient, stimulates to skin, eyes and mucous membrane and causes inflammation.
Conditions to avoid	: high temperature and humidity.
Incompatible substances	: Water and moisture
Hazardous decomposition products	: Generates harmful chlorine gas (HCL, mainly) when heated.

## 11 Toxicity information

Acute toxicity	: No data
Skin corrosion/irritation	: corrosion : Inflammation is caused on skin irritation : When it touched skin an acute pain is caused. When it caught sight, a mucous membrane is attacked, and inflammation is caused.
Serious eye danger/eye irritation	: No data
Respiratory sensitization/Skin	: No data
Germ cell mutagenicity	: No data
Carcinogenicity	: No data
Reproductive toxicity	: No data
Specific target organ systemic toxicity (Single	: No data
Specific target organ systemic toxicity (Repeated	: No data
Aspiration hazard	: No data

## 12 Ecological information

Ecotoxicity	: No data
Persistence/Degradability	: No data
Bioaccumulation	: No data
Mobility in soil	: No data
Hazardous to the ozone layer	: No data

## 13 Disposal considerations

The remainder waste	: Dispose of it properly in accordance with the laws relating to disposal and cleaning of waste. Waste water including the one used for washing shall be disposed of in accordance with all applicable regulations such as Water Pollution Control Law.
Pollution container and packing	: The container is recycled after cleaned, or is disposed of appropriately according to the standard of related regulations and the local government. Remove contents completely when you abandon an empty container.

## 14 Transport information

International regulations	: No data
Hazard class	: No data
Type of container	: No data
Marine Pollutant	: No data
Prevention	: Because of hygroscopicity of the product, care must be taken not to cause water leakage during transportation. Protect paper bags from damage and breakage, and take appropriate measures to prevent load from collapsing.
Domestic regulations	: Because of hygroscopicity of the product, care must be taken not to cause water leakage during transportation. Protect paper bags from damage and breakage, and take appropriate measures to prevent load from collapsing.

## 15 Applicable laws and regulations

PRTR (Pollutant Release and Transfer Register) Law (Note 1)

: Applicable	Applicable substance	Provision name and No.
	Zinc chloride	PRTR Law, Class 1 designated substance 1

Chemical Substances Control Law (Note 2)

: Not applicable

Industrial Safety and Health Law (Note 3)

: Applicable

: Applicable	Applicable substance	Provision name and No.
	Zinc chloride	Cabinet Order Article 18-2, Attached Table No. 9-94 (Note 7)
	Silica sand (Silica)	Cabinet Order Article 18-2, Attached Table No. 9-312 (Note 8)

Poisonous and Deleterious Substances Control Law (Note 4)

: Not applicable

Fire Service Law

: Not applicable

WEEE, ELV, RoHS (Note 5)

: No intentional addition concerning applicable elements and

Export Trade Control Order (Note 6)

: Not applicable

## 16 Others (Contact information for questions or cited references etc.)

Contact	: Engineering Dept., FOUNTEC CO., LTD.
Telephone number	: 052-218-1271
Fax number	: 052-218-1270

Although the data and information herein contained was provided based on the data and information currently obtained, it is understood that no warranty was made as to accuracy of such information or safety.  
Every chemical product may have unknown hazardous property, it is required to pay careful attention to any of such products when handling.  
They must be handled with appropriate measures prepared to its specific application and usage.

- Note 1 Law concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting in Improvements in their Management
- Note 2 Law concerning Screening of Chemical Substances and Regulations of their Manufacture
- Note 3 Industrial Safety and Health Law
- Note 4 Poisonous and Deleterious Substances Control Law
- Note 5 EC Directive on Waste Electrical and Electronic Equipment (WEEE)  
End-of-Life Vehicles Directive (ELV)  
Restriction of Hazardous Substances directive (RoHS)
- Note 6 Ordinance of the Ministry Specifying Goods and Technologies Pursuant to Provisions of the Appended Table 1 of the Export Control Order and the Appended Table of the Foreign Exchange
- Note 7 Industrial Safety and Health Law Article 57-2, Ordinance on Industrial Safety and Hygiene Article 34, and Ministry of Labor Ordinance Article 18-2, Attached Table No. 9-94
- Note 8 Industrial Safety and Health Law Article 57-2, Ordinance on Industrial Safety and Hygiene Article 34, and Ministry of Labor Ordinance Article 18-2, Attached Table No. 9-312

- สามารถเลือกใช้สัปดาห์เชิงธุรกิจต่างๆ ขึ้นอยู่กับบริเวณ  
ที่เกิดไฟไหม้ หรือใช้น้ำทำเย็นลง  
ไม่มีข้อมูล  
ความชื้นจากเปลวเพลิงอาจทำให้พาชนะบรรจุ  
สารเคมีเกิดแรงดัน และแตกได้ควรจัดพื้นที่เพื่อทำให้อากาศ  
บรรจุ และสารเคมีเย็นตัวลง  
ไม่มีข้อมูล  
สารเคมีที่เกิดขึ้นเมื่อเกิดการเผาไหม้ อาจทำให้เกิด  
กรดไฮโดรคลอริก และ ซัลเฟอร์ไดออกไซด์ ในกรณีที่มีกลิ่น  
ปรากฏ ควรสวมหน้ากากแบบเต็ม OSHANIOSH ที่สามารถ  
ป้องกันสารพิษ และมีความช่วยเหลือ  
ไม่ติดไฟ  
ไม่ติดไฟ



6. มาตรการการจัดการเมื่อมีการหกและรั่วไหลของสารโดยอุบัติเหตุ

- ☐ การปฏิบัติเมื่อเกิดการรั่วไหล
- การป้องกันผู้คน ☐ ไม่มีข้อมูล
  - การป้องกันสิ่งแวดล้อม ☐ ไม่มีข้อมูล
  - การทำความสะอาด ☐ ไม่มีข้อมูล
  - วิธีการจัดการกับเคมีภัณฑ์ ☐ ไม่มีข้อมูล
- ควรหลีกเลี่ยงการทำความสะอาดในบริเวณที่เกิดเหตุด้วยน้ำ หรือปล่อยลงท่อระบายน้ำ ควรเก็บในภาชนะที่แห้ง และมีขีด แต่ กรณีรั่วที่ออกในปริมาณน้อย สามารถชำระด้วยน้ำ หรือทำให้เป็นกลาง ด้วยโซดาแอช และสามารถปล่อยลงท่อ

7. การขนถ่ายเคลื่อนย้ายและการจัดเก็บ

- ☐ การใช้งาน
- คำเตือน ☐ ไม่มีข้อมูล
  - ข้อควรระวัง ☐ ไม่มีข้อมูล
  - การระบายอากาศ ☐ ไม่มีข้อมูล
  - วิธีการใช้อย่างปลอดภัย ☐ ไม่มีข้อมูล
  - การจัดเก็บที่ปลอดภัย ☐ ไม่มีข้อมูล
  - สารเคมีที่เก็บรวมกันไม่ได้ ☐ ไม่มีข้อมูล
- สวมใส่แว่นตาป้องกัน สารเคมีสามารถทำให้เหล็ก ทองเหลือง ตะกั่ว อลูมิเนียม ค่อยๆ ลีกกร่อนได้

8. การควบคุมการสัมผัสและการป้องกันส่วนบุคคล

- ☐ การป้องกันอันตรายที่เกิดขึ้นกับร่างกาย ☐ ควรรวมถุงมือ
- ☐ การป้องกันอันตรายที่เกิดขึ้นกับมือ ☐ ควรรวมถุงมือ
- ☐ การป้องกันอันตรายที่เกิดขึ้นกับตา ☐ แว่นครอบตา
- ☐ การป้องกันอื่น ๆ ☐ การระบายอากาศควรมีการระบายอากาศที่เพียงพอ

9. คุณสมบัติทางกายภาพเคมี

- ☐ น้ำหนักโมเลกุล ☐ ไม่มีข้อมูล
- ☐ ความเป็นกรดเป็นด่าง (pH) ☐ 3 - 5
- ☐ ความหนาแน่น (g/cm<sup>3</sup>) ☐ 1.2
- ☐ จุดหลอมเหลว (°C) ☐ ไม่มีข้อมูล
- ☐ จุดเดือด (°C) ☐ 110 °C
- ☐ สถานะ ☐ ของเหลว
- ☐ ลักษณะสีและกลิ่น ☐ ของเหลวสีขาวขุ่นสีเหลืองอ่อนมีลักษณะใส ไม่มีกลิ่น
- ☐ การละลายได้ในน้ำ (g/100 ml) ☐ ละลายน้ำได้ดี

10. ข้อมูลการเกิดปฏิกิริยา

- ☐ การคงตัว (Stabilization) ☐ สารเคมีจะเกิดการเสถียรภาพด้วยแสงได้อย่างช้าๆ การเสื่อมสภาพจะเกิดขึ้นถ้ามีความร้อนเหนือจุดสูงกว่า 45 องศาเซลเซียส
- ☐ การป้องกันอันตราย ☐ ไม่มีข้อมูล
- ☐ คุณสมบัติเกี่ยวกับการระเบิด ☐ ไม่มีข้อมูล
- ☐ คุณสมบัติเกี่ยวกับปฏิกิริยากับน้ำ ☐ ไม่มีข้อมูล
- ☐ คุณสมบัติในการออกซิไดซ์ ☐ ไม่มีข้อมูล
- ☐ ผลการสลายตัวจะก่อให้เกิดสารที่มีพิษอันตราย ☐ ไม่มีข้อมูล
- ☐ การป้องกันกำจัดสารพิษ ☐ ไม่มีข้อมูล
- ☐ จากการสลายตัว

11. ข้อสงสัยด้านพฤกษวิทยา

- |  |             |                           |
|--|-------------|---------------------------|
| <input type="checkbox"/> พืชเงี้ยวพลัน     | ไม่มีข้อมูล | สัตว์ที่เข้าทดลอง หนู     |
| ● LD <sub>50</sub> โดยทางปาก (mg/kg)       | ไม่มีข้อมูล | สัตว์ที่เข้าทดลอง กระต่าย |
| ● LD <sub>50</sub> โดยทางผิวหนัง (mg/kg)   | ไม่มีข้อมูล | สัตว์ที่เข้าทดลอง หนู     |
| ● LD <sub>50</sub> โดยทางหลอดเลือด (mg/kg) | ไม่มีข้อมูล | 1 ชั่วโมง                 |
| ● พิษต่อตา                                 | ไม่มีข้อมูล |                           |
| ● พิษต่อผิวหนัง                            | ไม่มีข้อมูล |                           |
| ● พิษถึงเย็บพลัน/กึ่งเรื้อรัง              | ไม่มีข้อมูล |                           |
| ● พิษที่ทำให้เกิดภูมิแพ้                   | ไม่มีข้อมูล |                           |
| <input type="checkbox"/> พิษเรื้อรัง       | ไม่มีข้อมูล |                           |
| ● พิษในการก่อมะเร็ง                        | ไม่มีข้อมูล |                           |
| ● พิษต่อการเจริญเติบโตของตัวอ่อน           | ไม่มีข้อมูล |                           |
| ● พิษที่ทำให้ตัวอ่อนผิดปกติ                | ไม่มีข้อมูล |                           |
| ● พิษต่อผลต่อการสืบพันธุ์                  | ไม่มีข้อมูล |                           |
| ● พิษต่อการเปลี่ยนแปลงทางพันธุกรรม         | ไม่มีข้อมูล |                           |
| ● พิษต่อระบบประสาท                         | ไม่มีข้อมูล |                           |

## 12. ข้อมูลผลสภาระบบตอบรับพิเศษ

- ☐ พืชต่อระบบนิเวศน์
- ☐ การสะสมของสารในสิ่งมีชีวิต

### 13. ข้อพิจารณาในการกำจัด

- ☐ การกำจัด

  - ๑ การกำจัดเคมีภัณฑ์/ผลิตภัณฑ์
  - ๑ การกำจัดภาชนะบรรจุ
  - ๑ การกำจัดทางของเสีย

14. ข้อมูลเกี่ยวกับการขนส่ง

- | UN Number          | UN1760      | UN Class           | ไม่มีข้อมูล |
|--------------------|-------------|--------------------|-------------|
| UN Packing group   | III         | IMDG-Ems Number    | ไม่มีข้อมูล |
| IMDG-Class         | ไม่มีข้อมูล | IMDG-Packing group | ไม่มีข้อมูล |
| IATA-Class         | ไม่มีข้อมูล | รหัสแท่ง           | ไม่มีข้อมูล |
| IATA-Packing group | ไม่มีข้อมูล |                    |             |

15. ข้อมูลเกี่ยวกับกฎบังคับ

- ☐ การควบคุมโดยใช้หลักการบริหารวิศวกรรม
  - ☐ ชนิดอุปกรณ์ป้องกัน
  - ☐ อุปกรณ์ป้องกันกาย
- ไม่มีข้อมูล

ไม่มีข้อมูล

ไม่มีข้อมูล

## 16. ข้อมูลอื่น

N/A



Safety Data Sheet

LUBLIGHT #2500-WX

Date prepared :20/APR/1995  
Date revised : 5/AUG/2013

1. PRODUCT & COMPANY IDENTIFICATION

Product name : #2500-WX  
Company name : JAPAN LUBLIGHT LTD.  
Address : 2079-7, Kamiyabe-cho, Totsuka-ku, Yokohama, Kanagawa, 245-0053, Japan  
Telephone : +81-45-813-3651  
Facsimile : +81-45-813-3775  
Emergency telephone : +81-45-813-3651  
e-mail address : lublight\_jabo@lublight.co.jp  
SDS No. : E2502  
Recommended use of the chemical and restrictions on use : Lubricant for industrial use

2. HAZARD IDENTIFICATION

GHS classification of the substance or mixture

Physical hazards

Explosives	: Not applicable
Flammable gases	: Not applicable
Flammable gases	: Not applicable
Flammable aerosols	: Not applicable
Oxidizing gases	: Not applicable
Gases under pressure	: Not applicable
Flammable liquids	: Not classified
Flammable solids	: Not applicable
Self-reactive substances and mixtures	: Not applicable
Pyrophoric liquids	: Not classified
Pyrophoric solids	: Not applicable
Self-heating substances and mixtures	: Not classified
Substances and mixture which, in contact with water, emit flammable gases	: Not applicable
Oxidizing liquids	: Not applicable
Oxidizing solids	: Not applicable
Organic peroxides	: Not applicable
Corrosive to metals	: Not classified
Health hazards	
Acute toxicity (oral)	: Not classified
Acute toxicity (skin)	: Not classified
Acute toxicity (inhalation : gas)	: Not applicable
Acute toxicity (inhalation : vapour)	: Classification not possible
Acute toxicity (inhalation : dust, mist)	: Not classified
Skin corrosion / irritation	: Classification not possible
Serious eye damages / eye irritation	: Classification not possible
Respiratory sensitization	: Classification not possible
Skin sensitization	: Classification not possible
Germ cell mutagenicity	: Classification not possible
Carcinogenicity	: Classification not possible
Reproductive toxicity	: Classification not possible
Specific target organ toxicity single exposure	: Classification not possible

Specific target organ toxicity repeated exposure : Classification not possible  
Aspiration hazard : Classification not possible  
Environmental hazards  
Aquatic toxicity (acute) : Classification not possible  
Aquatic toxicity (chronic) : Classification not possible  
Hazardous to the ozone layer : Classification not possible  
GHS label elements including precautionary statements  
Symbol : Not applicable  
Signal word : Not applicable  
Hazard statement : Not applicable  
Precautionary statements : Not applicable

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substance / mixture : Mixture  
Chemical name or generic name : Water soluble lubricant  
Component : Vegetable oils 20-30%  
Mineral oils 10-20%  
Anionic surfactants 5-15%  
Nonionic surfactants 5-10%  
Antifoamer 0-3%  
Water 35-45%  
CAS No. : Can not list because it is trade secret  
Hazardous ingredient(s) : Mineral oils 10-20%

4. FIRST AID MEASURES

If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
Get medical advice / attention immediately.  
If not breathing, give artificial respiration.  
If serious cough or phlegm occurs, get medical examination immediately.  
If on skin : Remove all contaminated clothing immediately.  
Wash off soap and water.  
Wash skin with water stream or shower.  
If skin irritation occurs or feel unwell, get medical advice / attention.  
Take off contaminated clothing and wash before reuse.  
If in eyes : Immediately rinse with fresh water for 15 minutes even if very small contact.  
Rinse carefully with water for several minutes. Remove contact lenses, if present and easy to do.  
Continue rinsing.  
If eye irritation persists, get medical advice / attention.  
Do not induce vomiting. Never give anything by mouth to an unconscious person.  
If swallowed : Get medical advice / attention (washing of stomach) immediately.

5. FIRE-FIGHTING MEASURES

FLAMMABLE PROPERTIES : This product is not flammable.  
Suitable extinguishing media : Dry chemical powder, CO2, foam, dry sand  
Unsuitable extinguishing media : Water jet  
Specific extinction method : Dry chemical powder or CO2 should be used for small fire.  
In case of larger fires, large volume of water spray should be used.  
Keep surrounding areas cool by spraying water.  
Neutralize the spilled TDI after extinguished.  
Special protective for fire- fighters : Fireman has to wear self-contained breathing apparatus and other protective equipments.

**6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures  
Wear proper equipment and avoid contact with skin and inhalation of vapor. Keep personnel removed from and upwind of fire. Shut off all sources of ignition. Keep away personnel except for authorized ones from spillage area by stretching ropes.  
Environmental precautions  
Do not let this chemical enter the environment.  
Methods and materials for containment and cleaning up  
Absorb spill with inert material (e.g., diatomaceous earth, sand) and flush residual area with copious amounts of water.

**7. HANDLING AND STORAGE**

Handling  
Technical measure : Take measures of as described in chapter "8. EXPOSURE CONTROLS / PERSONAL PROTECTION" and wear an appropriate protective equipment.  
Should be established the adequate local exhauster in the indoor working area.  
Local-ventilation / whole-ventilation : Set local exhaust or general ventilation of as described in chapter "8. EXPOSURE CONTROLS / PERSONAL PROTECTION".  
Notes : Do not handle until all safety precautions have been read and understood.  
Do not contact, inhale and ingest.  
Wash hands thoroughly after handling.  
Use only outdoors or in well ventilated areas.  
Avoid release contaminated clothing to out of work place.  
Do not eat, drink or smoke when using this product.  
Safety treatment notes : Do not contact with oxidizing substances.  
Storage  
Appropriate safekeeping condition : Store in a dark, cool place and tightly closed.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

Facility and equipment measures : Should be established the adequate local exhauster if vapor / mist generate.  
Operator should wear appropriate protection.  
Make available emergency safety shower and eye wash in the work area.  
Control limit : Not set  
Occupational exposure limits : Mineral oil (oil mist, mineral) ACGIH(2009) 5 mg/m<sup>3</sup> (TLV-TWA)  
10 mg/m<sup>3</sup> (TLV-STEL)  
5 mg/m<sup>3</sup>  
Personal protective equipment  
Hand protection : Protective gloves (impermeable)  
Eye protection : Protective glasses, goggles  
Skin and body protection : Protective clothing, safety boots  
Special protection information : Avoid a prolonged or repeated contact.  
Hygiene measures : Wash hands thoroughly after handling.  
Avoid release contaminated clothing to out of work place.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : White emulsion liquid  
Odour : Characteristic odor  
pH : 9.0-11.0 (20°C, 1%)  
MELTING POINT / Freezing point : No Data  
Boiling point : 100°C  
Flash point : Non flash point. (COC)  
Measurement is impossible because it is take a boil at 100°C.

Explosion properties : No Data  
Vapor pressure : No Data  
Vapor density : No Data  
Specific gravity : 0.98±0.05/cm<sup>3</sup> (25°C)  
Solubility in water : Soluble (Emulsion)  
Octanol / water partition coefficient : No Data  
Decomposition temperature : No Data  
Viscosity : No Data

**10. STABILITY AND REACTIVITY**

Stability : Stable for normal storage and handling.  
Reactivity : Stable for normal storage and handling.  
Hazardous decomposition products : Combustion may produce COx, NOx and SOx.

**11. TOXICOLOGICAL INFORMATION**

Acute toxicity [oral]  
: Oral ATEmix >9.8g/kg (JIS), Not classified as a mixture  
Include the substance of the following categories.  
Not classified : Mineral oils  
Acute toxicity [skin]  
: Skin ATEmix >18g/kg (JIS), Not classified as a mixture  
Include the substance of the following categories.  
Not classified : Mineral oils  
Acute toxicity [inhalation (GAS)]  
: No information  
Acute toxicity [inhalation (vapour)]  
: No information  
Acute toxicity [inhalation (dust, mist)]  
: Mist ATEmix >19mg/kg (JIS), Not classified as a mixture  
Include the substance of the following categories.  
Not classified : Mineral oils  
Skin corrosion / irritation  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Serious eye damage / eye irritation  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Respiratory sensitization  
: No information  
Skin sensitization  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Germ cell mutagenicity  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Carcinogenicity  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Reproductive toxicity  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Specific target organ toxicity single exposure  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Specific target organ toxicity repeated exposure: Include the substance of the following categories.  
Not classified : Mineral oils  
Aspiration hazard  
: Include the substance of the following categories.  
Not classified : Mineral oils

**12. ECOLOGICAL INFORMATION**

Aquatic toxicity [ACUTE]  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Aquatic toxicity [CHRONIC]  
: Include the substance of the following categories.  
Not classified : Mineral oils  
Hazardous to the ozone layer  
: No information





13. DISPOSAL CONSIDERATIONS

- The remainder waste
- Pollution container and packing
- : Product waste must be processed with the relevant regulation oneself or must be processed by waste treatment company having the official approval of regulation. In case of to burn, carried out by a method and in a safe place, without fear of harm or harm to others by burning, place a guard people.
- : Used containers could be recycled by cleaning or should be disposed accordance with official regulation. In case of disposal, remove all contents.

14. TRANSPORT INFORMATION

International regulations	UN class	: Not applicable
Marine regulation information	UN number	: Not applicable
	UN No.	: Not applicable
	Proper shipping name	: Not applicable
	Class	: Not applicable
	Sub risk	: Not applicable
	Packing group	: Not applicable
	Marine pollutant	: Not applicable
Aviation regulation information	UN No.	: Not applicable
	Proper shipping name	: Not applicable
	Class	: Not applicable
	Sub risk	: Not applicable
	Packing group	: Not applicable

15. REGULATORY INFORMATION

Ensure this material in compliance with federal requirements and ensure conformity to local regulations.

16. OTHER INFORMATION

References

- a) Japan Society for Occupational Health (2006)
- b) Threshold limit values for chemical substance and physical agents and biological exposure indices, ACGIH (2009)
- c) National Institute of Technology and Evaluation GHS
- d) Globally Harmonized System of Classification and Labeling of Chemicals (GHS) (2007)
- e) Japanese Industrial Standards JIS Z 7252 Classification of chemicals based on "Globally Harmonized System of Classification and Labelling of Chemicals (GHS)"
- f) Japanese Industrial Standards JIS Z 7253 Hazard communication of chemicals based on GHS-Labeling and Safety Data Sheet (SDS)

This product is for industrial use only

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The information contained herein is based on several references and the present state of our knowledge. However the SDS does not always cover all information about the product, handle the product carefully. The information is intended to ordinary usage, in case of particular handlings, conduct appropriate safety measurements. The information herein is only provision of information, and it does not represent a guarantee the properties of the product. The Safety Data Sheet (SDS) is prepared based on JIS Z7253, and it has the same required elements on the Material Safety Data Sheet (MSDS) which is prepared based on JIS Z7250:2010.



## MATERIAL SAFETY DATA SHEET

### PRODUCT: DOSS

#### SECTION I : MANUFACTURER INFORMATION

#### SECTION II : INGREDIENT INFORMATION,

Ingredient	CAS Number	% By Weight	OSHA	ACGIH TLV
Sodium cyanodithiocarbamate	-	3.68 %	NA	NA
Potassium N-methyldithiocarbamate	-	5.07 %	NA	NA
Inert ingredients	-	91.25 %	NA	NA

#### SECTION III – HAZARDS IDENTIFICATION,

**EYES**, This material will cause severe eye irritation upon direct contact. Exposure to vapor, mist or dust will also be irritating.

**SKIN**, This material will cause irritation and/or burning of skin. Prolonged or repeated contact may cause irreversible damage. Persons with pre-existing skin disorders may be more susceptible to the effects of this material.

**INGESTION** ingestion of this material will cause damage to tissues contact. Small amounts of this product aspirated into the respiratory system during ingestion or vomiting may cause pulmonary injury.

**INHALATION** inhalation may cause irritation of the mucous membranes and respiratory tract. Symptoms may include coughing, bloody nose, and sneezing. Severe overexposures may cause Lung damage.

CARCOCCACTIV: LARC : N NIP : N OSHA : N

#### SECTION IV - EMERGENCY AND FIRST AID HAZARD

**EYES**, Flush with large amounts of fresh water for 15 minutes, lifting upper and lower lids occasionally Contact a physician immediately for further direction.

**SKIN**, Remove contaminated clothing and launder before reuse. Flush exposed with large amounts of fresh water.

**INGESTION**: Do not induce vomiting. Give several glasses of water for dilution affect. If vomiting occurs.

Administer additional fluids. Never give anything by mouth to an unconscious person. Contact a Physician immediately for further instructions.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE**: None known.

#### SECTION V - Fire fighting measure.

Flash Point (closed cup, °F) : NA

**EXTINGUISHING MEDIA** , Foam, dry chemical, water spray.

**SPECIAL FIRE FIGHTING PROCEDURES** , firefighters should wear appropriate protective equipment including respiratory protection as condition warrant. stop spill/release if it can be done without risk. Move undamaged container from fire area if it can be done without risk. Water spray may be useful in cooling equipment and containers exposed to heat and flame. Avoid spreading burning material with water used for cooling purposes.

**UNUSUAL FIRE** a explosion hazards, None know.

#### SECTION VI - ACCIDENTAL RERELEASE INFORMATION:

Spill response. Only trained personnel with proper protective gear should be permitted in the area. Stop spill at source, reclaim material it possible for reuse. Containize contaminated material for disposal after all visible traces have been removed. Flush area thoroughly with water; Dispose of all waste in accordance with local, status and federal regulations. Care must be taken when using or disposing of chemical materials and /or their containers to prevent environmental contamination. Water handling procedure, see section XIII

#### SECTION VII – HANDLING AND STORAGE:

Handling Procedures.: Eyewash fountain recommended in work area. Do not use pressure to empty Container. Do not cut grind, weld, or drill on or near this container. Container, even when empty, can contain product and vapor always obey hazard warning and handle empty Container as if ware full.

Storage procedures: Store this material of in a cool, dry. Well ventilated area away from heat and all source of ignition. Keep container lightly closed when not in use. Store only in approved containers that have been properly labeled. Protect container from physical damage.

#### SECTION VIII - EXPOSURE CONTROL CHEMICAL PROTECTION.

**EYE** protection, use safety glasses. Where contact is likely, splash-proof chemical goggles are recommended if vapor cause eye discomfort. Use a full-face respirator.

**SKIN PROTECTION:** Impervious gloves, apron, face shield, and boots should be worn when handling this material. Respiratory protection. Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required. Use an approved air - purifying respirator. When exposure guidelines may be greatly exceeded use an approved positive pressure self-contained breathing apparatus.

**ENVIRONMENTAL CONTROLS,** Maintain airborne concentrations below the exposure guidelines. Use only with adequate ventilation. Local exhaust ventilation may be necessary for some operations. **HYGIENIC PROCEDURES:** Never touch face with hands or gloves that may be contaminated with Product. Wash thoroughly with soap and water after handling product.

#### SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES:

Specific gravity : 1.280

% Volatile : 50+

Solubility : complete in water,

Apparent and odor : Clear, light an color, mild odor,

ph ( 1% solution ) : 10

physical state : liquid

#### SECTION X - STABILITY AND REACTIVITY:

**General:** This product is considered a stable material under normal and anticipated storage and Handling conditions.

**INCOMPATIBILITY:** Strong oxidisers, acidic materials.

**HAZARDOUS DECOMPOSITION PRODUCTS,** buffer compounds.

#### SECTION XI - Toxicological information :

Toxicological properties of this chemical mixture have not been thoroughly investigated.

#### SECTION XII - Ecological properties :

Ecological properties of this chemical mixture have not been thoroughly investigated.

#### SECTION XIII - Disposal properties :

Dispose of all wastes in accordance with local, local, and federal regulations.

#### SECTION XIV - TRANSPORTATION INFORMATION.

Caustic alkali liquids, (potassium & sodium hydroxide), UN 1719 II

RQ (hS) : 5000

#### SECTION XV - REGULATION INFORMATION:

Osha status. This product is considered hazardous under the criteria of the federal OSHA

Hazard communication standard, 29 CFR 1910, 1200.

SARA HAZARD CATEGORY:

Acute: Y

Chronic: N

Reactive : N

Fire: N

R-O-P:N

#### SECTION XVI - Other information,

Dermis rating Health : 2

Flammability : 0

Reactivity : 0

personal Protection : C

**DISCLAIMER:** The information on this material safety Data Sheet the last Information and data

That we have on hazards, properties, and handling of this product under the recommended

Conditions of use. As the use of this material is subject to conditions beyond the sellers control.

Seller makes no warranty express or implied as to this material or its use other than is a chemical

Analysis when packed. The total liability of seller shall be limited to the purchase

Price of the product.

DATE PREPARED : 12/12/96

DATE PRINTED : 01/14/97