

ภาคผนวก ณ
เอกสารข้อมูลความปลอดภัยของวัตถุอันตราย
และเคมีภัณฑ์ (MSDS)



Material Safety Data Sheet (MSDS)
材料安全数据表

- 商品名称 generic/Trade name: KC-1A 油井水泥降失水剂
- 化学名称 Chemical name: _____
- 供应商 Supplier: 四川凯尔油气田技术服务有限公司
- 成分 Composition: 1-2 巯基-咪唑烷酮
- 外观及气味 Appearance and odor: 灰黑色粉末
- 用途 Usage: 石油固井
- 物理特性 Physical properties:
密度 density: _____ g/cm³ 蒸气密度 rel. vapor density: _____
熔点 Melting point: _____ 蒸气压力 vapor pressure: _____
闪点 Flash point: 无 NO 溶解度 (水) solubility in water(kg/m3): > 85%
自燃点 Autoignition: 无 NO PH: _____
易燃 Flammability: 否 NO 粒子尺寸 particle size: _____
- 安全性 safety hazards
火 fire: 不易燃 non-combustible 稳定性 stability:良好 good
- 预防 precautions: 常规化工产品保养 maintain conventional chemical product
- 灭火方式 Fire extinguishing agents: 无 NO
- 灭火方法 Fire fighting precautions: 无 NO
- 对身体的危害性 Health hazards: 无 NO
呼吸 Inhalation: 无影响 NO
皮肤 Skin: 无刺激性 NO
眼睛 Eyes: 无刺激性 NO
摄入身体 Ingestion: 不易排泄 unexcretive
- 首先援助 first aid: _____
- 个人防护 personal protection: 穿戴防护服 wear protective clothes
一般用途 normal usage: 石油固井
溢出控制/清理 spill control/clean up: 用清洗剂清洗 clean with cleaning fluid
- 环境危害性 environmental hazards: 无 NO
- 防护 precaution: 需穿防护服, 不需自带呼吸器械 need wear protective clothes, no need self-contained breathing apparatus
- 储存 storage: 阴凉干燥处 in dry and shady and cool storehouse place
- 包装和标签 packing and labeling:
国际危险级别 international dangerous class: 无 NO
国际包装等级 international packing grade: 国家包装质量标准 national packing quality specification

Material Safety Data Sheet (MSDS)

- Product name: KC-1B Filtrate reducer for oil well cement
- Chemical name: _____
- Supplier: THE KAIER OIL-FIELD TECHNIQUE SERVICE LIMITED COMPANY OF SICUAN
- Composition: 1-2alkenyl - PVP
- Appearance and odor: White powder
- Usage: Cementing
- Properties:
Density: _____ g/cm³ Rel. vapor density: _____
Melting point: _____ Vapor pressure: _____
Flash point: NO Solubility in water(kg/m3): > 85%
Autoignition: NO PH: _____
Flammability: NO Particle size: _____
- Safety hazards
Fire: non-combustible Stability: good
- Precautions: maintain conventional chemical product
- Fire extinguishing agents: NO
- Fire fighting precautions: NO
- Health hazards: NO
Inhalation: NO
Skin: NO
Eyes: NO
Ingestion: unexcretive
- First aid: _____
- Personal protection: wear protective clothes
Normal usage: Oil well cementing
Spill control/clean up: clean with cleaning fluid
- Environmental hazards: NO
- Precaution: need wear protective clothes, no need self-contained breathing apparatus
- Storage: in dry and shady and cool storehouse place
- Packing and labeling:
International dangerous class: 无 NO
International packing grade: national packing quality specification

Material Safety Data Sheet (MSDS)
材料安全数据表

- 商品名称 generic/Trade name: KC-2 油井水泥缓凝剂
- 化学名称 Chemical name: _____
- 供应商 Supplier: 四川凯尔油气田技术服务有限公司
- 成分 Composition: 葡庚糖钠盐
- 外观及气味 Appearance and odor: 深棕色液体
- 用途 Usage: 石油固井
- 物理特性 Physical properties:
密度 density: 1.15~1.27 g/cm³ 蒸气密度 rel. vapor density: _____
熔点 Melting point: 无 NO 蒸气压力 vapor pressure: _____
闪点 Flash point: 无 NO 溶解度 (水) solubility in water(kg/m³): 100%
自燃点 Autoignition: 无 NO PH: 6.0~7.0
易燃 Flammability: 否 NO 粒子尺寸 particle size: _____
- 安全性 safety hazards
火 fire: 不易燃 non-combustible 稳定性 stability:良好 good
- 预防 precautions: 常规化工产品保养 maintain conventional chemical product
- 灭火方式 Fire extinguishing agents: 无 NO
- 灭火方法 Fire fighting precautions: 无 NO
- 对身体的危害性 Health hazards: 无 NO
呼吸 Inhalation: 无影响 NO
皮肤 Skin: 无刺激性 NO
眼睛 Eyes: 无刺激性 NO
摄入身体 Ingestion: 不易排泄 unexcretive
- 首先援助 first aid: _____
- 个人防护 personal protection: 穿戴防护服 wear protective clothes
一般用途 normal usage: 石油固井
溢出控制/清理 spill control/clean up: 用清洗剂清洗 clean with cleaning fluid
- 环境危害性 environmental hazards: 无 NO
- 防护 precaution: 需穿防护服, 不需自带呼吸器械 need wear protective clothes, no need self-contained breathing apparatus
- 储存 storage: 阴凉干燥处 in dry and shady and cool storehouse place
- 包装和标签 packing and labeling:
国际危险级别 international dangerous class: 无 NO
国际包装等级 international packing grade: 国家包装质量标准 national packing quality specification

Material Safety Data Sheet (MSDS)

- Product name: KC-2retarder for oil well cement
- Chemical name: _____
- Supplier: THE KAIER OIL-FIELD TECHNIQUE SERVICE LIMITED COMPANY OF SICUAN
- Composition: Glucoseheptonic sodium salt
- Appearance and odor: Dark brown liquid
- Usage: oil well cementing
- Properties:
Density: 1.15~1.27 g/cm³ Rel. vapor density: _____
Melting point: NO Vapor pressure: _____
Flash point: NO Solubility in water(kg/m³): 100%
Autoignition: NO pH: 6.0~7.0
Flammability: NO Particle size: NO
- Safety hazards
Fire: non-combustible Stability: good
- Precautions: maintain mineral product
- Fire extinguishing agents: NO
- Fire fighting precautions: NO
- Health hazards: NO
Inhalation: NO
Skin: NO
Eyes: NO
Ingestion: unexcretive
- First aid: _____
- Personal protection: wear protective clothes
Normal usage: oil well cementing
Spill control/clean up: clean with water
- Environmental hazards: NO
- Precaution: need wear protective clothes, no need self-contained breathing apparatus
- Storage: in dry and shady and cool storehouse place
- Packing and labeling:
International dangerous class: NO
International packing grade: national packing quality specification

MATERIAL SAFETY DATA SHEET

KC-3 The anti gas channeling agent

1. Chemical Product and Company Identification

1.1 Chemical Product

Chemical products chinese name : 防气窜剂
Product name in English : The anti gas channeling agent
Product code : KC-3B

1.2 Company Information

Name : Sichuan Kell oil and Gas Technology Services Limited
Address: : The town of Jiangyou city of Sichuan
emergency phone :
National emergency phone : 0532-3889090

2. Composition Information

Composition :	Content:	CAS No.
Montmorillonite natural mineral calcining	80%	68911-87-5

3. Hazards Identification

3.1 hazards identification

Risk category : Non dangerous goods
Pathways : Inhalation Ingestion

3.2 effect

Health effect : Have a certain irritation

Environmental effect : Volatility

Explosion hazard : the powder and the air may form explosive mixture, which will cause explosion by a spark when the concentration reaches certain degree.

4. First Aid Procedures

Inhalation: The chemical will not resolve for normal application. If the resolved gas is inhaled, move to high place and breathe fresh air. Go to see the doctor if ill results occur.

Skin Contact: Wash and rinse skin with water and soap in case of skin irritating medical control.

Eye Contact: Keep eyelids widely apart and rinse out the chemicals with copious amounts of water for several minutes. In case of continuous irritation to eyes medical control.

Ingestion: Rinse mouth with water, give a plenty of water to drink Avoid vomiting. Medical aid.

12. Ecological Information

ELIMINATION INFORMATION:

Ecological data are not available
The product does not contact the sewage system, waters and soil, if correctly used.

13. Disposal Consideratins

Disposal measurement: If this product has become a waste, it must be to obtain a permit the professional factory processing.

14. Transportation Consideratins

Packing method: 25KG three composite packing bag

Transportation cautions: A complete package of departure, Prevent the sun and rain

15. Regulatory Consideratins

The following regulations applicable to the products: the people's Republic of China laws and regulations: Regulations on safety management of hazardous chemicals (issued by the State Council on February 17, 1987) chemical dangerous goods safety management regulations implementing rules (labour hair [1992]677 date) workplace safety use of chemical products regulations ([1996] labor department sent 423) above laws and regulations for the safe use of chemicals, the production, storage, transportation, loading and unloading are corresponding provisions.

16. Other Consideratins

The safety technical specification (MSDS) according to GB16483-2000 " chemical safety technology rules for preparation of instructions " to prepare

Filling time : October 2013

Guidance department: Sichuan Kell oil and Gas Technology Services Limited Technical department

Data verification unit : Technical department

The information contained herein is based on our present state of knowledge, but do not constitute a guarantee of our properties Recipients of our product must take responsibility for observing existing laws and regulations

5. Fire Fighting Measures

Suitable extinguishing media: Distinguish fire with water, dry ice or foam extinguisher based on the concrete situation

6. Accidental Release Measures

Emergency action : Cleaning agents cleaning

7. Handling and Storage

Handling Precautions : The wearing of protective clothing
Storage precautions : Store in a cool dry place

8. Exposure Controls and Peronal Protection

8.1 Exposure Limit:
TLVTN : Failure to develop standard
TLVWN : Failure to develop standard
8.2 Personal Protection
Respiratory protection : Mask
Eye Protection : Protective goggles
Hand protection : Gloves

9. Physical and Chemical Properties

State: Solid	Appearance: Gray Powder
Melting point: 1500℃	Flash point: NO
Density: 3g/ cm3	Flammability: NO
Critical Temperature	: Not information available
solubility in water(kg/m3)	: 50%
PH	: 7.0~8.5
(V/V) Exposure ceiling	: Not applicable
(V/V) Exposure ceiling	: Not applicable
Use	: Oil well cementing

10. Stability and Reactivity

Stability	: Good
Incompatibility with various substances	: Water
decomposition product	: Bentonite
Hazardous polymerization	: Not polymerization

11. Toxicological Information

ACUTE TOXICITY :Long period of application indicates that under normal application and operation, the chemical is harmless to body and is not harmful to nerves.

PRIMARY SKIN IRRITATION :May cause irritation in case of longer contact.

MATERIAL SAFETY DATA SHEET

KC-4 lost circulation material

1. Chemical Product and Company Identification

1.1 Chemical Product

Chemical products chinese name : 堵漏材料
Product name in English : lost circulation material
Product code : KC-4

1.2 Company information

Name : Sichuan Kell oil and Gas Technology Services Limited
Address: : The town of Jiangyou city of Sichuan
emergency phone :
National emergency phone : 0532-3889090

2. Composition Information

Composition :	Content:	CAS No.
(Mg,Al) ₆ (Si,Ca) _x O ₂ ·2H ₂ O	80%	12304-65-3

3. Hazards Identification

3.1 hazards identification

Risk category : Non dangerous goods
Pathways : Inhalation Ingestion

3.2 effect

Health effect : Have a certain irritation

Environmental effect : Corrosive

Explosion hazard : the powder and the air may form explosive mixture, which will cause explosion by a spark when the concentration reaches certain degree.

4. First Aid Procedures

Inhalation: The chemical will not resolve for normal application. If the resolved gas is inhaled, move to high place and breathe fresh air. Go to see the doctor if ill results occur.

Skin Contact: Wash and rinse skin with water and soap in case of skin irritating medical control.

Eye Contact: Keep eyelids widely apart and rinse out the chemicals with copious amounts of water for several minutes. In case of continuous irritation to eyes medical control.

Ingestion: Rinse mouth with water, give a plenty of water to drink Avoid vomiting. Medical aid.

5. Fire Fighting Measures

Suitable extinguishing media: Distinguish fire with water, dry ice or foam extinguisher based on the concrete situation

6. Accidental Release Measures

Emergency action : Cleaning agents cleaning

7. Handling and Storage

Handling Precautions : The wearing of protective clothing
Storage precautions : Store in a cool dry place

8. Exposure Controls and Peronal Protection

8.1 Exposure Limit:
TLVTN : Failure to develop standard
TLVWN : Failure to develop standard
8.2 Personal Protection
Respiratory protection : Mask
Eye Protection : Protective goggles
Hand protection : Gloves

9. Physical and Chemical Properties

State: Solid
Melting point: 1200℃
Density: 2.5g/ cm³
Critical Temperature
solubility in water(kg/m3)
(V/V) **Exposure ceiling**
(V/V) **Exposure ceiling**
Use
Appearance: White fibers
Flash point: NO
Flammability: NO
: Not information available
: 0%
: Not applicable
: Not applicable
: Oil well cementing

10. Stability and Reactivity

Stability : Good
Incompatibility with various substances : Oxidizing agent Water
decomposition product : Carbon dioxide
Hazardous polymerization : Not polymerization

11. Toxicological Information

ACUTE TOXICITY :Long period of application indicates that under normal application and operation, the chemical is harmless to body and is not harmful to nerves.
PRIMARY SKIN IRRITATION :May cause irritation in case of longer contact.

12. Ecological Information

Environmental evolution : Stable
Ecotoxicity : NO
Biological degradability : YES

13. Disposal Consideratins

Disposal measurement: If this product has become a waste, it must be to obtain a permit the professional factory processing. Treatment must be made before the stabilizer (such as sand, dust ash or cement) curing, the use of industrial landfill treatment will not have free waste residue.

14. Transportation Consideratins

Packing method: 20KG three composite packing bag
Transportation cautions: A complete package of departure. Prevent the sun and rain

15. Regulatory Consideratins

The following regulations applicable to the products: the people's Republic of China laws and regulations: Regulations on safety management of hazardous chemicals (issued by the State Council on February 17, 1987) chemical dangerous goods safety management regulations implementing rules (labour hair [1992]677 date) workplace safety use of chemical products regulations ([1996] labor department sent 423) above laws and regulations for the safe use of chemicals, the production, storage, transportation, loading and unloading are corresponding provisions.

16. Other Consideratins

The safety technical specification (MSDS) according to GB16483-2000 " chemical safety technology rules for preparation of instructions " to prepare
Filling time : October 2013
Guidance department: Sichuan Kell oil and Gas Technology Services Limited Technical department
Data verification unit : Technical department

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MATERIAL SAFETY DATA SHEET

KC-12 Coagulation accelerator

1. Chemical Product and Company Identification

1.1 Chemical Product
Chemical products chinese name : 促凝剂
Product name in English : Coagulation accelerator
Product code : KC-12
1.2 Company information
Name : Sichuan Kell oil and Gas Technology Services Limited
Address: : The town of Jiangyou city of Sichuan
emergency phone
National emergency phone : 0532-3889090

2. Composition Information

Composition : **Content:** **CAS No.**
Benzyltriethylammonium chloride 50% 56-37-1

3. Hazards Indentification

3.1 hazards identification
Risk category : Non dangerous goods
Pathways : Inhalation Ingestion
3.2 effect
Health effect : Have a certain irritation
Environmental effect : Volatility
Explosion hazard : the powder and the air may form explosive mixture, which will cause explosion by a spark when the concentration reaches certain degree.

4. First Aid Procedures

Inhalation: The chemical will not resolve for normal application. If the resolved gas is inhaled, move to high place and breathe fresh air. Go to see the doctor if ill results occur.
Skin Contact: Wash and rinse skin with water and soap in case of skin irritating medical control.
Eye Contact: Keep eyelids widely apart and rinse out the chemicals with copious amounts of water for several minutes. In case of continuous irritation to eyes medical control.
Ingestion: Rinse mouth with water, give a plenty of water to drink Avoid vomiting. Medical aid.

5. Fire Fighting Measures

Suitable extinguishing media: Distinguish fire with water, dry ice or foam extinguisher based on the concrete situation

6. Accidental Release Measures

Emergency action : Cleaning agents cleaning

7. Handling and Storage

Handling Precautions : The wearing of protective clothing
Storage precautions : Store in a cool dry place

8. Exposure Controls and Peronal Protection

8.1 Exposure Limit:
TLVTN : Failure to develop standard
TLVWN : Failure to develop standard
8.2 Personal Protection
Respiratory protection : Mask
Eye Protection : Protective goggles
Hand protection : Gloves

9. Physical and Chemical Properties

State: Solid
Melting point: 500℃
Density: 2g/ cm3
Critical Temperature
solubility in water(kg/m3)
PH : 7.0~8.0
(V/V) **Exposure ceiling**
(V/V) **Exposure ceiling**
Use
Appearance: white powder
Flash point: >100℃
Flammability: NO
: Not information available
: 70%
: Not applicable
: Not applicable
: Not applicable
: Oil well cementing

10. Stability and Reactivity

Stability : Good
Incompatibility with various substances : Water
decomposition product : Bentonite
Hazardous polymerization : Not polymerization

11. Toxicological Information

ACUTE TOXICITY :Long period of application indicates that under normal application and operation, the chemical is harmless to body and is not harmful to nerves.
PRIMARY SKIN IRRITATION :May cause irritation in case of longer contact.

12. Ecological Information

ELIMINATION INFORMATION:
Ecological data are not available
The product does not contact the sewage system, waters and soil, if correctly used.

13. Disposal Consideratins

Disposal measurement: If this product has become a waste, it must be to obtain a permit the professional factory processing.

14. Transportation Consideratins

Packing method: 25KG three composite packing bag
Transportation cautions: A complete package of departure. Prevent the sun and rain

15. Regulatory Consideratins

The following regulations applicable to the products: the people's Republic of China laws and regulations: Regulations on safety management of hazardous chemicals (issued by the State Council on February 17, 1987) chemical dangerous goods safety management regulations implementing rules (labour hair [1992]677 date) workplace safety use of chemical products regulations ([1996] labor department sent 423) above laws and regulations for the safe use of chemicals, the production, storage, transportation, loading and unloading are corresponding provisions.

16. Other Consideratins

The safety technical specification (MSDS) according to GB16483-2000 " chemical safety technology rules for preparation of instructions " to prepare
Filling time : October 2013
Guidance department: Sichuan Kell oil and Gas Technology Services Limited Technical department
Data verification unit : Technical department

The information contained herein is based on our present state of knowledge, but do not constitute a guarantee of our properties Recipients of our product must take responsibility for observing existing laws and regulations

Material Safety Data Sheet (MSDS)
材料安全数据表

15. 商品名称 generic/Trade name: KR-500 油井水泥分散剂
16. 化学名称 Chemical name: _____
17. 供应商 Supplier: 四川凯尔油气田技术服务有限公司
18. 成分 Composition: 脲酮加成聚合物
19. 外观及气味 Appearance and odor: 深褐色粉末
20. 用途 Usage: 石油固井
21. 物理特性 Physical properties:
密度 density: _____ g/cm³ 蒸气密度 rel. vapor density: _____
熔点 Melting point: _____ 蒸气压力 vapor pressure: _____
闪点 Flash point: 无 溶解度 (水) solubility in water(kg/m³): 80%
自燃点 Autoignition: 无 pH: 8.0~9.5
易燃 Flammability: 否 粒子尺寸 particle size: _____
8. 安全性 safety hazards
火 fire: 不易燃 稳定性 stability: 良好
9. 预防 precautions: 常规化工产品保养
10. 灭火方式 Fire extinguishing agents: 无
11. 灭火方法 Fire fighting precautions: 无
12. 对身体的危害性 Health hazards: 有
呼吸 Inhalation: 有一定刺激性
皮肤 Skin: 有一定刺激性
眼睛 Eyes: 有一定刺激性
摄入身体 Ingestion: 不易排泄
13. 首先援助 first aid: 用水冲洗
14. 个人防护 personal protection: 穿戴防护服
一般用途 normal usage: 石油固井
溢出控制/清理 spill control/clean up: 用清洗剂清洗
15. 环境危害性 environmental hazards: 无
16. 防护 precaution: 需穿防护服, 不需自带呼吸器械
17. 储存 storage: 阴凉干燥处
20. 包装和标签 packing and labeling:
国际危险级别 international dangerous class: 无
国际包装等级 international packing grade: 国家包装质量标准

Material Safety Data Sheet (MSDS)

15. Product name: KR-500 Oil well cement dispersion agent
16. Chemical name: _____
17. Supplier: THE KAIER OIL-FIELD TECHNIQUE SERVICE LIMITED COMPANY OF SICUAN
18. Composition: Aldehyde and ketone addition polymer
19. Appearance and odor: Brown powder
20. Usage: oil well cementing
21. Properties:
Density: _____ g/cm³ Rel. vapor density: _____
Melting point: _____ Vapor pressure: _____
Flash point: NO Solubility in water(kg/m³): 0%
Autoignition: NO PH: 8.0~9.5
Flammability: NO Particle size: _____
8. Safety hazards
Fire: Non-combustible Stability: Good
9. Precautions: Maintain conventional chemical product
10. Fire extinguishing agents: NO
11. Fire fighting precautions: NO
12. Health hazards: NO
Inhalation: NO
Skin: NO
Eyes: NO
Ingestion: Unexcretive
13. First aid: _____
14. Personal protection: Wear protective clothes
Normal usage: oil well cementing
Spill control/clean up: Clean with cleaning fluid
15. Environmental hazards: NO
16. Precaution: Need wear protective clothes, no need self-contained breathing apparatus
17. Storage: In drv and shadv and cool storehouse place
20. Packing and labeling:
International dangerous class: NO
International packing grade: National packing quality specification

Material Safety Data Sheet (MSDS)
材料安全数据表

22. 商品名称 generic/Trade name: 微硅粉
23. 化学名称 Chemical name: _____
24. 供应商 Supplier: 四川凯尔油气田技术服务有限公司
25. 成分 Composition: 三氧化二铝、二氧化硅混合物
26. 外观及气味 Appearance and odor: 灰色粉末
27. 用途 Usage: 石油固井
28. 物理特性 Physical properties:
密度 density: _____ g/cm³ 蒸气密度 rel. vapor density: _____
熔点 Melting point: _____ 蒸气压力 vapor pressure: _____
闪点 Flash point: NO 溶解度 (水) solubility in water(kg/m³): 0%
自燃点 Autoignition: NO PH: _____
易燃 Flammability: 否 NO 粒子尺寸 particle size: _____
8. 安全性 safety hazards
火 fire: 不易燃 non-combustible 稳定性 stability: 良好 good
9. 预防 precautions: 常规化工产品保养 maintain conventional chemical product
10. 灭火方式 Fire extinguishing agents: NO
11. 灭火方法 Fire fighting precautions: NO
12. 对身体的危害性 Health hazards: NO
呼吸 Inhalation: 无影响 NO
皮肤 Skin: 无刺激性 NO
眼睛 Eyes: 无刺激性 NO
摄入身体 Ingestion: 不易排泄 unexcretive
13. 首先援助 first aid: _____
14. 个人防护 personal protection: 穿戴防护服 wear protective clothes
一般用途 normal usage: 石油固井
溢出控制/清理 spill control/clean up: 用清洗剂清洗 clean with cleaning fluid
15. 环境危害性 environmental hazards: NO
16. 防护 precaution: 需穿防护服, 不需自带呼吸器械 need wear protective clothes, no need self-contained breathing apparatus
17. 储存 storage: 阴凉干燥处 in dry and shady and cool storehouse place
21. 包装和标签 packing and labeling:
国际危险级别 international dangerous class: NO
国际包装等级 international packing grade: 国家包装质量标准 national packing quality specification

Material Safety Data Sheet (MSDS)

22. Product name: Micro silica fume
 23. Chemical name: _____
 24. Supplier: THE KAIER OIL-FIELD TECHNIQUE SERVICE LIMITED
COMPANY OF SICHUAN
 25. Composition: Three two aluminum oxide, silicon dioxide mixture
 26. Appearance and odor: Gray powder
 27. Usage: oil well cementing
 28. Properties:
 Density: g/cm³ Rel. vapor density: _____
 Melting point: _____ Vapor pressure: _____
 Flash point: NO Solubility in water(kg/m³): 0
 Autoignition: NO pH: _____
 Flammability: NO Particle size: _____
 8. Safety hazards
 Fire: non-combustible Stability: good
 9. Precautions: maintain mineral product
 10. Fire extinguishing agents: NO
 11. Fire fighting precautions: NO
 12. Health hazards: NO
 Inhalation: NO
 Skin: NO
 Eyes: NO
 Ingestion: unexcretive
 13. First aid: _____
 14. Personal protection: wear protective clothes
 Normal usage: oil well cementing
 Spill control/clean up: clean with water
 15. Environmental hazards: NO
 16. Precaution: need wear protective clothes, no need self-contained breathing apparatus
 17. Storage: in dry and shady and cool storehouse place
 21. Packing and labeling:
 International dangerous class: NO
 International packing grade: national packing quality specification

MATERIAL SAFETY DATA SHEET CAUSTIC SODA

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

PRODUCT NAME: CAUSTIC SODA

APPLICATIONS: pH modifier

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
SODIUM HYDROXIDE SOLID	1310-73-2	>95 %

3. HAZARDS IDENTIFICATION:

Causes severe burns.

4. FIRST AID MEASURES:

INHALATION: Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

INGESTION: Do not induce vomiting. Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention immediately.

SKIN CONTACT: Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention immediately.

EYE CONTACT: Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA: Use fire-extinguishing media appropriate for surrounding materials.

SPECIAL FIRE FIGHTING PROCEDURES: Containers close to fire should be removed immediately or cooled with water. Do not use water jet as an extinguisher, as this will spread the fire.

SPECIFIC HAZARDS: By heating and fire, corrosive vapours/gases may be formed.

PROTECTIVE MEASURES IN FIRE: Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES:

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

ENVIRONMENTAL PRECAUTIONS: Do not allow to enter drains, sewers or watercourses.

SPILL CLEAN UP METHODS:

Avoid generation and spreading of dust. Shovel into dry containers. Cover and move the containers.

Flush the area with water.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS:

Avoid inhalation of dust and contact with skin and eyes.

USAGE DESCRIPTION:

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Do not add water directly to the product. It may cause a violent reaction.

STORAGE PRECAUTIONS:

Store in tightly closed original container in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

ENGINEERING MEASURES

Provide adequate general and local exhaust ventilation.

RESPIRATORY EQUIPMENT

No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive air contamination exists. Dust filter P2 (for fine dust).

HAND PROTECTION

Use protective gloves made of: Impermeable material. Butyl rubber. Polyvinyl chloride (PVC). Neoprene.

EYE PROTECTION

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

OTHER PROTECTION

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Pellets	COLOUR: White
ODOUR / TASTE: Odourless	MOL. WEIGHT 40.01
BOILING POINT (°C) 1390°C 760 mm Hg	MELTING POINT (°C) 318.4°C
RELATIVE DENSITY 2.13 g/cm ³ @ 20°C	BULK DENSITY 900 - 1200 kg/m ³
VAPOUR PRESSURE 3.5 h Pa @ 800°C	pH-VALUE, DILUTED SOLUTION 14.0 @ 1%
SOLUBILITY VALUE (g/100g H ₂ O@20°C)	50.0

10. STABILITY AND REACTIVITY:

STABILITY: Stable under normal temperature conditions and recommended use.

CONDITIONS TO AVOID

Do not add water directly to the product. It may cause a violent reaction.

HAZARDOUS DECOMPOSITION PRODUCTS

By heating and fire, corrosive vapours/gases may be formed.

11. TOXICOLOGICAL INFORMATION:

INHALATION

Dust may irritate respiratory system or lungs.

INGESTION

Corrosive. Even small amounts may cause serious damage. May irritate and cause stomach pain, vomiting and diarrhoea.

SKIN CONTACT

Irritating to skin. Irritating and may cause redness and pain.

EYE CONTACT

Irritating to eyes. Particles in the eyes may cause irritation and smarting.

12. ECOLOGICAL INFORMATION:

ECOTOXICITY

Contact JOECO's QHSE Department for ecological information.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of waste and residues in accordance with local authority requirements. This material and its container must be disposed of as hazardous waste.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT:

ROAD TRANSPORT NOTES: Not classified for road transport.

SEA TRANSPORT:

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES:	R35	Causes severe burns
SAFETY PHRASES:	S26	In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
	S45	In case of accident or if you feel unwell, seek medical advice immediately (show label where possible).
	S37/39	Wear suitable gloves and eye/face protection.

16. OTHER INFORMATION:

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET

OXYGEN SCAVENGER

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

PRODUCT NAME: OXYGEN SCAVENGER

APPLICATIONS: OXYGEN SCAVENGER

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
Sodium Sulphite	007757-83-7	>95 %

3. HAZARDS IDENTIFICATION: Irritating to eyes and skin. Contact with acids liberates toxic gas.

4. FIRST AID MEASURES:

GENERAL INFORMATION: In all cases of doubt, or when symptoms persist, seek medical attention.

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

INHALATION: Move the exposed person to fresh air at once. Keep the affected person warm and at rest.

Get prompt medical attention.

INGESTION: Immediately rinse mouth and drink plenty of water (200-300 ml). Contact physician if larger quantity has been consumed.

SKIN CONTACT: Wash the skin immediately with soap and water. Remove contaminated clothing. Get medical attention if irritation persists after washing.

EYE CONTACT: Important! Immediately rinse with water for at least 15 minutes. Get medical attention promptly if symptoms occur after washing.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA: Carbon dioxide (CO₂). Dry chemicals. Foam. Water spray.

SPECIAL FIRE FIGHTING PROCEDURES: Water spray should be used to cool containers. Keep run-off water out of sewers and water sources.

SPECIFIC HAZARDS: The product is non-combustible. If heated, toxic vapours may be formed.

6. ACCIDENTAL RELEASE MEASURES:

SPILL CLEANUP METHODS:

Avoid generation and spreading of dust. Collect spillage with shovel, broom or the like and reuse, if possible. Dispose of large amounts of spillage/waste according to agreement with local authorities.

SPECIAL FIRE FIGHTING PROCEDURES: Water spray should be used to cool containers. Keep run-off water out of sewers and water sources.

SPECIFIC HAZARDS: The product is non-combustible. If heated, toxic vapours may be formed.

6. ACCIDENTAL RELEASE MEASURES:

SPILL CLEANUP METHODS:

Avoid generation and spreading of dust. Collect spillage with shovel, broom or the like and reuse, if possible. Dispose of large amounts of spillage/waste according to agreement with local authorities.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS: Avoid handling which leads to dust formation. Provide good ventilation.

STORAGE PRECAUTIONS: Store in tightly closed original container in a cool, dry well-ventilated place.

Do not store near heat sources or expose to high temperatures. Avoid contact with oxidising agents.

Avoid contact with: Acids. Protect from freezing and direct sunlight. Keep product dry.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

VENTILATION: Provide adequate general and local exhaust ventilation.

RESPIRATORS: Respiratory protection must be used if air concentration exceeds acceptable level. Dust filter P2 (for fine dust).

PROTECTIVE GLOVES: No specific hand protection noted, but gloves may still be advisable. For

prolonged or repeated skin contact use suitable protective gloves. Butyl rubber or polyvinyl acetate.

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

OTHER PROTECTION: Wear appropriate clothing to prevent repeated or prolonged skin contact.

Provide eyewash station.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: powder, dust Colour: white/off white

Solubility: soluble in water Odour: Slight odour Sulphur

Density: 2.65 G PH Value DILUTED SOLUTION : 9 @ 10% (25°C)

10. STABILITY AND REACTIVITY:

STABILITY: Stable under normal temperatures and pressures.

CONDITIONS TO AVOID: Avoid exposure to high temperatures or direct sunlight. Generates toxic gas in contact with acid. Reacts violently with strong oxidizing substances. Avoid contact with acids and oxidising substances. Toxic gases are generated when heated.

MATERIALS TO AVOID: Strong oxidizing agents, strong acids.

HAZARDOUS DECOMP. PRODUCTS: High temperatures generate: Sulphur. Oxides of: Sulphur dioxide.

11. TOXICOLOGICAL INFORMATION:

INHALATION: Dust may irritate respiratory system or lungs.

INGESTION: May cause discomfort if swallowed.

SKIN: Powder may irritate skin.

EYES: Particles in the eyes may cause irritation and smarting.

12. ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION:

Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of on site landfill area. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT NOTES: Not classified for road transport.

RAIL TRANSPORT NOTES: Not classified for rail transport.

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: Contact with acids liberates toxic gas. Irritating to eyes and skin.

SAFETY PHRASES: Avoid contact with skin and eyes. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable gloves and eye/face protection

16. OTHER INFORMATION:

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET

SODA ASH

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

PRODUCT NAME: SODA ASH

APPLICATIONS: SODIUM CARBONATE

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
SODIUM CARBONATE	497-19-8	>95 %

3. HAZARDS IDENTIFICATION:

Irritating to eyes.

4. FIRST AID MEASURES:

INHALATION: Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Get medical attention if any discomfort continues.

INGESTION: Do not induce vomiting. Immediately give a couple of glasses of water or milk, provided the victim is fully conscious. Get medical attention if any discomfort continues.

SKIN CONTACT: Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention promptly if symptoms occur after washing.

EYE CONTACT: Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Get medical attention if any discomfort continues.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA: Use fire-extinguishing media appropriate for surrounding materials.

SPECIAL FIRE FIGHTING PROCEDURES: Containers close to fire should be removed immediately or cooled with water.

SPECIFIC HAZARDS: Fire or high temperatures create: Vapours/gases/fumes of: Carbon dioxide (CO₂).

PROTECTIVE MEASURES IN FIRE: Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES:

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

ENVIRONMENTAL PRECAUTIONS: Do not allow to enter drains, sewers or watercourses.

SPILL CLEAN UP METHODS:

Avoid generation and spreading of dust. Shovel into dry containers. Cover and move the containers.

Flush the area with water.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS: Avoid inhalation of dust and contact with skin and eyes.

STORAGE PRECAUTIONS:

Store in tightly closed original container in a dry, cool and well-ventilated place.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

ENGINEERING MEASURES

Provide adequate general and local exhaust ventilation.

RESPIRATORY EQUIPMENT

No specific recommendation made, but respiratory protection may still be required under exceptional circumstances when excessive air contamination exists. Dust filter P2 (for fine dust).

HAND PROTECTION

For prolonged or repeated skin contact use suitable protective gloves. Use protective gloves made of: Neoprene, nitrile, polyethylene or PVC.

EYE PROTECTION

Wear approved chemical safety goggles where eye exposure is reasonably probable.

OTHER PROTECTION

Wear appropriate clothing to prevent any possibility of skin contact. Provide eyewash station.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Granular Powder, dust COLOUR: White

ODOUR / TASTE: No characteristic odour. SOLUBILITY: Completely soluble in water

MELTING POINT (°C) 851° C RELATIVE DENSITY 2.53 s.g @ 20° C

pH-VALUE, DILUTED SOLUTION 11.6

SOLUBILITY VALUE (g/100g H₂O@20°C) 22g/100g H₂O @ 20° C

10. STABILITY AND REACTIVITY:

STABILITY: Stable under normal temperature conditions and recommended use.

MATERIALS TO AVOID

Avoid contact with acids and oxidising substances.

HAZARDOUS DECOMPOSITION PRODUCTS

Fire or high temperatures create: Vapours/gases/fumes of: Carbon dioxide (CO₂).

11. TOXICOLOGICAL INFORMATION:

INHALATION

Dust may irritate respiratory system or lungs.

INGESTION

May irritate and cause stomach pain, vomiting and diarrhoea.

SKIN CONTACT

Irritating and may cause redness and pain.

EYE CONTACT

Irritating to eyes. Particles in the eyes may cause irritation and smarting.

12. ECOLOGICAL INFORMATION:

ECOTOXICITY

Contact JOECO's QHSE Department for ecological information.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

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

14. TRANSPORT INFORMATION:

ROAD TRANSPORT:

ROAD TRANSPORT NOTES: Not classified for road transport.

SEA TRANSPORT:

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: R36 Irritating to eyes.

SAFETY PHRASES: S22 Do not breathe dust.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

16. OTHER INFORMATION:

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET

WJF-1(LIQUID)

1. IDENTIFICATION OF THE SUBSTANCE/Preparation AND THE COMPANY:

PRODUCT NAME: WJF-1(LIQUID)

APPLICATIONS: CORROSION INHIBITOR

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
Inorganic silicate	1312-76-1	70-80%
H ₂ O	7732-18-5	20-30%

3. HAZARDS IDENTIFICATION:

An alkaline material which may cause chemical burns to the skin and eyes. The danger is greater with hot solutions.

4. FIRST AID MEASURES:

EYES: Speed is essential. Immediately wash eyes with lots of water while lifting the eye lids. Continue to rinse for at least 20 minutes. This prolonged irrigation is extremely important and must be done immediately, otherwise serious damage may result. Get prompt medical attention after this first aid treatment.

SKIN: Remove contaminated clothing. Wash with large quantities of water until there is no longer a "soapy" feeling. Seek medical attention if symptoms develop/persist.

INHALATION: Remove the exposed person to fresh air. Keep the exposed person warm and at rest.

INGESTION: Do not induce vomiting, wash out mouth with water. Give plenty of water or milk to drink. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA: This material is not flammable. Use suitable extinguishing media for surrounding fire.

SPECIAL FIRE FIGHTING PROCEDURES: None noted.

SPECIAL EXPOSURE HAZARDS IN FIRE: None noted.

6. ACCIDENTAL RELEASE MEASURES:

SPILL CLEANUP METHODS: In the event of a spill suitable gloves and eye/face protection must be worn. If there is insufficient ventilation suitable respiratory equipment must be worn to avoid breathing mists. Do not touch the spilled material. Do not allow discharge to surface water drains. Large spills of liquor should be absorbed onto a sweeping material such as vermiculite or dry sand and shovelled into dry containers. The containers must be covered and moved. Small spills of liquor can be washed down with copious amounts of water.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS: Provide good ventilation.

STORAGE PRECAUTIONS: Store at moderate temperatures in dry, well ventilated area.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

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VENTILATION: Provide adequate general and local exhaust ventilation.

PROTECTIVE GLOVES: No specific hand protection noted, but gloves may still be advisable.

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

OTHER PROTECTION: Wear appropriate clothing to prevent prolonged skin contact. Provide eyewash station.

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Viscous liquid **COLOUR:** Colourless

ODOUR / TASTE: No characteristic odour **pH:** approximately 11

FLAMMABILITY: Not flammable.

RELATIVE DENSITY: S.G. 1.2 - 1.5

10. STABILITY AND REACTIVITY:

STABILITY: Normally stable.

CONDITIONS TO AVOID: Avoid arc welding on vessels containing silicate solutions, take care to prevent electrolyses of the solution.

MATERIALS TO AVOID: Solutions will react with new surfaces of aluminium, tin, zinc and their alloys to evolve hydrogen. Strong acids, may react violently.

HAZARDOUS DECOMPOSITION PRODUCTS: Food or dairy residues which may contain reducing sugars which under certain conditions may react with alkaline materials evolving CO.

11. TOXICOLOGICAL INFORMATION:

INHALATION: No specific health warnings noted. May cause irritation to the respiratory system.

INGESTION: May cause discomfort if swallowed.

SKIN: Liquid may irritate skin.

EYES: Spray in the eyes may cause irritation.

12. ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION:

Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT NOTES: Not classified for road transport.

SEA TRANSPORT:

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: Not classified.

SAFETY PHRASES: Not classified.

16. OTHER INFORMATION:

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MATERIAL SAFETY DATA SHEET

WJF-1(SOLID)

1. IDENTIFICATION OF THE SUBSTANCE/Preparation AND THE COMPANY:

PRODUCT NAME: WJF-1(SOLID)

APPLICATIONS: CORROSION INHIBITOR

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
Octadecylamine	124-30-1	20-30%
Urea	57-13-6	40-50%
Hexamethylenetetramine	100-97-0	20-30%

3. HAZARDS IDENTIFICATION:

Not regarded as a health hazard under current legislation.

4. FIRST AID MEASURES:

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

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

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

EYES: Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention if any discomfort continues.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA:

Carbon dioxide (CO₂). Dry chemicals. Foam. Water spray, fog or mist.

HAZARDOUS COMBUSTION PRODUCTS:

Carbon monoxide, carbon dioxide, nitrogen dioxide, steam and smoke

6. ACCIDENTAL RELEASE MEASURES:

SPILL CLEANUP METHODS:

Collect in containers and seal securely. Flush clean with lots of water. Be aware of potential for surfaces to become slippery. Avoid generation and spreading of dust. Wear necessary protective equipment.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS:

Provide good ventilation.

STORAGE PRECAUTIONS:

Store at moderate temperatures in dry, well ventilated area.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

VENTILATION: Provide adequate general and local exhaust ventilation.

PROTECTIVE GLOVES:

No specific hand protection noted, but gloves may still be advisable.

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EYE PROTECTION:

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

OTHER PROTECTION:

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE White solid

Solubility: soluble in water

pH: 8-9

Inhibitive efficiency: 80(1min)

10. STABILITY AND REACTIVITY:

STABILITY: Normally stable.

HAZARDOUS POLYMERIZATION: Will not polymerize.

MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMP. PRODUCTS: Fire or high temperatures create: Carbon dioxide (CO₂), Nitrogen dioxide(NO₂).

11. TOXICOLOGICAL INFORMATION:

INHALATION: No specific health warnings noted. May cause irritation to the respiratory system.

INGESTION: May cause discomfort if swallow

EYES: Spray in the eyes may cause irritation.

12. ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION:

Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT:

ROAD TRANSPORT NOTES: Not classified for road transport.

SEA TRANSPORT:

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: Not classified

SAFETY PHRASES: Not classified.

16. OTHER INFORMATION:

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET**XC POLYMER****1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY:**

PRODUCT NAME: XC POLYMER (Xanthan Gum)

APPLICATIONS: Viscosifier

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
Xanthan Gum)	11138-66-2	100 %

3. HAZARDS IDENTIFICATION:

Not regarded as a health hazard under current legislation.

4. FIRST AID MEASURES:

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

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

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

EYES: Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention if any discomfort continues.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA:

Carbon dioxide (CO₂). Dry chemicals. Foam. Water spray, fog or mist.

SPECIAL FIRE FIGHTING PROCEDURES:

Water spray may be used to flush spills away from exposures and dilute spills to non-flammable mixtures.

UNUSUAL FIRE & EXPLOSION HAZARDS:

High concentrations of dust may form explosive mixture with air.

HAZARDOUS COMBUSTION PRODUCTS:

Asphyxiating gases/vapors/fumes. Carbon dioxide (CO₂). Carbon monoxide (CO).

6. ACCIDENTAL RELEASE MEASURES:

SPILL CLEANUP METHODS:

Collect in containers and seal securely. Flush clean with lots of water. Be aware of potential for surfaces to become slippery. Avoid generation and spreading of dust. Wear necessary protective equipment.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS:

Provide good ventilation.

STORAGE PRECAUTIONS:

Store at moderate temperatures in dry, well ventilated area.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

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VENTILATION: Provide adequate general and local exhaust ventilation.

PROTECTIVE GLOVES:

No specific hand protection noted, but gloves may still be advisable. For prolonged or repeated skin contact use suitable protective gloves. Butyl rubber or polyvinyl acetate.

EYE PROTECTION:

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

OTHER PROTECTION:

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Powder, dust. **COLOUR:** Off-white, to Brownish.

ODOUR/TASTE: Mild (or faint). **SOLUBILITY DESCRIPTION:** Very soluble in water.

DENSITY/SPECIFIC GRAVITY (g/ml): 1.5 **TEMPERATURE (°C):** 20

pH-VALUE, DILUTED SOLUTION: 7 **CONCENTRATION (%M):** 1

10. STABILITY AND REACTIVITY:

STABILITY: Normally stable.

CONDITIONS TO AVOID: Not known.

MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMP. PRODUCTS: Fire or high temperatures create: Asphyxiating gases/vapours/fumes of: Carbon dioxide (CO₂). Carbon monoxide(CO).

11. TOXICOLOGICAL INFORMATION:

INHALATION: Dust may irritate respiratory system or lungs.

INGESTION: May cause discomfort if swallowed.

SKIN: Powder may irritate skin.

EYES: Particles in the eyes may cause irritation and smarting.

12. ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION:

Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of on site landfill area. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT NOTES: Not classified for road transport.

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: Not classified.

SAFETY PHRASES: Not classified.

16. OTHER INFORMATION:

DISCLAIMER

The information in MSDS is only related to certain materials. This material is not suitable for mix-using with other materials or used in the production & processing of other materials. For the company's maximum interests and intellectual property rights, the listed data is accurate and reliable. User should meet their requirement according to product description and specification, it is user's duty.

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MATERIAL SAFETY DATA SHEET**BIOCIDE****1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY:**

PRODUCT NAME: BIOCID

APPLICATIONS: BIOCID

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
Polyhexamethylene guanidine	57028-96-3	60-70%
H ₂ O	7732-18-5	30-40%

3. HAZARDS IDENTIFICATION:

Harmful if swallowed. May cause sensitisation by skin contact.

4. FIRST AID MEASURES:

INHALATION: Move the exposed person to fresh air at once. For breathing difficulties oxygen may be necessary. Get medical attention if any discomfort continues.

INGESTION DO NOT INDUCE VOMITING! Rinse mouth thoroughly with water and give large amounts of milk or water to people not unconscious. Get medical attention.

SKIN CONTACT: Remove contaminated clothing. Wash the skin immediately with soap and water. Get medical attention if any discomfort continues.

EYE CONTACT: Important! Immediately rinse with water for at least 15 minutes. Hold eyelids apart. Get medical attention if any discomfort continues.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA: Water spray, foam, dry powder or carbon dioxide.

SPECIAL FIRE FIGHTING PROCEDURES: Use water to keep fire exposed containers cool and disperse vapours.

PROTECTIVE MEASURES IN FIRE: Self contained breathing apparatus and full protective clothing must be worn in case of fire.

6. ACCIDENTAL RELEASE MEASURES:

ENVIRONMENTAL PRECAUTIONS: Do not allow to enter drains, sewers or watercourses.

SPILL CLEAN UP METHODS:

Dike far ahead of larger spills for later disposal. Absorb spillage with suitable absorbent material. Collect spillage in containers, seal securely and deliver for disposal according to local regulations. Flush area with plenty of water.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS:

Provide good ventilation.

STORAGE PRECAUTIONS:

Store at moderate temperatures in dry, well ventilated area.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

VENTILATION: Provide adequate general and local exhaust ventilation.

PROTECTIVE GLOVES:

No specific hand protection noted, but gloves may still be advisable.

EYE PROTECTION:

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

OTHER PROTECTION:

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: liquid

COLOUR: Colorless to light yellow

ODOUR / TASTE: No characteristic odour

SOLUBILITY: soluble in water

BOILING POINT (° C): > 100

RELATIVE DENSITY: S.G. 1.12 - 1.15

10. STABILITY AND REACTIVITY:

STABILITY: Normally stable.

CONDITIONS TO AVOID: Avoid excessive heat for prolonged periods of time.

MATERIALS TO AVOID: Oxidising materials. Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS: Fire or high temperatures create: Oxides of: Nitrogen. Carbon.

11. TOXICOLOGICAL INFORMATION:

INHALATION: May cause irritation to the respiratory system..

INGESTION: May cause discomfort if swallowed.

SKIN: Liquid may irritate skin.

EYES: Spray in the eyes may cause irritation.

12. ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION:

Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT:

ROAD TRANSPORT NOTES: Not classified for road transport.

SEA TRANSPORT:

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: Not classified.

SAFETY PHRASES: Not classified.

16. OTHER INFORMATION:

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

MATERIAL SAFETY DATA SHEET



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

PRODUCT NAME: CaCO_3

APPLICATIONS: Drilling Fluid Lost Circulation Material

SUPPLIER: JOECO

YANGZHOU JIANGSU PROVINCE CHINA

T -0086514-86766151

2. COMPOSITION/INFORMATION ON INGREDIENTS:

Name	CAS-No.	Content
calcium carbonate	1317-65-3	>90%

3. HAZARDS IDENTIFICATION:

Not regarded as a health hazard under current legislation.

4. FIRST AID MEASURES:

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

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

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

EYES: Promptly wash eyes with plenty of water while lifting the eye lids. Get medical attention if any discomfort continues.

5. FIRE FIGHTING MEASURES:

EXTINGUISHING MEDIA:

Carbon dioxide (CO₂). Dry chemicals. Foam. Water spray, fog or mist.

SPECIAL FIRE FIGHTING PROCEDURES:

No specific fire fighting procedure given.

6. ACCIDENTAL RELEASE MEASURES:

SPILL CLEANUP METHODS:

Collect in containers and seal securely. Flush clean with lots of water. Avoid generation and spreading of dust. Wear necessary protective equipment.

7. HANDLING AND STORAGE:

USAGE PRECAUTIONS:

Avoid handling which leads to dust formation. Provide good ventilation.

STORAGE PRECAUTIONS:

Store at moderate temperatures in dry, well ventilated area.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION:

PROTECTIVE EQUIPMENT:

VENTILATION: Provide adequate general and local exhaust ventilation.

RESPIRATORS: Respiratory protection must be used if air concentration exceeds acceptable level. Dust filter P2 (for fine dust).

PROTECTIVE GLOVES:

No specific hand protection noted, but gloves may still be advisable. For prolonged or repeated skin contact use suitable protective gloves. Butyl rubber or polyvinyl acetate.

EYE PROTECTION:

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

OTHER PROTECTION:

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

9. PHYSICAL AND CHEMICAL PROPERTIES:

APPEARANCE: Powder, dust

COLOUR: White / off-white

ODOUR: Odourless

SOLUBILITY: Insoluble in water

RELATIVE DENSITY: 2.6 g/cm³

DECOMPOSITION TEMPERATURE: 825°C

10. STABILITY AND REACTIVITY:

STABILITY: Stable under normal temperature conditions.

MATERIALS TO AVOID: Strong acids.

HAZARDOUS DECOMPOSITION PRODUCTS

The product is non-combustible. If heated, toxic vapours may be formed, such as, Carbon dioxide (CO₂).

11. TOXICOLOGICAL INFORMATION:

INHALATION: Dust may irritate respiratory system or lungs.

INGESTION: May cause discomfort if swallowed.

SKIN: Powder may irritate skin.

EYES: Particles in the eyes may cause irritation and smarting.

12. ECOLOGICAL INFORMATION:

ECOLOGICAL INFORMATION:

Not regarded as dangerous for the environment.

13. DISPOSAL CONSIDERATIONS:

DISPOSAL METHODS:

Recover and reclaim or recycle, if practical. Dispose of on site landfill area. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION:

ROAD TRANSPORT:

ROAD TRANSPORT NOTES: Not classified for road transport.

RAIL TRANSPORT:

RAIL TRANSPORT NOTES: Not classified for rail transport.

SEA TRANSPORT:

SEA TRANSPORT NOTES: Not classified for sea transport.

15. REGULATORY INFORMATION:

RISK PHRASES: Not classified.

SAFETY PHRASES: Not classified.

16. OTHER INFORMATION:

USER NOTES: HMIS Health - 1 HMIS Flammability - 1 HMIS Reactivity - 0 E - Safety glasses, Gloves.

ภาคผนวก ญ
ใบรายงานผลการวิเคราะห์



ระยะก่อสร้างและติดตั้งพื้นที่ฐานหลุมผลิต WBNE-F



คุณภาพอากาศ



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@eco.thai.net
SAMPLING SOURCE : A1: MOO 14 BAN MAB SAMOR (UTM WGS 84 ZONE 47P 733756E 1733389N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **
SAMPLING TIME : *, **
SAMPLING BY : MR PREEDA CHAIYAPOOMSAKUL
ANALYZED BY : MISS JETJANIN TUMSA-AT

RECEIVED DATE : JANUARY 4, 2022
ANALYTICAL DATE : JANUARY 4-10, 2022
REPORT NO. : 2022-U002256
WORK NO. : 2021-008596
ANALYSIS NO. : T22AA012-0001 - T22AA012-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD
			A1: MOO 14 BAN MAB SAMOR		
			*	**	
			T22AA012-0001	T22AA012-0002	
TOTAL SUSPENDED PARTICULATE	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.048	0.062	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.026	0.020	≤ 0.12
SAMPLE CONDITION			COMPLETE	COMPLETE	

REMARK
RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.
PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.
REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).
* : SAMPLING FROM 08:00 HOUR ON DECEMBER 29, 2021 TO 08:00 HOUR ON DECEMBER 30, 2021.
** : SAMPLING FROM 08:00 HOUR ON DECEMBER 30, 2021 TO 08:00 HOUR ON DECEMBER 31, 2021.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 13, 2022

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• REPORTED ANALYSIS REFERS TO SUBMITTED SAMPLE ONLY.

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ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@eco.thai.net
SAMPLING SOURCE : A1: MOO 14 BAN MAB SAMOR (UTM WGS 84 ZONE 47P 733756E 1733389N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *
SAMPLING TIME : *
SAMPLING BY : MR PREEDA CHAIYAPOOMSAKUL
ANALYZED BY : MISS JETJANIN TUMSA-AT

RECEIVED DATE : JANUARY 4, 2022
ANALYTICAL DATE : JANUARY 4-10, 2022
REPORT NO. : 2022-U002257
WORK NO. : 2021-008596
ANALYSIS NO. : T22AA012-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD
			A1: MOO 14 BAN MAB SAMOR	
			T22AA012-0003	
TOTAL SUSPENDED PARTICULATE	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.038	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.025	≤ 0.12
SAMPLE CONDITION			COMPLETE	

REMARK
RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.
PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.
REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).
* : SAMPLING FROM 08:00 HOUR ON DECEMBER 31, 2021 TO 08:00 HOUR ON JANUARY 1, 2022.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 13, 2022

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ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecothai.net
SAMPLING SOURCE : A2: NONG KHANOM JEEN HOUSE OF PRIEST (UTM WGS 84 ZONE 47P 731587E 1730272N)
SAMPLE TYPE : AMBIENT **RECEIVED DATE** : JANUARY 4, 2022
SAMPLING DATE : *, ** **ANALYTICAL DATE** : JANUARY 4-10, 2022
SAMPLING TIME : *, ** **REPORT NO.** : 2022-U002259
SAMPLING BY : MR PREEDA CHAIYAPOOMSAKUL **WORK NO.** : 2021-008596
ANALYZED BY : MISS JETJARAN TUMSA-AT **ANALYSIS NO.** : T22AA012-0004 - T22AA012-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD
			A2: NONG KHANOM JEEN HOUSE OF PRIEST		
			* T22AA012-0004	** T22AA012-0005	
TOTAL SUSPENDED PARTICULATE	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.028	0.029	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.014	0.014	≤ 0.12
SAMPLE CONDITION			COMPLETE	COMPLETE	

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.

TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.

PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.

REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).

* : SAMPLING FROM 09:00 HOUR ON DECEMBER 29, 2021 TO 09:00 HOUR ON DECEMBER 30, 2021.

** : SAMPLING FROM 09:00 HOUR ON DECEMBER 30, 2021 TO 09:00 HOUR ON DECEMBER 31, 2021.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 13, 2022

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ANALYSIS REPORT

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CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecothai.net
SAMPLING SOURCE : A2: NONG KHANOM JEEN HOUSE OF PRIEST (UTM WGS 84 ZONE 47P 731587E 1730272N)
SAMPLE TYPE : AMBIENT **RECEIVED DATE** : JANUARY 4, 2022
SAMPLING DATE : * **ANALYTICAL DATE** : JANUARY 4-10, 2022
SAMPLING TIME : * **REPORT NO.** : 2022-U002260
SAMPLING BY : MR PREEDA CHAIYAPOOMSAKUL **WORK NO.** : 2021-008596
ANALYZED BY : MISS JETJARAN TUMSA-AT **ANALYSIS NO.** : T22AA012-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATOR STANDARD
			A2: NONG KHANOM JEEN HOUSE OF PRIEST T22AA012-0006	
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.029	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.013	≤ 0.12
SAMPLE CONDITION			COMPLETE	

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.

TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.

PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.

REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).

* : SAMPLING FROM 09:00 HOUR ON DECEMBER 31, 2021 TO 09:00 HOUR ON JANUARY 1, 2022.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

JANUARY 13, 2022

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ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@eco-thai.net
MEASURING SOURCE : N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)
MEASURING TYPE : AMBIENT (NOISE) **RECEIVED DATE** : DECEMBER 29 - JANUARY 1, 2022
MEASURING DATE : DECEMBER 29 - JANUARY 1, 2022 **ANALYTICAL DATE** : DECEMBER 29 - JANUARY 1, 2022
MEASURING TIME : * **REPORT NO.** : 2022-U002358
MEASURING METHOD : INTEGRATED SOUND LEVEL METER **WORK NO.** : 2021-008596
MEASURED BY : MR PREEDA CHAIYAPOOMSAKUL **ANALYSIS NO.** : T22AA012-0007 - T22AA012-0009

TIME*	RESULT dB(A)		
	N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)		
	DECEMBER 29 - 30, 2021		
	T22AA012-0007		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	49.9	78.6	41.3
08:00-09:00 HOUR	43.6	66.8	37.1
09:00-10:00 HOUR	48.0	71.9	36.0
10:00-11:00 HOUR	41.8	63.9	34.4
11:00-12:00 HOUR	44.5	72.7	34.2
12:00-13:00 HOUR	44.5	64.1	36.8
13:00-14:00 HOUR	46.0	71.0	37.7
14:00-15:00 HOUR	44.0	62.8	37.1
15:00-16:00 HOUR	44.3	65.5	36.0
16:00-17:00 HOUR	45.7	71.5	35.2
17:00-18:00 HOUR	46.6	58.2	35.3
18:00-19:00 HOUR	48.0	60.8	46.1
19:00-20:00 HOUR	48.4	62.6	47.1
20:00-21:00 HOUR	47.3	70.8	44.9
21:00-22:00 HOUR	48.1	73.1	44.8
22:00-23:00 HOUR	46.3	63.2	44.5
23:00-00:00 HOUR	46.7	65.3	44.6
00:00-01:00 HOUR	46.7	59.9	45.0
01:00-02:00 HOUR	45.7	65.4	42.8
02:00-03:00 HOUR	45.3	60.0	41.5
03:00-04:00 HOUR	45.7	64.8	42.0
04:00-05:00 HOUR	43.6	54.4	40.4
05:00-06:00 HOUR	46.4	58.1	43.8
06:00-07:00 HOUR	51.3	77.4	47.5
L _{Aeq} 24 hours	46.7		
L _{Adn}	53.3		

TIME*	RESULT dB(A)		
	N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)		
	DECEMBER 30 - 31, 2021		
	T22AA012-0008		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	50.3	78.3	40.4
08:00-09:00 HOUR	43.7	62.4	36.7
09:00-10:00 HOUR	48.3	73.5	37.6
10:00-11:00 HOUR	49.4	67.4	42.9
11:00-12:00 HOUR	48.2	63.7	38.2
12:00-13:00 HOUR	49.7	69.8	41.9
13:00-14:00 HOUR	49.8	76.1	37.5
14:00-15:00 HOUR	45.8	64.5	36.9
15:00-16:00 HOUR	45.5	67.1	39.1
16:00-17:00 HOUR	45.8	66.5	39.7
17:00-18:00 HOUR	47.7	78.0	37.8
18:00-19:00 HOUR	46.4	70.6	44.2
19:00-20:00 HOUR	46.4	71.7	41.8
20:00-21:00 HOUR	47.9	70.6	43.3
21:00-22:00 HOUR	52.0	74.4	47.8
22:00-23:00 HOUR	47.4	59.8	45.2
23:00-00:00 HOUR	46.6	58.4	44.8
00:00-01:00 HOUR	46.5	63.4	44.6
01:00-02:00 HOUR	46.2	69.5	44.0
02:00-03:00 HOUR	44.2	54.8	42.1
03:00-04:00 HOUR	42.2	54.7	39.9
04:00-05:00 HOUR	44.2	54.5	40.2
05:00-06:00 HOUR	47.9	66.7	45.3
06:00-07:00 HOUR	49.4	79.5	44.2
L _{Aeq} 24 hours	47.7		
L _{Adn}	53.2		



TIME*	RESULT dB(A)		
	N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)		
	DECEMBER 31, 2021 - JANUARY 01, 2022		
	T22AA012-0009		
	L _{Aeq} 1 hour	L _{Amax} 1 hour	L _{A90} 1 hour
07:00-08:00 HOUR	46.7	70.6	39.0
08:00-09:00 HOUR	46.3	73.2	37.5
09:00-10:00 HOUR	46.5	71.3	37.3
10:00-11:00 HOUR	48.7	65.2	41.4
11:00-12:00 HOUR	46.0	69.0	39.3
12:00-13:00 HOUR	46.5	72.6	37.6
13:00-14:00 HOUR	45.3	59.2	38.1
14:00-15:00 HOUR	47.3	67.0	38.2
15:00-16:00 HOUR	50.5	68.3	41.0
16:00-17:00 HOUR	48.0	75.3	39.6
17:00-18:00 HOUR	46.4	77.1	36.4
18:00-19:00 HOUR	50.5	76.4	46.4
19:00-20:00 HOUR	50.7	62.3	47.5
20:00-21:00 HOUR	47.3	64.6	46.0
21:00-22:00 HOUR	47.3	69.5	45.2
22:00-23:00 HOUR	46.5	58.1	44.9
23:00-00:00 HOUR	46.0	70.6	43.6
00:00-01:00 HOUR	46.8	70.8	45.1
01:00-02:00 HOUR	45.6	57.7	44.3
02:00-03:00 HOUR	43.3	59.1	40.3
03:00-04:00 HOUR	42.5	62.4	40.0
04:00-05:00 HOUR	44.2	69.2	42.9
05:00-06:00 HOUR	46.0	58.4	43.4
06:00-07:00 HOUR	48.1	72.2	44.7
L _{Aeq} 24 hours	47.3		
L _{Adn}	52.6		

Sila Banjongjairuk
(MR. SILA BANJONGJAIRUK)
LABORATORY SUPERVISOR

JANUARY 14, 2022

ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecoohai.net
MEASURING PLACE : N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)
MEASURING TYPE : AMBIENT (ANNOYANCE NOISE)
MEASURING DATE : DECEMBER 29 - JANUARY 1, 2022
MEASURING TIME : *
MEASURING EQUIPMENT : INTEGRATED SOUND LEVEL METER AND CALCULATION
MEASURED BY : MR. FREEDA CHAIYAPOOMSAKUL

RECEIVED DATE : DECEMBER 29 - JANUARY 1, 2022
ANALYTICAL DATE : DECEMBER 29 - JANUARY 1, 2022
REPORT NO. : 2022-U002359
WORK NO. : 2021-008596
ANALYSIS NO. : T22AA012-0007 - T22AA012-0009

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 29, 2021 T22AA012-0007	DAY TIME 1/					
	07:00-08:00 HOUR	49.9 1/	44.7 **	48.4 1/	44.3 **	4.1
	08:00-09:00 HOUR	43.6 1/	44.7 **	36.6 1/	44.3 **	NOT SIGNIFICANT 1/
	09:00-10:00 HOUR	48.0 1/	44.7 **	45.0 1/	44.3 **	0.7
	10:00-11:00 HOUR	41.8 1/	44.7 **	34.8 1/	44.3 **	NOT SIGNIFICANT 1/
	11:00-12:00 HOUR	44.5 1/	44.7 **	37.5 1/	44.3 **	NOT SIGNIFICANT 1/
	12:00-13:00 HOUR	44.5 1/	44.7 **	37.5 1/	44.3 **	NOT SIGNIFICANT 1/
	13:00-14:00 HOUR	46.0 1/	44.7 **	39.0 1/	44.3 **	NOT SIGNIFICANT 1/
	14:00-15:00 HOUR	44.0 1/	44.7 **	37.0 1/	44.3 **	NOT SIGNIFICANT 1/
	15:00-16:00 HOUR	44.3 1/	44.7 **	37.3 1/	44.3 **	NOT SIGNIFICANT 1/
	16:00-17:00 HOUR	45.7 1/	44.7 **	38.7 1/	44.3 **	NOT SIGNIFICANT 1/
	17:00-18:00 HOUR	46.6 1/	44.7 **	42.1 1/	44.3 **	NOT SIGNIFICANT 1/
	18:00-19:00 HOUR	48.0 1/	44.7 **	45.0 1/	44.3 **	0.7
	19:00-20:00 HOUR	48.4 1/	44.7 **	46.4 1/	44.3 **	2.1
	20:00-21:00 HOUR	47.3 1/	44.7 **	44.3 1/	44.3 **	0.0
	21:00-22:00 HOUR	48.1 1/	44.7 **	45.1 1/	44.3 **	0.8
	NIGHT TIME 2/					
	22:00-22:05 HOUR	47.4 2/	43.6 ***	48.4 2/	41.5 ***	6.9
	22:05-22:10 HOUR	45.9 2/	43.6 ***	44.4 2/	41.5 ***	2.9
	22:10-22:15 HOUR	46.1 2/	43.6 ***	46.1 2/	41.5 ***	4.6
	22:15-22:20 HOUR	48.3 2/	43.6 ***	49.8 2/	41.5 ***	8.3
	22:20-22:25 HOUR	45.6 2/	43.6 ***	44.1 2/	41.5 ***	2.6
	22:25-22:30 HOUR	45.0 2/	43.6 ***	41.0 2/	41.5 ***	NOT SIGNIFICANT 1/
	22:30-22:35 HOUR	44.5 2/	43.6 ***	40.5 2/	41.5 ***	NOT SIGNIFICANT 1/
	22:35-22:40 HOUR	47.8 2/	43.6 ***	48.8 2/	41.5 ***	7.3
	22:40-22:45 HOUR	44.9 2/	43.6 ***	40.9 2/	41.5 ***	NOT SIGNIFICANT 1/
	22:45-22:50 HOUR	46.4 2/	43.6 ***	46.4 2/	41.5 ***	4.9
	22:50-22:55 HOUR	47.1 2/	43.6 ***	48.1 2/	41.5 ***	6.6
	22:55-23:00 HOUR	44.9 2/	43.6 ***	40.9 2/	41.5 ***	NOT SIGNIFICANT 1/
	23:00-23:05 HOUR	44.6 2/	43.6 ***	40.6 2/	41.5 ***	NOT SIGNIFICANT 1/
	23:05-23:10 HOUR	44.4 2/	43.6 ***	40.4 2/	41.5 ***	NOT SIGNIFICANT 1/
	23:10-23:15 HOUR	45.0 2/	43.6 ***	41.0 2/	41.5 ***	NOT SIGNIFICANT 1/
	23:15-23:20 HOUR	43.6 2/	43.6 ***	39.6 2/	41.5 ***	NOT SIGNIFICANT 1/
	23:20-23:25 HOUR	43.0 2/	43.6 ***	39.0 2/	41.5 ***	NOT SIGNIFICANT 1/



DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 29, 2021	NIGHT TIME ^{2/}					
T22AA012-0007	23:25-23:30 HOUR	44.8 ^{2/}	43.6 ***	40.8 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	23:30-23:35 HOUR	48.5 ^{2/}	43.6 ***	50.0 ^{2/}	41.5 ***	8.5
	23:35-23:40 HOUR	48.4 ^{2/}	43.6 ***	49.9 ^{2/}	41.5 ***	8.4
	23:40-23:45 HOUR	48.4 ^{2/}	43.6 ***	49.9 ^{2/}	41.5 ***	8.4
	23:45-23:50 HOUR	48.2 ^{2/}	43.6 ***	49.7 ^{2/}	41.5 ***	8.2
	23:50-23:55 HOUR	48.0 ^{2/}	43.6 ***	49.0 ^{2/}	41.5 ***	7.5
	23:55-00:00 HOUR	47.9 ^{2/}	43.6 ***	48.9 ^{2/}	41.5 ***	7.4
DECEMBER 30, 2021	NIGHT TIME ^{2/}					
T22AA012-0007	00:00-00:05 HOUR	47.5 ^{2/}	43.6 ***	48.5 ^{2/}	41.5 ***	7.0
	00:05-00:10 HOUR	47.8 ^{2/}	43.6 ***	48.8 ^{2/}	41.5 ***	7.3
	00:10-00:15 HOUR	45.9 ^{2/}	43.6 ***	44.4 ^{2/}	41.5 ***	2.9
	00:15-00:20 HOUR	46.3 ^{2/}	43.6 ***	46.3 ^{2/}	41.5 ***	4.8
	00:20-00:25 HOUR	46.1 ^{2/}	43.6 ***	46.1 ^{2/}	41.5 ***	4.6
	00:25-00:30 HOUR	46.9 ^{2/}	43.6 ***	46.9 ^{2/}	41.5 ***	5.4
	00:30-00:35 HOUR	48.1 ^{2/}	43.6 ***	49.6 ^{2/}	41.5 ***	8.1
	00:35-00:40 HOUR	47.0 ^{2/}	43.6 ***	47.0 ^{2/}	41.5 ***	5.5
	00:40-00:45 HOUR	47.1 ^{2/}	43.6 ***	48.1 ^{2/}	41.5 ***	6.6
	00:45-00:50 HOUR	46.1 ^{2/}	43.6 ***	46.1 ^{2/}	41.5 ***	4.6
	00:50-00:55 HOUR	46.3 ^{2/}	43.6 ***	46.3 ^{2/}	41.5 ***	4.8
	00:55-01:00 HOUR	44.8 ^{2/}	43.6 ***	40.8 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	01:00-01:05 HOUR	43.7 ^{2/}	43.6 ***	39.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	01:05-01:10 HOUR	45.7 ^{2/}	43.6 ***	44.2 ^{2/}	41.5 ***	2.7
	01:10-01:15 HOUR	44.7 ^{2/}	43.6 ***	40.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	01:15-01:20 HOUR	47.1 ^{2/}	43.6 ***	48.1 ^{2/}	41.5 ***	6.6
	01:20-01:25 HOUR	45.2 ^{2/}	43.6 ***	43.7 ^{2/}	41.5 ***	2.2
	01:25-01:30 HOUR	46.4 ^{2/}	43.6 ***	46.4 ^{2/}	41.5 ***	4.9
	01:30-01:35 HOUR	44.9 ^{2/}	43.6 ***	40.9 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	01:35-01:40 HOUR	46.2 ^{2/}	43.6 ***	46.2 ^{2/}	41.5 ***	4.7
	01:40-01:45 HOUR	45.7 ^{2/}	43.6 ***	44.2 ^{2/}	41.5 ***	2.7
	01:45-01:50 HOUR	46.4 ^{2/}	43.6 ***	46.4 ^{2/}	41.5 ***	4.9
	01:50-01:55 HOUR	46.8 ^{2/}	43.6 ***	46.8 ^{2/}	41.5 ***	5.3
	01:55-02:00 HOUR	44.4 ^{2/}	43.6 ***	40.4 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:00-02:05 HOUR	45.2 ^{2/}	43.6 ***	43.7 ^{2/}	41.5 ***	2.2
	02:05-02:10 HOUR	47.7 ^{2/}	43.6 ***	48.7 ^{2/}	41.5 ***	7.2
	02:10-02:15 HOUR	47.5 ^{2/}	43.6 ***	48.5 ^{2/}	41.5 ***	7.0
	02:15-02:20 HOUR	44.0 ^{2/}	43.6 ***	40.0 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:20-02:25 HOUR	43.2 ^{2/}	43.6 ***	39.2 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:25-02:30 HOUR	43.1 ^{2/}	43.6 ***	39.1 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:30-02:35 HOUR	45.9 ^{2/}	43.6 ***	44.4 ^{2/}	41.5 ***	2.9
	02:35-02:40 HOUR	44.1 ^{2/}	43.6 ***	40.1 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:40-02:45 HOUR	44.2 ^{2/}	43.6 ***	40.2 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:45-02:50 HOUR	44.4 ^{2/}	43.6 ***	40.4 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	02:50-02:55 HOUR	45.7 ^{2/}	43.6 ***	44.2 ^{2/}	41.5 ***	2.7
	02:55-03:00 HOUR	45.7 ^{2/}	43.6 ***	44.2 ^{2/}	41.5 ***	2.7
	03:00-03:05 HOUR	47.1 ^{2/}	43.6 ***	48.1 ^{2/}	41.5 ***	6.6

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 30, 2021	NIGHT TIME ^{2/}					
T22AA012-0007	03:05-03:10 HOUR	46.7 ^{2/}	43.6 ***	46.7 ^{2/}	41.5 ***	5.2
	03:10-03:15 HOUR	45.0 ^{2/}	43.6 ***	41.0 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	03:15-03:20 HOUR	44.8 ^{2/}	43.6 ***	40.8 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	03:20-03:25 HOUR	45.8 ^{2/}	43.6 ***	44.3 ^{2/}	41.5 ***	2.8
	03:25-03:30 HOUR	47.5 ^{2/}	43.6 ***	48.5 ^{2/}	41.5 ***	7.0
	03:30-03:35 HOUR	45.4 ^{2/}	43.6 ***	43.9 ^{2/}	41.5 ***	2.4
	03:35-03:40 HOUR	46.0 ^{2/}	43.6 ***	44.5 ^{2/}	41.5 ***	3.0
	03:40-03:45 HOUR	45.5 ^{2/}	43.6 ***	44.0 ^{2/}	41.5 ***	2.5
	03:45-03:50 HOUR	44.7 ^{2/}	43.6 ***	40.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	03:50-03:55 HOUR	43.7 ^{2/}	43.6 ***	39.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	03:55-04:00 HOUR	44.0 ^{2/}	43.6 ***	40.0 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:00-04:05 HOUR	46.4 ^{2/}	43.6 ***	46.4 ^{2/}	41.5 ***	4.9
	04:05-04:10 HOUR	43.7 ^{2/}	43.6 ***	39.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:10-04:15 HOUR	41.8 ^{2/}	43.6 ***	37.8 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:15-04:20 HOUR	41.3 ^{2/}	43.6 ***	37.3 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:20-04:25 HOUR	41.2 ^{2/}	43.6 ***	37.2 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:25-04:30 HOUR	42.1 ^{2/}	43.6 ***	38.1 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:30-04:35 HOUR	41.4 ^{2/}	43.6 ***	37.4 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:35-04:40 HOUR	43.2 ^{2/}	43.6 ***	39.2 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:40-04:45 HOUR	44.6 ^{2/}	43.6 ***	40.6 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:45-04:50 HOUR	43.7 ^{2/}	43.6 ***	39.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:50-04:55 HOUR	44.4 ^{2/}	43.6 ***	40.4 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	04:55-05:00 HOUR	45.5 ^{2/}	43.6 ***	44.0 ^{2/}	41.5 ***	2.5
	05:00-05:05 HOUR	46.2 ^{2/}	43.6 ***	46.2 ^{2/}	41.5 ***	4.7
	05:05-05:10 HOUR	46.9 ^{2/}	43.6 ***	46.9 ^{2/}	41.5 ***	5.4
	05:10-05:15 HOUR	47.8 ^{2/}	43.6 ***	48.8 ^{2/}	41.5 ***	7.3
	05:15-05:20 HOUR	43.3 ^{2/}	43.6 ***	39.3 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	05:20-05:25 HOUR	48.2 ^{2/}	43.6 ***	49.7 ^{2/}	41.5 ***	8.2
	05:25-05:30 HOUR	47.7 ^{2/}	43.6 ***	48.7 ^{2/}	41.5 ***	7.2
	05:30-05:35 HOUR	47.6 ^{2/}	43.6 ***	48.6 ^{2/}	41.5 ***	7.1
	05:35-05:40 HOUR	47.0 ^{2/}	43.6 ***	47.0 ^{2/}	41.5 ***	5.5
	05:40-05:45 HOUR	46.5 ^{2/}	43.6 ***	46.5 ^{2/}	41.5 ***	5.0
	05:45-05:50 HOUR	45.6 ^{2/}	43.6 ***	44.1 ^{2/}	41.5 ***	2.6
	05:50-05:55 HOUR	42.6 ^{2/}	43.6 ***	38.6 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	05:55-06:00 HOUR	41.7 ^{2/}	43.6 ***	37.7 ^{2/}	41.5 ***	NOT SIGNIFICANT ^{3/}
	DAY TIME ^{1/}					
	06:00-07:00 HOUR	51.3 ^{1/}	44.7 **	50.3 ^{1/}	44.3 **	6.0
DECEMBER 30, 2021	DAY TIME ^{1/}					
T22AA012-0008	07:00-08:00 HOUR	50.3 ^{1/}	45.0 **	48.8 ^{1/}	44.2 **	4.6
	08:00-09:00 HOUR	43.7 ^{1/}	45.0 **	36.7 ^{1/}	44.2 **	NOT SIGNIFICANT ^{3/}
	09:00-10:00 HOUR	48.3 ^{1/}	45.0 **	45.3 ^{1/}	44.2 **	1.1
	10:00-11:00 HOUR	49.4 ^{1/}	45.0 **	47.4 ^{1/}	44.2 **	3.2
	11:00-12:00 HOUR	48.2 ^{1/}	45.0 **	45.2 ^{1/}	44.2 **	1.0
	12:00-13:00 HOUR	49.7 ^{1/}	45.0 **	48.2 ^{1/}	44.2 **	4.0
	13:00-14:00 HOUR	49.8 ^{1/}	45.0 **	48.3 ^{1/}	44.2 **	4.1

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 30, 2021	DAY TIME ^{1/}					
T22AA012-0008	14:00-15:00 HOUR	45.8 ^{1/}	45.0 **	38.8 ^{1/}	44.2 **	NOT SIGNIFICANT ^{3/}
	15:00-16:00 HOUR	45.5 ^{1/}	45.0 **	38.5 ^{1/}	44.2 **	NOT SIGNIFICANT ^{3/}
	16:00-17:00 HOUR	45.8 ^{1/}	45.0 **	38.8 ^{1/}	44.2 **	NOT SIGNIFICANT ^{3/}
	17:00-18:00 HOUR	47.7 ^{1/}	45.0 **	44.7 ^{1/}	44.2 **	0.5
	18:00-19:00 HOUR	46.4 ^{1/}	45.0 **	39.4 ^{1/}	44.2 **	NOT SIGNIFICANT ^{3/}
	19:00-20:00 HOUR	46.4 ^{1/}	45.0 **	39.4 ^{1/}	44.2 **	NOT SIGNIFICANT ^{3/}
	20:00-21:00 HOUR	47.9 ^{1/}	45.0 **	44.9 ^{1/}	44.2 **	0.7
	21:00-22:00 HOUR	52.0 ^{1/}	45.0 **	51.0 ^{1/}	44.2 **	6.8
	NIGHT TIME ^{2/}					
	22:00-22:05 HOUR	49.2 ^{2/}	44.1 ***	50.7 ^{2/}	42.2 ***	8.5
	22:05-22:10 HOUR	48.7 ^{2/}	44.1 ***	50.2 ^{2/}	42.2 ***	8.0
	22:10-22:15 HOUR	49.6 ^{2/}	44.1 ***	51.1 ^{2/}	42.2 ***	8.9
	22:15-22:20 HOUR	47.5 ^{2/}	44.1 ***	47.5 ^{2/}	42.2 ***	5.3
	22:20-22:25 HOUR	47.0 ^{2/}	44.1 ***	47.0 ^{2/}	42.2 ***	4.8
	22:25-22:30 HOUR	46.1 ^{2/}	44.1 ***	44.6 ^{2/}	42.2 ***	2.4
	22:30-22:35 HOUR	45.3 ^{2/}	44.1 ***	41.3 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	22:35-22:40 HOUR	46.7 ^{2/}	44.1 ***	46.7 ^{2/}	42.2 ***	4.5
	22:40-22:45 HOUR	44.9 ^{2/}	44.1 ***	40.9 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	22:45-22:50 HOUR	46.9 ^{2/}	44.1 ***	46.9 ^{2/}	42.2 ***	4.7
	22:50-22:55 HOUR	46.8 ^{2/}	44.1 ***	46.8 ^{2/}	42.2 ***	4.6
	22:55-23:00 HOUR	47.2 ^{2/}	44.1 ***	47.2 ^{2/}	42.2 ***	5.0
	23:00-23:05 HOUR	46.9 ^{2/}	44.1 ***	46.9 ^{2/}	42.2 ***	4.7
	23:05-23:10 HOUR	46.3 ^{2/}	44.1 ***	44.8 ^{2/}	42.2 ***	2.6
	23:10-23:15 HOUR	46.4 ^{2/}	44.1 ***	44.9 ^{2/}	42.2 ***	2.7
	23:15-23:20 HOUR	46.8 ^{2/}	44.1 ***	46.8 ^{2/}	42.2 ***	4.6
	23:20-23:25 HOUR	47.0 ^{2/}	44.1 ***	47.0 ^{2/}	42.2 ***	4.8
	23:25-23:30 HOUR	46.2 ^{2/}	44.1 ***	44.7 ^{2/}	42.2 ***	2.5
	23:30-23:35 HOUR	46.1 ^{2/}	44.1 ***	44.6 ^{2/}	42.2 ***	2.4
	23:35-23:40 HOUR	45.5 ^{2/}	44.1 ***	41.5 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	23:40-23:45 HOUR	46.2 ^{2/}	44.1 ***	44.7 ^{2/}	42.2 ***	2.5
	23:45-23:50 HOUR	47.4 ^{2/}	44.1 ***	47.4 ^{2/}	42.2 ***	5.2
	23:50-23:55 HOUR	47.4 ^{2/}	44.1 ***	47.4 ^{2/}	42.2 ***	5.2
	23:55-00:00 HOUR	46.4 ^{2/}	44.1 ***	44.9 ^{2/}	42.2 ***	2.7
DECEMBER 31, 2021	NIGHT TIME ^{2/}					
T22AA012-0008	00:00-00:05 HOUR	46.0 ^{2/}	44.1 ***	44.5 ^{2/}	42.2 ***	2.3
	00:05-00:10 HOUR	46.6 ^{2/}	44.1 ***	46.6 ^{2/}	42.2 ***	4.4
	00:10-00:15 HOUR	47.5 ^{2/}	44.1 ***	47.5 ^{2/}	42.2 ***	5.3
	00:15-00:20 HOUR	48.5 ^{2/}	44.1 ***	49.5 ^{2/}	42.2 ***	7.3
	00:20-00:25 HOUR	46.2 ^{2/}	44.1 ***	44.7 ^{2/}	42.2 ***	2.5
	00:25-00:30 HOUR	46.9 ^{2/}	44.1 ***	46.9 ^{2/}	42.2 ***	4.7
	00:30-00:35 HOUR	46.5 ^{2/}	44.1 ***	45.0 ^{2/}	42.2 ***	2.8
	00:35-00:40 HOUR	45.9 ^{2/}	44.1 ***	44.4 ^{2/}	42.2 ***	2.2
	00:40-00:45 HOUR	45.9 ^{2/}	44.1 ***	44.4 ^{2/}	42.2 ***	2.2
	00:45-00:50 HOUR	46.0 ^{2/}	44.1 ***	44.5 ^{2/}	42.2 ***	2.3
	00:50-00:55 HOUR	45.5 ^{2/}	44.1 ***	41.5 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 31, 2021	NIGHT TIME ^{2/}					
T22AA012-0008	00:55-01:00 HOUR	45.6 ^{2/}	44.1 ***	44.1 ^{2/}	42.2 ***	1.9
	01:00-01:05 HOUR	45.8 ^{2/}	44.1 ***	44.3 ^{2/}	42.2 ***	2.1
	01:05-01:10 HOUR	48.7 ^{2/}	44.1 ***	50.2 ^{2/}	42.2 ***	8.0
	01:10-01:15 HOUR	45.5 ^{2/}	44.1 ***	41.5 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	01:15-01:20 HOUR	45.1 ^{2/}	44.1 ***	41.1 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	01:20-01:25 HOUR	46.0 ^{2/}	44.1 ***	44.5 ^{2/}	42.2 ***	2.3
	01:25-01:30 HOUR	46.3 ^{2/}	44.1 ***	44.8 ^{2/}	42.2 ***	2.6
	01:30-01:35 HOUR	48.9 ^{2/}	44.1 ***	50.4 ^{2/}	42.2 ***	8.2
	01:35-01:40 HOUR	46.0 ^{2/}	44.1 ***	44.5 ^{2/}	42.2 ***	2.3
	01:40-01:45 HOUR	45.9 ^{2/}	44.1 ***	44.4 ^{2/}	42.2 ***	2.2
	01:45-01:50 HOUR	45.4 ^{2/}	44.1 ***	41.4 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	01:50-01:55 HOUR	44.1 ^{2/}	44.1 ***	40.1 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	01:55-02:00 HOUR	43.2 ^{2/}	44.1 ***	39.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:00-02:05 HOUR	43.2 ^{2/}	44.1 ***	39.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:05-02:10 HOUR	43.3 ^{2/}	44.1 ***	39.3 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:10-02:15 HOUR	43.8 ^{2/}	44.1 ***	39.8 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:15-02:20 HOUR	43.8 ^{2/}	44.1 ***	39.8 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:20-02:25 HOUR	44.2 ^{2/}	44.1 ***	40.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:25-02:30 HOUR	45.2 ^{2/}	44.1 ***	41.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:30-02:35 HOUR	45.5 ^{2/}	44.1 ***	41.5 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:35-02:40 HOUR	44.6 ^{2/}	44.1 ***	40.6 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:40-02:45 HOUR	45.3 ^{2/}	44.1 ***	41.3 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:45-02:50 HOUR	43.9 ^{2/}	44.1 ***	39.9 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:50-02:55 HOUR	43.3 ^{2/}	44.1 ***	39.3 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	02:55-03:00 HOUR	43.2 ^{2/}	44.1 ***	39.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:00-03:05 HOUR	43.0 ^{2/}	44.1 ***	39.0 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:05-03:10 HOUR	41.4 ^{2/}	44.1 ***	37.4 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:10-03:15 HOUR	42.0 ^{2/}	44.1 ***	38.0 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:15-03:20 HOUR	41.9 ^{2/}	44.1 ***	37.9 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:20-03:25 HOUR	42.5 ^{2/}	44.1 ***	38.5 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:25-03:30 HOUR	42.5 ^{2/}	44.1 ***	38.5 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:30-03:35 HOUR	42.2 ^{2/}	44.1 ***	38.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:35-03:40 HOUR	42.0 ^{2/}	44.1 ***	38.0 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:40-03:45 HOUR	43.0 ^{2/}	44.1 ***	39.0 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:45-03:50 HOUR	43.1 ^{2/}	44.1 ***	39.1 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:50-03:55 HOUR	41.2 ^{2/}	44.1 ***	37.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	03:55-04:00 HOUR	40.6 ^{2/}	44.1 ***	36.6 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:00-04:05 HOUR	44.3 ^{2/}	44.1 ***	40.3 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:05-04:10 HOUR	45.8 ^{2/}	44.1 ***	44.3 ^{2/}	42.2 ***	2.1
	04:10-04:15 HOUR	43.1 ^{2/}	44.1 ***	39.1 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:15-04:20 HOUR	41.9 ^{2/}	44.1 ***	37.9 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:20-04:25 HOUR	42.7 ^{2/}	44.1 ***	38.7 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:25-04:30 HOUR	42.8 ^{2/}	44.1 ***	38.8 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:30-04:35 HOUR	43.8 ^{2/}	44.1 ***	39.8 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:35-04:40 HOUR	44.2 ^{2/}	44.1 ***	40.2 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 31, 2021	NIGHT TIME ^{2/}					
T22AA012-0008	04:40-04:45 HOUR	44.4 ^{2/}	44.1 ***	40.4 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:45-04:50 HOUR	43.7 ^{2/}	44.1 ***	39.7 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:50-04:55 HOUR	43.8 ^{2/}	44.1 ***	39.8 ^{2/}	42.2 ***	NOT SIGNIFICANT ^{3/}
	04:55-05:00 HOUR	47.1 ^{2/}	44.1 ***	47.1 ^{2/}	42.2 ***	4.9
	05:00-05:05 HOUR	48.4 ^{2/}	44.1 ***	49.4 ^{2/}	42.2 ***	7.2
	05:05-05:10 HOUR	48.7 ^{2/}	44.1 ***	50.2 ^{2/}	42.2 ***	8.0
	05:10-05:15 HOUR	48.8 ^{2/}	44.1 ***	50.3 ^{2/}	42.2 ***	8.1
	05:15-05:20 HOUR	47.8 ^{2/}	44.1 ***	48.8 ^{2/}	42.2 ***	6.6
	05:20-05:25 HOUR	47.6 ^{2/}	44.1 ***	48.6 ^{2/}	42.2 ***	6.4
	05:25-05:30 HOUR	47.0 ^{2/}	44.1 ***	47.0 ^{2/}	42.2 ***	4.8
	05:30-05:35 HOUR	47.4 ^{2/}	44.1 ***	47.4 ^{2/}	42.2 ***	5.2
	05:35-05:40 HOUR	46.9 ^{2/}	44.1 ***	46.9 ^{2/}	42.2 ***	4.7
	05:40-05:45 HOUR	46.3 ^{2/}	44.1 ***	44.8 ^{2/}	42.2 ***	2.6
	05:45-05:50 HOUR	47.0 ^{2/}	44.1 ***	47.0 ^{2/}	42.2 ***	4.8
	05:50-05:55 HOUR	48.1 ^{2/}	44.1 ***	49.1 ^{2/}	42.2 ***	6.9
	05:55-06:00 HOUR	49.8 ^{2/}	44.1 ***	51.3 ^{2/}	42.2 ***	9.1
	DAY TIME ^{1/}					
	06:00-07:00 HOUR	49.4 ^{1/}	45.0 **	47.4 ^{1/}	44.2 **	3.2
DECEMBER 31, 2021	DAY TIME ^{1/}					
T22AA012-0009	07:00-08:00 HOUR	46.7 ^{1/}	45.7 **	39.7 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	08:00-09:00 HOUR	46.3 ^{1/}	45.7 **	39.3 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	09:00-10:00 HOUR	46.5 ^{1/}	45.7 **	39.5 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	10:00-11:00 HOUR	48.7 ^{1/}	45.7 **	45.7 ^{1/}	42.3 **	3.4
	11:00-12:00 HOUR	46.0 ^{1/}	45.7 **	39.0 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	12:00-13:00 HOUR	46.5 ^{1/}	45.7 **	39.5 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	13:00-14:00 HOUR	45.3 ^{1/}	45.7 **	38.3 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	14:00-15:00 HOUR	47.3 ^{1/}	45.7 **	42.8 ^{1/}	42.3 **	0.5
	15:00-16:00 HOUR	50.5 ^{1/}	45.7 **	49.0 ^{1/}	42.3 **	6.7
	16:00-17:00 HOUR	48.0 ^{1/}	45.7 **	43.5 ^{1/}	42.3 **	1.2
	17:00-18:00 HOUR	46.4 ^{1/}	45.7 **	39.4 ^{1/}	42.3 **	NOT SIGNIFICANT ^{3/}
	18:00-19:00 HOUR	50.5 ^{1/}	45.7 **	49.0 ^{1/}	42.3 **	6.7
	19:00-20:00 HOUR	50.7 ^{1/}	45.7 **	49.2 ^{1/}	42.3 **	6.9
	20:00-21:00 HOUR	47.3 ^{1/}	45.7 **	42.8 ^{1/}	42.3 **	0.5
	21:00-22:00 HOUR	47.3 ^{1/}	45.7 **	42.8 ^{1/}	42.3 **	0.5
	NIGHT TIME ^{2/}					
	22:00-22:05 HOUR	46.8 ^{2/}	44.5 ***	45.3 ^{2/}	40.6 ***	4.7
	22:05-22:10 HOUR	46.4 ^{2/}	44.5 ***	44.9 ^{2/}	40.6 ***	4.3
	22:10-22:15 HOUR	46.0 ^{2/}	44.5 ***	44.5 ^{2/}	40.6 ***	3.9
	22:15-22:20 HOUR	47.0 ^{2/}	44.5 ***	47.0 ^{2/}	40.6 ***	6.4
	22:20-22:25 HOUR	47.0 ^{2/}	44.5 ***	47.0 ^{2/}	40.6 ***	6.4
	22:25-22:30 HOUR	46.8 ^{2/}	44.5 ***	45.3 ^{2/}	40.6 ***	4.7
	22:30-22:35 HOUR	46.6 ^{2/}	44.5 ***	45.1 ^{2/}	40.6 ***	4.5
	22:35-22:40 HOUR	47.1 ^{2/}	44.5 ***	47.1 ^{2/}	40.6 ***	6.5
	22:40-22:45 HOUR	46.6 ^{2/}	44.5 ***	45.1 ^{2/}	40.6 ***	4.5
	22:45-22:50 HOUR	45.9 ^{2/}	44.5 ***	41.9 ^{2/}	40.6 ***	1.3

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
DECEMBER 31, 2021	NIGHT TIME ^{2/}					
T22AA012-0009	22:50-22:55 HOUR	45.8 ^{2/}	44.5 ***	41.8 ^{2/}	40.6 ***	1.2
	22:55-23:00 HOUR	45.9 ^{2/}	44.5 ***	41.9 ^{2/}	40.6 ***	1.3
	23:00-23:05 HOUR	46.4 ^{2/}	44.5 ***	44.9 ^{2/}	40.6 ***	4.3
	23:05-23:10 HOUR	45.0 ^{2/}	44.5 ***	41.0 ^{2/}	40.6 ***	0.4
	23:10-23:15 HOUR	44.8 ^{2/}	44.5 ***	40.8 ^{2/}	40.6 ***	0.2
	23:15-23:20 HOUR	44.9 ^{2/}	44.5 ***	40.9 ^{2/}	40.6 ***	0.3
	23:20-23:25 HOUR	44.8 ^{2/}	44.5 ***	40.8 ^{2/}	40.6 ***	0.2
	23:25-23:30 HOUR	46.0 ^{2/}	44.5 ***	44.5 ^{2/}	40.6 ***	3.9
	23:30-23:35 HOUR	47.0 ^{2/}	44.5 ***	47.0 ^{2/}	40.6 ***	6.4
	23:35-23:40 HOUR	47.4 ^{2/}	44.5 ***	47.4 ^{2/}	40.6 ***	6.8
	23:40-23:45 HOUR	46.9 ^{2/}	44.5 ***	45.4 ^{2/}	40.6 ***	4.8
	23:45-23:50 HOUR	46.7 ^{2/}	44.5 ***	45.2 ^{2/}	40.6 ***	4.6
	23:50-23:55 HOUR	43.9 ^{2/}	44.5 ***	39.9 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	23:55-00:00 HOUR	46.5 ^{2/}	44.5 ***	45.0 ^{2/}	40.6 ***	4.4
JANUARY 1, 2022	NIGHT TIME ^{2/}					
T22AA012-0009	00:00-00:05 HOUR	47.5 ^{2/}	44.5 ***	47.5 ^{2/}	40.6 ***	6.9
	00:05-00:10 HOUR	47.3 ^{2/}	44.5 ***	47.3 ^{2/}	40.6 ***	6.7
	00:10-00:15 HOUR	45.5 ^{2/}	44.5 ***	41.5 ^{2/}	40.6 ***	0.9
	00:15-00:20 HOUR	46.8 ^{2/}	44.5 ***	45.3 ^{2/}	40.6 ***	4.7
	00:20-00:25 HOUR	46.9 ^{2/}	44.5 ***	45.4 ^{2/}	40.6 ***	4.8
	00:25-00:30 HOUR	46.9 ^{2/}	44.5 ***	45.4 ^{2/}	40.6 ***	4.8
	00:30-00:35 HOUR	46.0 ^{2/}	44.5 ***	44.5 ^{2/}	40.6 ***	3.9
	00:35-00:40 HOUR	46.7 ^{2/}	44.5 ***	45.2 ^{2/}	40.6 ***	4.6
	00:40-00:45 HOUR	47.0 ^{2/}	44.5 ***	47.0 ^{2/}	40.6 ***	6.4
	00:45-00:50 HOUR	46.2 ^{2/}	44.5 ***	44.7 ^{2/}	40.6 ***	4.1
	00:50-00:55 HOUR	48.0 ^{2/}	44.5 ***	49.0 ^{2/}	40.6 ***	8.4
	00:55-01:00 HOUR	46.5 ^{2/}	44.5 ***	45.0 ^{2/}	40.6 ***	4.4
	01:00-01:05 HOUR	46.5 ^{2/}	44.5 ***	45.0 ^{2/}	40.6 ***	4.4
	01:05-01:10 HOUR	46.3 ^{2/}	44.5 ***	44.8 ^{2/}	40.6 ***	4.2
	01:10-01:15 HOUR	45.9 ^{2/}	44.5 ***	41.9 ^{2/}	40.6 ***	1.3
	01:15-01:20 HOUR	45.4 ^{2/}	44.5 ***	41.4 ^{2/}	40.6 ***	0.8
	01:20-01:25 HOUR	46.0 ^{2/}	44.5 ***	44.5 ^{2/}	40.6 ***	3.9
	01:25-01:30 HOUR	45.9 ^{2/}	44.5 ***	41.9 ^{2/}	40.6 ***	1.3
	01:30-01:35 HOUR	44.9 ^{2/}	44.5 ***	40.9 ^{2/}	40.6 ***	0.3
	01:35-01:40 HOUR	44.8 ^{2/}	44.5 ***	40.8 ^{2/}	40.6 ***	0.2
	01:40-01:45 HOUR	45.6 ^{2/}	44.5 ***	41.6 ^{2/}	40.6 ***	1.0
	01:45-01:50 HOUR	44.5 ^{2/}	44.5 ***	40.5 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	01:50-01:55 HOUR	45.0 ^{2/}	44.5 ***	41.0 ^{2/}	40.6 ***	0.4
	01:55-02:00 HOUR	45.5 ^{2/}	44.5 ***	41.5 ^{2/}	40.6 ***	0.9
	02:00-02:05 HOUR	45.7 ^{2/}	44.5 ***	41.7 ^{2/}	40.6 ***	1.1
	02:05-02:10 HOUR	45.8 ^{2/}	44.5 ***	41.8 ^{2/}	40.6 ***	1.2
	02:10-02:15 HOUR	45.6 ^{2/}	44.5 ***	41.6 ^{2/}	40.6 ***	1.0
	02:15-02:20 HOUR	43.5 ^{2/}	44.5 ***	39.5 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:20-02:25 HOUR	42.2 ^{2/}	44.5 ***	38.2 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:25-02:30 HOUR	42.6 ^{2/}	44.5 ***	38.6 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}

DATE	TIME*	RESULT (dB(A))				
		N3 : BAN KUT TA BONG (UTM WGS 84 ZONE 47P 734939E 1731847N)				
		SPECIFIC NOISE LEVEL	RESIDUAL NOISE LEVEL	SPECIFIC NOISE LEVEL (IMPROVE NOISE LEVEL)	BACKGROUND NOISE LEVEL	ANNOYANCE NOISE LEVEL
JANUARY 1, 2022 T22AA012-0009	NIGHT TIME ^{2/}					
	02:30-02:35 HOUR	40.9 ^{2/}	44.5 ***	36.9 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:35-02:40 HOUR	41.4 ^{2/}	44.5 ***	37.4 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:40-02:45 HOUR	41.3 ^{2/}	44.5 ***	37.3 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:45-02:50 HOUR	41.5 ^{2/}	44.5 ***	37.5 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:50-02:55 HOUR	41.8 ^{2/}	44.5 ***	37.8 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	02:55-03:00 HOUR	42.9 ^{2/}	44.5 ***	38.9 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:00-03:05 HOUR	43.0 ^{2/}	44.5 ***	39.0 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:05-03:10 HOUR	42.6 ^{2/}	44.5 ***	38.6 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:10-03:15 HOUR	42.6 ^{2/}	44.5 ***	38.6 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:15-03:20 HOUR	42.3 ^{2/}	44.5 ***	38.3 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:20-03:25 HOUR	42.6 ^{2/}	44.5 ***	38.6 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:25-03:30 HOUR	46.0 ^{2/}	44.5 ***	44.5 ^{2/}	40.6 ***	3.9
	03:30-03:35 HOUR	42.0 ^{2/}	44.5 ***	38.0 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:35-03:40 HOUR	41.5 ^{2/}	44.5 ***	37.5 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:40-03:45 HOUR	41.1 ^{2/}	44.5 ***	37.1 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:45-03:50 HOUR	41.6 ^{2/}	44.5 ***	37.6 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:50-03:55 HOUR	41.4 ^{2/}	44.5 ***	37.4 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	03:55-04:00 HOUR	40.2 ^{2/}	44.5 ***	36.2 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	04:00-04:05 HOUR	40.8 ^{2/}	44.5 ***	36.8 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	04:05-04:10 HOUR	40.6 ^{2/}	44.5 ***	36.6 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	04:10-04:15 HOUR	40.4 ^{2/}	44.5 ***	36.4 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	04:15-04:20 HOUR	46.5 ^{2/}	44.5 ***	45.0 ^{2/}	40.6 ***	4.4
	04:20-04:25 HOUR	44.6 ^{2/}	44.5 ***	40.6 ^{2/}	40.6 ***	0.0
	04:25-04:30 HOUR	44.6 ^{2/}	44.5 ***	40.6 ^{2/}	40.6 ***	0.0
	04:30-04:35 HOUR	45.3 ^{2/}	44.5 ***	41.3 ^{2/}	40.6 ***	0.7
	04:35-04:40 HOUR	44.9 ^{2/}	44.5 ***	40.9 ^{2/}	40.6 ***	0.3
	04:40-04:45 HOUR	43.7 ^{2/}	44.5 ***	39.7 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	04:45-04:50 HOUR	44.4 ^{2/}	44.5 ***	40.4 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	04:50-04:55 HOUR	45.4 ^{2/}	44.5 ***	41.4 ^{2/}	40.6 ***	0.8
	04:55-05:00 HOUR	44.2 ^{2/}	44.5 ***	40.2 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	05:00-05:05 HOUR	44.6 ^{2/}	44.5 ***	40.6 ^{2/}	40.6 ***	0.0
	05:05-05:10 HOUR	44.5 ^{2/}	44.5 ***	40.5 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	05:10-05:15 HOUR	43.8 ^{2/}	44.5 ***	39.8 ^{2/}	40.6 ***	NOT SIGNIFICANT ^{3/}
	05:15-05:20 HOUR	44.8 ^{2/}	44.5 ***	40.8 ^{2/}	40.6 ***	0.2
	05:20-05:25 HOUR	44.8 ^{2/}	44.5 ***	40.8 ^{2/}	40.6 ***	0.2
	05:25-05:30 HOUR	45.9 ^{2/}	44.5 ***	41.9 ^{2/}	40.6 ***	1.3
	05:30-05:35 HOUR	46.5 ^{2/}	44.5 ***	45.0 ^{2/}	40.6 ***	4.4
	05:35-05:40 HOUR	46.5 ^{2/}	44.5 ***	45.0 ^{2/}	40.6 ***	4.4
	05:40-05:45 HOUR	47.1 ^{2/}	44.5 ***	47.1 ^{2/}	40.6 ***	6.5
	05:45-05:50 HOUR	48.1 ^{2/}	44.5 ***	49.1 ^{2/}	40.6 ***	8.5
	05:50-05:55 HOUR	45.7 ^{2/}	44.5 ***	41.7 ^{2/}	40.6 ***	1.1
	05:55-06:00 HOUR	47.1 ^{2/}	44.5 ***	47.1 ^{2/}	40.6 ***	6.5
	DAY TIME ^{1/}					
	06:00-07:00 HOUR	48.1 ^{1/}	45.7 **	43.6 ^{1/}	42.3 **	1.3

- REMARK :
- CASE 1 CALCULATION (DURING 06:00 TO 22:00 HOUR) : SPECIFIC NOISE LEVEL CONTINUOUSLY OCCUR AT LEAST 1 HOUR, MEASURING AS L_{Aeq} 1 hour.
 - CASE 4 CALCULATION (DURING 22:00 TO 06:00 HOUR) : SPECIFIC NOISE LEVEL OCCUR IN RESTFUL AREA OR NIGHT TIME, MEASURING AS L_{Aeq} 5 minutes.
 - NOT SIGNIFICANT MEANS ANNOYING NOISE LEVEL IS LOWER THAN 0.
- ** PERCENTILE LEVEL 90 (L_{A90}) IS MIDDLE VALUE OF 3 TIMES MEASURING. (15 MINUTES MEASURING DURING 06:00 TO 22:00 HOUR)
- AND RESIDUAL NOISE LEVEL (L_{Aeq} 5 minutes) IS CHOSE AT THE SAME TIME AS PERCENTILE LEVEL 90 ABOVE.
- *** PERCENTILE LEVEL 90 (L_{A90}) IS MIDDLE VALUE OF 3 TIMES MEASURING. (15 MINUTES MEASURING DURING 22:00 TO 06:00 HOUR)
- AND RESIDUAL NOISE LEVEL (L_{Aeq} 5 minutes) IS CHOSE AT THE SAME TIME AS PERCENTILE LEVEL 90 ABOVE.

Sila Banjongjairuk

(MR SILA BANJONGJAIRUK)
LABORATORY SUPERVISOR

JANUARY 14, 2022

คุณภาพน้ำใต้ดิน



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecothal.net
SAMPLING SOURCE : MWWBNE-F (UP GRADIENT)(UTM WGS 84 ZONE 47P 733996E 1731279N)
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : DECEMBER 27, 2021
SAMPLING TIME : 13:20 HOUR
SAMPLING METHOD : GRAB
SAMPLING BY : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : DECEMBER 28, 2021
ANALYTICAL DATE : DECEMBER 28, 2021-JANUARY 6, 2022
REPORT NO. : 2022-U002750
WORK NO. : 2021-008596
ANALYSIS NO. : T21AZ544-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD	DETECTION LIMIT
			MWWBNE-F (UP GRADIENT) T21AZ544-0002		
pH ^c	-	ELECTROMETRIC METHOD AT SITE (SM4500-H ⁺ B)	6.9 (30°C)	-	-
TEMPERATURE ^c	°C	THERMOMETER AT SITE (SM: 2550 B)	30	-	-
ELECTRICAL CONDUCTIVITY ^c	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	884 (30°C)	-	0.1
SALINITY ^c	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	0.4	-	0.1
TOTAL SUSPENDED SOLIDS ^c	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: 2540 D)	191	-	5.0
TOTAL DISSOLVED SOLIDS ^b	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	662	-	25
TOTAL PETROLEUM HYDROCARBONS ^c	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	-	3
METALS					
ARSENIC ^c	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	ND	≤ 0.01	0.0003
BARIUM ^c	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: 3030 F AND 3120 B)	0.057	-	0.003
CADMIUM ^c	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	≤ 0.003	0.002
HEXAVALENT CHROMIUM ^c	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: 3500-Cr B)	ND	≤ 0.05	0.006
COPPER ^c	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	≤ 1.0	0.002
IRON ^c	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	8.59	-	0.005
LEAD ^c	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	≤ 0.01	0.003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD	DETECTION LIMIT
			MWWBNE-F (UP GRADIENT) T21AZ544-0002		
MANGANESE ^c	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.062	≤ 0.5	0.002
MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	ND	≤ 0.001	0.0001
NICKEL ^c	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	≤ 0.02	0.005
SELENIUM ^c	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	ND	≤ 0.01	0.0005
ZINC ^c	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	≤ 5.0	0.003
VOLATILE ORGANIC COMPOUNDS					
BENZENE ^c	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.20	≤ 5	0.20
ETHYLBENZENE ^c	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.20	≤ 700	0.20
TOLUENE ^c	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.20	≤ 1,000	0.20
TOTAL XYLENES ^c	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.60	≤ 10,000	0.60
SAMPLE CONDITION					
WATER'S COLOUR/TURBID SEDIMENT			YELLOW/TURBID BROWN		

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

REGULATORY STANDARD : GROUNDWATER QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.20 (B.E. 2543) ISSUED UNDER THE ENHANCEMENT AND CONSERVATION OF NATIONAL ENVIRONMENTAL QUALITY ACT B.E. 2535.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L, NICKEL ≥ 0.005 AND < 0.050 mg/L, ZINC ≥ 0.003 AND < 0.025 mg/L).

Benawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

JANUARY 20, 2022



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecothal.net
SAMPLING SOURCE : MWWBNE-F (DOWN GRADIENT) (UTM WGS 84 ZONE 47P 734037E 1731441N)
SAMPLE TYPE : GROUNDWATER
SAMPLING DATE : DECEMBER 27, 2021
SAMPLING TIME : 13:45 HOUR
SAMPLING METHOD : SUBMERSIBLE PUMP
SAMPLING BY : MR KRIDSANAPONG NAMTHIP
ANALYZED BY : MISS NADNAPA KAMOLBOON

RECEIVED DATE : DECEMBER 28, 2021
ANALYTICAL DATE : DECEMBER 28, 2021-JANUARY 6, 2022
REPORT NO. : 2022-U002749
WORK NO. : 2021-008596
ANALYSIS NO. : T21AZ544-0001

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD	DETECTION LIMIT
			MWWBNE-F (DOWN GRADIENT) T21AZ544-0001		
pH ^o	-	ELECTROMETRIC METHOD AT SITE (SM:4500-H ⁺ B)	7.2 (32°C)	-	-
TEMPERATURE ^o	°C	THERMOMETER AT SITE (SM: 2550 B)	32	-	-
ELECTRICAL CONDUCTIVITY ^o	µmhos/cm	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2510 B)	758 (32°C)	-	0.1
SALINITY ^o	ppt	ELECTRICAL CONDUCTIVITY METHOD AT SITE (SM: 2520 B)	0.3	-	0.1
TOTAL SUSPENDED SOLIDS ^o	mg/L	TOTAL SUSPENDED SOLIDS DRIED AT 103-105 °C (SM: 2540 D)	ND	-	5.0
TOTAL DISSOLVED SOLIDS ^o	mg/L	TOTAL DISSOLVED SOLIDS DRIED AT 180 °C (SM: 2540 C)	472	-	25
TOTAL PETROLEUM HYDROCARBONS ^o	mg/L	SOXHLET EXTRACTION METHOD (SM: 5520 D AND 5520 F)	ND	-	3
METALS					
ARSENIC ^o	mg/L As	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	0.0009	≤ 0.01	0.0003
BARIIUM ^o	mg/L Ba	NITRIC ACID-HYDROCHLORIC ACID DIGESTION AND INDUCTIVELY COUPLED PLASMA (ICP) METHOD (SM: 3030 F AND 3120 B)	0.019	-	0.003
CADMIUM ^o	mg/L Cd	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	≤ 0.003	0.002
HEXAVALENT CHROMIUM ^o	mg/L Cr ⁶⁺	COLOURIMETRIC METHOD (SM: 3500-Cr B)	ND	≤ 0.05	0.006
COPPER ^o	mg/L Cu	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	< LOQ	≤ 1.0	0.002
IRON ^o	mg/L Fe	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.484	-	0.005
LEAD ^o	mg/L Pb	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	≤ 0.01	0.003



PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD	DETECTION LIMIT
			MWWBNE-F (DOWN GRADIENT) T21AZ544-0001		
MANGANESE ^o	mg/L Mn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	0.040	≤ 0.5	0.002
MERCURY ^b	mg/L Hg	IN-HOUSE METHOD: UAE.TP.HEM.002 (COLD VAPOUR ATOMIC ABSORPTION SPECTROMETRIC METHOD); SM: 3112 B	ND	≤ 0.001	0.0001
NICKEL ^o	mg/L Ni	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	≤ 0.02	0.005
SELENIUM ^o	mg/L Se	HYDRIDE GENERATION AAS METHOD (SM: 3114 C)	ND	≤ 0.01	0.0005
ZINC ^o	mg/L Zn	IN-HOUSE METHOD: UAE.TP.GW.01 (NITRIC ACID DIGESTION AND DIRECT AIR ACETYLENE FLAME METHOD); SM: 3030 E AND 3111 B	ND	≤ 5.0	0.003
VOLATILE ORGANIC COMPOUNDS					
BENZENE ^o	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.20	≤ 5	0.20
ETHYLBENZENE ^o	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.20	≤ 700	0.20
TOLUENE ^o	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	4.5	≤ 1,000	0.20
TOTAL XYLENES ^o	µg/L	PURGE AND TRAP GAS CHROMATOGRAPHIC/MASS SPECTROMETRIC METHOD (SM: 6200 B)	< 0.60	≤ 10,000	0.60
SAMPLE CONDITION WATER'S COLOUR/TURBID SEDIMENT			YELLOW/CLEAR YELLOW		

^a : ISO/IEC 17025 ACCREDITED BY THAI INDUSTRIAL STANDARDS INSTITUTE (TISI)

^b : ISO/IEC 17025 ACCREDITED BY DEPARTMENT OF SCIENCE SERVICE (DSS)

^c : VERIFIED BY OWN LABORATORY QUALITY SYSTEM, BUT STILL NOT ACCREDITED

IN-HOUSE : BASED ON STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

SM : STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, APHA, AWWA, WEF, 23rd EDITION, 2017.

REGULATORY STANDARD : GROUNDWATER QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.20 (B.E. 2543) ISSUED UNDER THE ENHANCEMENT AND CONSERVATION OF NATIONAL ENVIRONMENTAL QUALITY ACT B.E. 2535.

ND : NON-DETECTABLE.

< LOQ : < LEVEL OF QUANTITATION (COPPER ≥ 0.002 AND < 0.025 mg/L).

Benjawan V.

(MISS BENJAWAN VIRIYOTHAI)
LABORATORY SUPERVISOR

JANUARY 20, 2022

ระยะเจาะหลุมปิโตรเลียมพื้นที่ฐานหลุมผลิต TRE-1



คุณภาพอากาศ



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@eco-thai.net
SAMPLING SOURCE : TRE-1-A1: MOO 14 BAN MAB SAMOR (UTM WGS 84 ZONE 47P 733756E 1733389N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **
SAMPLING TIME : *, **
SAMPLING BY : MR CHATCHAWAN LUEANLONG
ANALYZED BY : MISS JETJARN TUMSA-AT

RECEIVED DATE : DECEMBER 7, 2021
ANALYTICAL DATE : DECEMBER 7-9, 2021
REPORT NO. : 2021-U94688
WORK NO. : 2021-008594
ANALYSIS NO. : T21AX921-0001 - T21AX921-0002

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD
			TRE-1-A1: MOO 14 BAN MAB SAMOR		
			* T21AX921-0001	** T21AX921-0002	
TOTAL SUSPENDED PARTICULATE	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.054	0.057	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.037	0.038	≤ 0.12
SAMPLE CONDITION			COMPLETE	COMPLETE	

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.
PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.
REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).
* : SAMPLING FROM 09:00 HOUR ON DECEMBER 1, 2021 TO 09:00 HOUR ON DECEMBER 2, 2021.
** : SAMPLING FROM 09:00 HOUR ON DECEMBER 2, 2021 TO 09:00 HOUR ON DECEMBER 3, 2021.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 20, 2021



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@eco-thai.net
SAMPLING SOURCE : TRE-1-A1: MOO 14 BAN MAB SAMOR (UTM WGS 84 ZONE 47P 733756E 1733389N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *
SAMPLING TIME : *
SAMPLING BY : MR CHATCHAWAN LUEANLONG
ANALYZED BY : MISS JETJARN TUMSA-AT

RECEIVED DATE : DECEMBER 7, 2021
ANALYTICAL DATE : DECEMBER 7-9, 2021
REPORT NO. : 2021-U94690
WORK NO. : 2021-008594
ANALYSIS NO. : T21AX921-0003

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD
			TRE-1-A1: MOO 14 BAN MAB SAMOR	
			T21AX921-0003	
TOTAL SUSPENDED PARTICULATE	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.053	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.031	≤ 0.12
SAMPLE CONDITION			COMPLETE	

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.
PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.
REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).
* : SAMPLING FROM 09:00 HOUR ON DECEMBER 3, 2021 TO 09:00 HOUR ON DECEMBER 4, 2021.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 20, 2021



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecothal.net
SAMPLING SOURCE : TRE-1-A2: NONG KHANOM JEEN HOUSE OF PRIEST (UTM WGS 84 ZONE 47P 731587E 1730272N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *, **
SAMPLING TIME : *, **
SAMPLING BY : MR CHATCHAWAN LUEANLONG
ANALYZED BY : MISS JETJARI TUMSA-AT

RECEIVED DATE : DECEMBER 7, 2021
ANALYTICAL DATE : DECEMBER 7-9, 2021
REPORT NO. : 2021-U94693
WORK NO. : 2021-008594
ANALYSIS NO. : T21AX921-0004 - T21AX921-0005

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT		REGULATORY STANDARD
			TRE-1-A2: NONG KHANOM JEEN HOUSE OF PRIEST		
			* T21AX921-0004	** T21AX921-0005	
TOTAL SUSPENDED PARTICULATE	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.042	0.053	≤ 0.33
PARTICULATE MATTER (≤ 10 µm)	mg/m³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.028	0.028	≤ 0.12
SAMPLE CONDITION			COMPLETE	COMPLETE	

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.
PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.
REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).
* : SAMPLING FROM 09:30 HOUR ON DECEMBER 1, 2021 TO 09:30 HOUR ON DECEMBER 2, 2021.
** : SAMPLING FROM 09:30 HOUR ON DECEMBER 2, 2021 TO 09:30 HOUR ON DECEMBER 3, 2021.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 20, 2021



ANALYSIS REPORT

CUSTOMER NAME : ECO ORIENT RESOURCES (THAILAND) LTD.
ADDRESS : 555 RASA TOWER II, 12TH FLOOR, UNIT 1203 PHAHOLYOTHIN ROAD CHATUCHAK CHATUCHAK BANGKOK 10900
CONTACT INFORMATION : TEL : 0 2937 1124-9 e-mail : anucha@ecothal.net
SAMPLING SOURCE : TRE-1-A2: NONG KHANOM JEEN HOUSE OF PRIEST (UTM WGS 84 ZONE 47P 731587E 1730272N)
SAMPLE TYPE : AMBIENT
SAMPLING DATE : *
SAMPLING TIME : *
SAMPLING BY : MR CHATCHAWAN LUEANLONG
ANALYZED BY : MISS JETJARI TUMSA-AT

RECEIVED DATE : DECEMBER 7, 2021
ANALYTICAL DATE : DECEMBER 7-9, 2021
REPORT NO. : 2021-U94697
WORK NO. : 2021-008594
ANALYSIS NO. : T21AX921-0006

PARAMETER	UNIT	METHOD OF ANALYSIS	RESULT	REGULATORY STANDARD
			TRE-1-A2: NONG KHANOM JEEN HOUSE OF PRIEST	
			T21AX921-0006	
TOTAL SUSPENDED PARTICULATE	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.058	≤ 0.33
PARTICULATE MATTER (≤ 10 μm)	mg/m ³	GRAVIMETRIC (HIGH VOLUME METHOD)	0.037	≤ 0.12
SAMPLE CONDITION			COMPLETE	

REMARK

RESULT : REFERENCE CONDITION IS 25 DEGREE CELSIUS AT 1 ATMOSPHERE.
TSP : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX B.
PM10 : US EPA, CODE OF FEDERAL REGULATION SEARCH RESULTS, 40 CFR-CHAPTER I PART 50, APPENDIX J.
REGULATORY STANDARD : AMBIENT AIR QUALITY STANDARDS, NOTIFICATION OF THE NATIONAL ENVIRONMENT BOARD NO.24, B.E.2547 (2004).
* : SAMPLING FROM 09:30 HOUR ON DECEMBER 3, 2021 TO 09:30 HOUR ON DECEMBER 4, 2021.

Piyapat S.
(MRS PIYAPAT SUTTAMANUTWONG)
LABORATORY SUPERVISOR

DECEMBER 20, 2021

