

	ORINATE-80 (2,4 TDI 80%, 2,6 TDI 20% ISOMER)	CAS No.	584-84-9 91-08-7	
		Establishment	16 TH SEP, 1999	
		Revised	24 TH DEC, 2014	
		Revision No	12	1/12

SECTION 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1. SUBSTANCE : ORINATE-80 (2,4-TDI 80%, 2,6-TDI 20% Isomer)

2. RECOMMENDATIONS FOR USE OF THE PRODUCT AND THE RESTRICTIONS

1) Recommendations For Use Of The Product

- PU sponge and plastics manufacturing polyurethane coating and wire coating most commonly used substance, 2,4 - isomer 80% and 2,6 - isomers in 20% of the mixture is a substance.

2) Restrictions On Use : No Data

3. PRODUCER / SUPPLIER / DISTRIBUTER INFORMATION

Producer

Company : OCI(주)

Establishment : Gusan Plant

Division : TDI Production Team

Producer : H.S.Huh (TEL : 063-460-6181)

Supplier / Distributer

Company : OCI(주)

Establishment : Gusan Plant

Division : QA

Supplier / Distributer : J.H. Park(TEL : 063-460-6302)

Article by

Company : OCI(주)

Establishment : Gusan Plant

Division : TDI Production Team

Producer : H.M.Song (TEL : 063-460-6182)

SECTION 2 - HAZARDS IDENTIFICATION

1. HAZARD CATEGORY

- Acute Toxicity(Inhalation : Dust / Mist) : Assortment 1
- Corrosive or irritating the skin : Assortment 2
- Severe eye damage or irritation : Assortment 2
- Respiratory hypersensitivity : Assortment 1
- Skin hypersensitivity : Assortment 1
- Carcinogenic : Assortment 2
- Germ cell mutagenicity : Assortment 2
- Specific target organ toxicity : Assortment 3

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- Specific target organ toxicity(repeated exposure) : Assortment 1

2. WARNING SIGNS INCLUDE PRECAUTION STATEMENT

1) Pictograph



2) Signal : Danger

3) Hazard Statement

- H300 Fatal If swallowed
- H315 Causes skin irritation
- H317 May cause an allergic skin reaction
- H319 Causes serious eye irritation
- H330 Fatal If inhaled
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled
- H335 May cause respiratory irritation
- H351 Suspected of causing cancer
- H412 Harmful to aquatic life with long lasting effects

4) Prevention Precautionary Statements

- Prevention

- P201 Obtain special instructions before use.
- P202 Do not handle until all safety precautions have been read and understood..
- P260 Do not breathe dust/fume/gas/mist/vapours/spray P261 Avoid breathing dust / fume / gas / mist / vapors / spray.
- P264 Wash ... thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P272 Contaminated work clothing should not be allowed out of the workplace.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required P285 In case of inadequate ventilation wear respiratory protection.
- P285 In case of inadequate ventilation wear respiratory protection.

- Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and water..
- P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

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

P308+P313 IF exposed or concerned: Get medical advice/attention.

P309+P311 IF exposed or if you feel unwell: Call a POISON CENTER or doctor/physician..

P332+P313 If skin irritation occurs: Get medical advice/attention.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P342+P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.

P362 Take off contaminated clothing and wash before reuse.

P363 Wash contaminated clothing before reuse..

-. Storage

P405 Store locked up.

-. Discard

P501 Dispose of contents/container to related laws

3. NFPA RATINGS (SCALE 0-4) : HEALTH=3 FIRE=1 REACTIVITY=3

SECTION 3 - COMPOSITION, INFORMATION ON INGREDIENTS

COMPONENT : TOLUENE-2,4-DIISOCYANATE 80%, TOLUENE-2,6-DIISOCYANATE 20%,

CAS NUMBER: 584-84-9, 91-08-07

PERCENTAGE : 100

OTHER CONTAMINANTS: NONE.

SECTION 4 - FIRST AID MEASURES

1. INHALATION

- Remove from exposure area to fresh air immediately.
- Perform artificial respiration if necessary.
- Maintain airway, blood pressure and respiration.
- Keep warm and at rest.
- Treat symptomatically and supportively.
- Get medical attention immediately.
- Qualified medical personnel should consider administering oxygen.

2. SKIN CONTACT

- Remove contaminated clothing and shoes immediately.

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- Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15 minutes).
- If burns occur, proceed with the following: Cover affected area securely with sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. Get medical attention immediately.

3. EYE CONTACT

- Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes).
- Cover with sterile bandages.
- Get medical attention immediately.

4. INGESTION

- If the person is conscious and not convulsing, induce emesis by giving syrup of ipecac followed by water. (If vomiting occurs keep the head below the hips to prevent aspiration).
- Repeat in 20 minutes if not effective initially. Give activated charcoal. In patients with depressed respiration or if emesis is not produced, perform gastric lavage cautiously.
- Treat symptomatically and supportively.
- Gastric lavage should be performed by qualified medical personnel. Get medical attention immediately.

5. NOTE TO PHYSICIAN

- Chemical ingestion, please consider gastric lavage and activated charcoal administration.
- Chemical If inhaled oxygen consider.

SECTION 5 - FIRE FIGHTING MEASURES

1. EXTINGUISHING MEDIA

- Extinguishing Media : Dry chemical, carbon dioxide, water spray or regular foam
- Improper Extinguishing Media : No Data
- For larger fires, use water spray, fog or regular foam

2. HAZARDOUS COMBUSTION PRODUCTS:

- Thermal decomposition products may include highly toxic hydrogen cyanide, andtoxic and hazardous oxides of carbon and nitrogen.

3. FIRE AND EXPLOSION HAZARD

- Slight fire hazard when exposed to heat or flame.
- Vapor-air mixtures are explosive above flash point.
- Intermediate-level explosion hazard

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4. FIREFIGHTING

- Move container from fire area if you can do it without risk.
- Cool container with water using unmanned device until well after fire is out.
- Fight fire from maximum distance.
- Stay away from ends of tanks.
- Dike fire-control water for later disposal; do not scatter material. (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 57).
- Extinguish only if flow can be stopped.
- Use flooding amounts of water as a fog; solid streams may be ineffective.
- Cool containers with flooding amounts of water from as far a distance as possible.
- Avoid breathing poisonous vapors, keep upwind.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

1. PRECAUTIONS NECESSARY TO PROTECT HUMAN SUBJECTS AND RESERVES

- Disclosure materials by hand, do not touch or contact.
- By injecting water, Reduce the occurrence of steam
- Heat, flame, sparks and remove all sources of ignition.
- If you do not risk to workers directly, please let chemicals to stop leaks.

2. PRECAUTIONS NECESSARY TO PROTECT THE ENVIRONMENT

- Air : No Data
- Soil : No Data
- Water : Water and stored in an isolated place.

3. METHODS FOR CLEANING UP

1) For Small Leak.

- leak a small amount of storage containers in a safe place to move.
- Use non-combustible material to absorb.
- Disclosure materials for later disposal in suitable containers to collect and take care of moving.

2) For Massive Leak

- At more than reference equivalent emissions in government departments or local government information, notice of discharge.
- Surface area and isolation measures to control unauthorized access to people
- Disclosure of material for processing and managing the construction of embankments.
- Before entering the enclosed space, adequate ventilation must be carried out.

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- Heat, flame, sparks and remove all sources of ignition.

SECTION 7 - HANDLING and STORAGE

1. SAFE HANDLING

- Water, steam, water and to avoid contact.
- All ventilation or local exhaust ventilation performed using.
- After using chemicals to wash the body and clothing.
- Avoid Particulate matter and gas breath.

2. SECURE STORAGE

- Under inert conditions, chemicals used, stored.
- Stored in a cool, dry place.
- Avoid contact with moisture.
- Stored in well-ventilated place.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

1. CHEMICAL EXPOSURE, BIOLOGICAL EXPOSURE LIMITS

- 1) Domestic Regulations : TWA 0.005ppm 0.04mg/m³, STEL - 0.02ppm 0.15mg/m³
- 2) ACGIH Regulations : TWA 0.005 ppm , STEL 0.02 ppm
- 3) Biological Exposure Limits : No Data

2. APPROPRIATE ENGINEERING CONTROLS

- Installing equipment or local exhaust seal.
- Process accepted by the Department of Labor and exposure for sure.

3. PERSONAL PROTECTIVE EQUIPMENT

- 1) Respiratory Protection
 - Korea Occupational Safety and Health Agency has completed the authentication to wear breathing respirators.

2) EYE PROTECTION

- This can be easily used by emergency workers to install washing facilities and washing facilities Working with various scattering occurs from the water, and hazardous liquid eyes and face (the front of the head, forehead, chin, mokapbubun, nose, mouth) to protect the security if the security lapse and Wear.

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3) HAND PROTECTION

- Direct hand contact with chemicals can be avoided Wear chemical resistant gloves.

4) BODY PROTECTION

- Can prevent skin exposure Wear chemical resistant clothing.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

1. APPEARANCE

- Property : No Data
- Color : No Data

2. **SMELL** : Changing smell

3. **ODOR THRESHOLD** : 0.049-2.14 ppm

4. **pH** : No Data

5. **MELTING /FROZEN POINT** : 22°C

6. **INITIAL BOILING POINT AND BOILING POINT RANGE** : 251°C (2.4kPa)

7. **FLASH POINT** : 127 °C

8. **EVAPORATION RATE** : [1<(Acetic Acid=1)]

9. **FLAMMABILITY (SOLID, GAS)** : No Data

10. **FLASH OR EXPLOSION RANGE OF UPPER / LOWER LIMIT**: 9.5 / 0.9 %

11. **VAPOR PRESSURE** : 1.3 Pa (20°C)

12. **SOLUBILITY** : 0.00376 g/100ml (25°C (Assumption))

13. **VAPOR DENSITY** : 6

14. **SPECIFIC GRAVITY** : 1.2

15. **n-OCTANOL / WATER DISTRIBUTION COEFFICIENT** : 0.21

16. **AUTOIGNITION TEMPERATURE** : 620 °C

17. **DECOMPOSITION TEMPERATURE** : No Data

18. **VISCOSITY** : No Data

19. **MW** : 174.2

SECTION 10 - STABILITY AND REACTIVITY

1, CHEMICAL STABILITY AND THE POSSIBILITY OF ADVERSE REACTIONS

- Exothermic reaction on contact with water may be.
- Above room temperature to avoid the storage and use.

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- Polymerization can occur.

2. CONDITIONS TO AVOID

- Save Water and Sewerage away from.
- Heat, flames, sparks and other ignition sources and to avoid contact.
- Containers may rupture or explode if exposed to heat.
- Dangerous gases may accumulate in confined spaces.

3. MATERIALS TO AVOID : Base, Metal, oxidant, Amine, combustible materials, acid

4. DECOMPOSITION OF HAZARDOUS SUBSTANCES THAT ARE GENERATED

- During pyrolysis cyanide, carbon oxides, nitrogen generation

SECTION 11 - TOXICOLOGICAL INFORMATION

1. INFORMATION ABOUT THE LIKELY ROUTE OF EXPOSURE

- Allergic reactions, burns, nausea, vomiting, stomach pain, asthma, headache, symptoms of drunkenness, lung or more, may cause death. Burns, sore throat, diarrhea, stomach pain may cause. Allergic reactions, burns, nausea, vomiting, stomach pain, asthma, headache, symptoms of drunkenness, lung or death, irritation (possibly severe), may cause blisters. Irritation (possibly severe), pepper, blurred vision, glaucoma can cause.

2. HEALTH HAZARD INFORMATION

1) Acute Toxicity

- Oral : LD50 5800mg/kg Rat
- Transdermal : No Data
- Inhalation : LC50 6405mg/l 4hr Rat

2) Corrosive Or Irritating The Skin : Severe skin irritation tests using rabbits stimulated

3) Severe Eye Damage Or Irritation : Rabbits using eye irritation exam results medium irritation.

4) Respiratory Hypersensitivity : Respiratory Irritable substances

5) Skin Hypersensitivity : Cavy Using skin Irritable Exam Results - Positive

6) Carcinogenic

- Occupational Safety and Health Act : Carcinogenic
- IARC : 2B
- NTP : No Data
- OSHA : No Data
- WISHA : No Data
- ACGIH : A4

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7) Germ cell mutagenicity Microbial reverse mutation assay : No Data

8) Specific target organ toxicity (1st exposure)

- In one eye, skin and airway irritation, chemical bronchitis, pneumonia, edema Causes

9) Specific target organ toxicity (Repeated exposure)

- Experimental animals reversible hyperplasia of the larynx, squamous epidermal growth, rhinitis, respiratory effort, reversible organ hyperplasia, necrosis of bronchitis, bronchiolitis, pulmonary hyperplasia, growth, species, heopakkwariyeom, nyoryanggwa of urinary loss of protein content, blood nitrogen , hemoglobin, hematocrit, red blood cells, increased platelets, decreased white blood cell count.

10) Aspiration hazard : No Data

SECTION 12 - ECOLOGICAL INFORMATION

1. ECOTOXICITY

- Fish : LC50 164 mg/ℓ 96 hr

- Shellfish : No Data

- BIRDS : No Data

2. PERSISTENCE AND DEGRADABILITY

- Persistent / Degradable : No Data

3. BIOACCUMULATIVE

- Concentration / Biodegradable : No Data

4. SOIL MOBILITY : No Data

5. OTHER HARMFUL EFFECTS: No Data

SECTION 13 - DISPOSAL CONSIDERATIONS

1. DISPOSAL METHOD

- Where should you be in the waste generation and to reduce possible Incineration of waste is the most desirable way to handle and is designed for incineration or incineration of hazardous substances in incinerators approved subject to appropriate adjustment shall be incinerated while.

2. DISPOSAL CONSIDERATIONS

- After preprocessing a small amount of waste will be handled. After removing the empty drums of pollutants or waste, or licensed to drill a hole drum should be sent to your agent.

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SECTION 14 - TRANSPORT INFORMATION

1. **UN No.** : 2078
2. **PROPER SHIPPING NAME:** TOLUENE DIISOCYANATE
3. **TRANSPORT RATING:** 6.1
4. **PACKING RATING** : 2
5. **MARINE POLLUTION** : No Data
6. **RESPECT TO TRANSPORTATION OR REQUIRE SPECIAL SAFETY MEASURES**
 - Emergency measures in case of fire: F-A
 - Non-disclosure measures : S-A

SECTION 15 - REGULATORY INFORMATION

1. **INDUSTRIAL SAFETY AND HEALTH REGULATIONS**
 - Working Environment Measurement materials (Measurement cycle : 6months)
 - Management target material
 - Special Health Check-up material (Diagnostic cycle : 12months)
 - Material exposure limits
2. **REGULATED BY THE TOXIC CHEMICALS CONTROL ACT** : No Data
3. **SAFETY CONTROL OF DANGEROUS GOODS REGULATIONS** :No Data
4. **WASTE MANAGEMENT ACT REGULATIONS** : No Data
5. **BY OTHER DOMESTIC AND FOREIGN REGULATIONS**
 - 1) Domestic Regulations
 - Persistent Organic Pollutants Management Act : Not Applicable
 - 2) International Regulations
 - OSHA : Not Applicable
 - CERCLA : 45.3599 kg 100 lb
 - EPCRA 302 : 45.3599 kg 100 lb
 - EPCRA 304 : 45.3599 kg 100 lb
 - EPCRA 313 : RELEVANT
 - Rotterdam Convention material) : Not Applicable
 - Stockholm Convention material: Not Applicable
 - Montreal Protocol on Substances : Not Applicable
 - EU Final classification results: Carc. Cat. 3; R40T+; R26Xi; R36/37/38R42/43R52-53

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- EU Risk Phrases: R26, R36/37/38, R40, R42/43, R52/53
- EU Safety Phrases: S1/2, S23, S36/37, S45, S61

SECTION 16 - ADDITIONAL INFORMATION

1. DATA SOURCE

The MSDS of Occupational Safety and Health Act Article 41, pursuant to South Korea, Health & Safety Authority provided in that OCI Company toluene 2, 4 diisocyanate characteristics of the product for some modifications because internal use only and can be used, and external (commercial) purposes use is prohibited.

If you are using an external-purpose OCI Company (063-460-6252), please contact.

2. DATE OF ESTABLISHMENT : 1999. 09. 16

3. REVISION NUMBER AND DATE OF THE FINAL REVISED

- Revision No : 12
- . 2012. 02. 15 last revision
- . 2014. 12. 24 Producer, Supplier information revision (Final)

