




MATERIAL SAFETY DATA SHEET (MSDS)

H-R016

SECTION 1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF SUPPLIER

- a. Product name: H-R016
- b. Recommended uses of the chemical: Surfactant
- c. Information on manufacturer/supplier/distributor
 - Supplier name: Dongnam Chemical Co., Ltd
 - Address: 80-61, Tanchoonsaneopdanji-gil, Tancheon-myeon, Gongju-si, Chungcheongnam-do, Korea
 - Contact Person: Technical Research Center
 - Emergency contact: 041-840-3151

SECTION 2. HAZARDS IDENTIFICATION

- a. Hazard classification : Skin corrosion/skin irritation: Category 2,
Serious eye damage/Eye irritation: Category 2
- b. Label elements including precautionary statements
 - Pictograms:

 - Signal words: Caution
 - Hazard statement
 - H315 Causes skin irritation.
 - H319 Causes serious eye irritation.
 - Prevention precautionary statements
 - ▶ Prevention
 - P264 Wash hands thoroughly after handling.
 - P280 Wear protective gloves/protective clothing/eye protection/face protection.
 - ▶ Response
 - P302+P352 When skin contact with chemicals, wash the skin lots of water and a soap
 - P305+P351+P338 When eye contact with chemical, wash the eyes for several minutes.
If possible, remove the contact lens. Keep washing.
 - P332+P313 If skin irritated, get a medical advice or attention.
 - P337+P313 If eye irritated, get a medical advice or attention.
 - P362 Take off contaminated clothing and wash before reuse.
 - ▶ Storage Not applicable
 - ▶ Disposal Not applicable



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c. Other hazards which do not result in classification.

- Health Not available
- Fire Not available
- Reactivity Not available

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

- a. Chemical name: Methyl triethanolammonium methyl sulfate dialkylester / 2-Propanol
- b. Other name:
- c. CAS-number: 91995-81-2 / 67-63-0
- d. Content: 90% / 10%

SECTION 4. FIRST-AID MEASURES

- a. When in contact with eyes: Rinse with plenty of soap and water with 15 minutes and If contact eye, promptly treated by a doctor/physician.
- b. When in contact with skin: Wash clothing and shoes before reuse.
If contaminated, remove contaminated clothing and shoes and rinse with plenty of soap and water with 15 minutes
If skin irritation occurs, get medical advice or attention.
- c. When inhaled: Do not make the exposed person vomit. Transfer the exposed person to fresh air.
Let him warm and stable.
- d. When ingested: Call 119 or emergency center and immediately transfer to the hospital.
If the person faint or has cramp, forbid ingest all kinds of food.
If natural vomit occur, to avoid possibility of absorption to the lung, take your head under your bottom.
If a person had lapsed into unconsciousness, prepare respiratory obstruction by turning his head.
In case of ingesting the chemicals please get medical advice.
- e. General advise: Not available

SECTION 5. FIRE-FIGHTING MEASURES

- a. Suitable fire-fighting agents
 - Suitable digester: Powder, CO₂, water spray, foam.



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- Unsuitable digester: Not Available.
- Big fire: Use anti-alcohol foam and much water spray.
- b. Specific hazards arising from the chemical
 - Flammable liquid and gas
 - Can be exploded or fire by an intensive neutralization reaction.
 - May occurred a fire by gas ignition.
 - When burning, could be occurred stimulated and toxic gas.
 - Can be formed an explosive compound at an ignition point or above.
 - Container can be exploded by heating.
 - High flammability, easily ignited by heat, spark and flame.
 - May causes a fire or explosion from its leakage.
 - May causes a gas explosion at inside, outside or drain area.
 - Can be burned partially but it is not ignited easily.
 - The gas can be formed an explosive compound with air.
 - Nonflammable, it is not burned but may occurred corrosive/toxic fume by heating.
- c. Special protective equipment and precautions for fire-fighters:
 - Rescuer should wear proper protectors.
 - Keep away from the fire area when extinguish.
 - Pay attention to this material since it is lighter than water.
 - The gas can be spread-out along the ground and accumulated at low level area or closed space since it is heavier than air.
 - Dig a ditch to treat extinguish water and prevent its expansion.
 - Move container if they're no potential danger from fire.
 - Extinguish from the maximum distance when tank fire.
 - Cool down the tank with a plenty of water after extinguishment.
 - In this case that a sound of safety equipment is operated and a tank is discolored escape immediately.
 - Do not approach the tank at both ends.
 - Pay attention to the melting material since it can be moved.
 - May causes an eye burn from container explosion by heating.

SECTION 6. ACCIDENT RELEASE MEASURES

- a. Measures required for personal protection and protective equipment
 - Prevent dust occurrence. Wipe out the leakage immediately and follow prevention measure.



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- Remove all other ignition sources.
 - Prevent further leakage or spillage if safe to do so.
 - Do not touch without protective equipment.
 - Cover the leakage with plastic sheet to prevent further leakage or spillage.
 - Pay attention to the materials and conditions to avoid.
- b. Measures required for environment protection
- Avoid release to the environment
 - Prevent to inflow to water way, sewage, basement and any closed area.
- c. Clean-up and removal method:
- Put on an exposed material into appropriate container and move to waste disposal containers for further disposal.
 - Use nonflammable materials to absorb.
 - Store away exposed location and regulate only related person to access.
 - Wash out the contaminated area with detergent and water.

SECTION 7. HANDLING AND STORAGE

- a. Precautions for safe handling :
- Wash thoroughly after handling.
 - Use only outdoors or in a well-ventilated
 - Refer to the engineering controls and personal protection equipment.
 - Follow the prevention measure when handling the empty containers since there can be some residue.
 - Pay attention to the materials and conditions to avoid.
 - Open the cap carefully.
 - Prevent to contact to skin for the long term and continuous contact.
 - Work referring to engineering management and personal protective equipment.
- b. Conditions for safe storage :
- Store in a sealed container.
 - Store in original container protected from direct sunlight in a dry, cool and well-ventilated area.
 - Store in dark place.
 - Avoid physical impact (pressure, cutting, heating etc..)
 - Do not contact point source of light and use
 - Paste warning signs.



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SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

a. Exposure limits of the chemical substance, biological exposure limits and etc

Local regulation

- 2-Propanol : TWA - 200 ppm 480 mg/m³, STEL - 400 ppm 980 mg.m³

ACGIH regulation

- 2-Propanol: TWA 200 ppm STEL 400 ppm

Biological Exposure Indices (BEIs) : Not available

b. Appropriate engineering controls: Check working process is in accordance with local regulations.

Install local exhaust ventilation and ventilator, and controls appropriate winds to flow.

In the case of explosion danger equip a ventilator which explosion-proof machine.

c. Personal protective equipment

Respiratory protection: To wear approved standard respiratory protection.

Eye protection: Not available

Hand protection: Not available

Body protection: Not available

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

a. Appearance (physical state, color, etc): Yellowish paste

b. Odor: Not available

c. Odor threshold: Not available

d. pH: 2.5 - 3.7

e. Melting point/freezing point: Not available

f. Initial boiling point and boiling range: Not available

g. Flash point : Not available

h. Evaporation speed : Not available

i. Flammability(solid, gas): Not available

j. Upper/lower flammable or explosive limits: Not available

k. Vapor pressure: Not available

l. Solubility : Soluble at water.

m. Vapor density: Not available

n. Specific gravity: 0.98

o. N-octanol/water partition coefficient: Not available

p. Auto-ignition temperature: Not available



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- q. Decomposition temperature: Not available
- r. Viscosity: 110 cps at 50°C
- s. Molecular weight: Not available

SECTION 10. STABILITY AND REACTIVITY

- a. Chemical stability :
- Flammable liquid and gas
 - Can be exploded or fire by an intensive neutralization reaction.
 - May occurred a fire by gas ignition.
 - When burning, could be occurred stimulated and toxic gas.
 - Can be formed an explosive compound at an ignition point or above.
 - Container can be exploded by heating.
 - High flammability, easily ignited by heat, spark and flame.
 - May causes a fire or explosion from its leakage.
 - May causes a gas explosion at inside, outside or drain area.
 - Can be burned partially but it is not ignited easily.
 - The gas can be formed an explosive compound with air.
 - Nonflammable, it is not burned but may occurred corrosive/toxic fume by heating.
- b. Conditions to avoid : Heat, flame, spark and high temperature.
- c. Materials to avoid : Flammable materials, reducing materials
- d. Hazardous material when decomposition : May release some toxic and dangerous gas by thermal degradation.

SECTION 11. TOXICOLOGICAL INFORMATION

	Methyl triethanolammonium methyl sulfate dialkylester	2-propanol
Information on the likely routes of exposure	Not available	Not available
Information of health warning		
Acute toxicity		
Oral	Not available	Not available
Percutaneous	Not available	Not available



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Inhale	Not available	LC50 > 10000 ppm 6hr Rat(Vapor)
Skin corrosion/irritation	Rabbit, middle class irritation (GLP,OECD TG 404)	Mild irritation to rabbit, non-irritation to the man
Serious eye damage/eye irritation	Rabbit, middle class irritation (GLP)	Mild or middle class irritation to rabbit
Respiratory sensitization	Not available	Not available
Skin sensitization	Not available	Skin sensitization test at Guinea pig - Negative
Carcinogenicity	Not available	Not available
Germ cell mutagenicity	In vitro (S. typhimurium TA98.TA100,TA1535,TA1537)- Negative (GLP,OECD TG 471), In vivo-Negative (GLP,OECD TG 474)	Mouse marrow cell test - Negative
Reproductive toxicity	Not available	Non-deformity from deformity test at mouse, shows weight changes and toxicity such as a narcosism. Shows a reproductive toxicity such as decrease of pregnancy rate and increase of fetal death.
Specific target organ toxicity(single exposure)	Not available	Activity decrease from white mouse by the inhalation exposure. Shows alimentary canal irritation, decrease of blood pressure and body temperature.
Specific target organ toxicity(repeated exposure)	Not available	Reported it may influence on mouse' s liver and spleen by inhalation exposure for 4 months. Accepted an impact on kidney and narcosism.
Aspiration hazard	Not available	Accepted a death within 24 hours due to cardiopulmonary arrest by an injection into mouse' s organ, If inhale, may cause an aspiration hazard, kinetic viscosity rate is about 1.6 mm ² /s.

SECTION 12. ECOLOGICAL INFORMATION



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	Methyl triethanolammonium methyl sulfate dialkylester	2-propanol
Aquatic and terrestrial ecotoxicity		
Fish	Not available	LC50 10000 mg/ℓ 96 hr Pimephales promelas
Crustacean	Not available	LC50 >10000 mg/L 24hr Daphnia magna
Algae	Not available	Not available
Persistence and degradability		
Persistence	Not available	log Kow 0.05
Degradability	Not available	Not available
Bioaccumulation		
Bioaccumulation	Not available	Not available
Biodegradability	99% within 28 day (Well decomposed, the accumulation potential in body is low. GLP, OECD TG 301D)	Not available
Mobility in soil	Not available	Not available
Other adverse effect	Not available	Not available

SECTION 13. DISPOSAL CONSIDERATIONS

- Disposal methods : Dispose content and container in accordance with disposal managing regulation and law.
- Precautions for disposal : Consider the law and caution in accordance with disposal managing regulation and law.

SECTION 14. TRANSPORT INFORMATION

- UN number: Not applicable
- UN proper shipping name: Not applicable
- Transport hazard classes: Not applicable
- Packing group: Not applicable
- Marine pollutant: Not applicable
- Information on any special precautions, which a user needs to be aware of, or needs to comply with



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in connection with transport.

- Fire emergency: Not applicable
- Exposure emergency: Not applicable

SECTION 15. REGULATORY INFORMATION

- a. Industrial Safety and Health Law : Not applicable
- b. Toxic Chemical Control Law: Not applicable
- c. Dangerous Goods Safety Control Law: 4 Class, 3 petroleum
- d. Wastes Management Law : Appointed waste material
- e. Other regulations in domestic and foreign countries
 - Local & Overseas regulation: Not applicable

SECTION 16. OTHER INFORMATION

- a. Sources of reference materials: Korea occupational safety & Health agency
- b. The first date of preparation: Aug. 01, 1997
- c. Number of revision times and the latest revision date
 - Revision number: Revision 5
 - Update revision date: Jun. 2, 2015
- d. Others
 - Revision article : Article 1, 2, 9, 11, 12 and 15 revised.