

물질안전보건자료

(Material Safety Data Sheet)

Name of the product

KUT370(B)

1. Information about chemicals and companies

A. Product name	KUT370(B)
B. Recommended use of the product and restrictions on its	
Recommended use of the product	general industrial hardener
Product usage restrictions	Do not use anything other than the intended use
C. Supplier information (in case of imported goods, enter information of domestic suppliers that can be contacted urgently)	
Corporate name	Geumgang Paint Industrial Co., Ltd.
Address	454-2 Yongjeon-ri, Gokyeong-myeon, Yeongcheon-si, Gyeongsangbuk-do
Emergency phone number	054 338 7722

2. Harmful and dangerous

A. Classification of hazards and risks	Flammable liquid: classification2 Skin Corrosive/Skin Irritability: Classification Severe eye damage/eye irritation: classification2 Carcinogenicity: Classification 1B Reproductive cell variability: Classification 1B Specific target organ toxicity (1 exposure): Classification 3 (anesthesia) Specific target organ toxicity (1 exposure): Classification 3 (breathing machine) Aspiration hazard: classification1 Hazardous Chronic Aquatic Environment: Classification 3
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B. Warning sign items including precautionary statements

Picture Text



a sign language

Dangers

Hazardous and dangerous phrases

H225 High Resilient Liquid and Steam
H304 Swallowing into the airways can be fatal
H315 Causes irritation to the skin
H317 May cause allergic skin reactions
H319 Severe irritation to the eyes

H334 Inhalation may cause allergic reactions, asthma or shortness of breath, etc
H335 May cause respiratory irritation
H336 May cause drowsiness or dizziness
H340 May cause genetic defects (Describe exposure pathways that cause genetic defects, provided there is conclusive evidence that they do not cause genetic defects by other exposure pathways)

H350 Can cause cancer (Describe the path of exposure to cause cancer; only if there is conclusive evidence that it does not cause cancer by other exposure pathways)
H412 Hazardous to aquatic life due to long-term effects

Preventive measures statement

Prevention

Obtain a manual for handling P201 before use.

P202 Do not handle all safety precautions until you have read and understood them.
Keep away from P210 heat, hot surfaces, sparks, flames, and other sources of ignition.
No smoking

Prevention

Seal the P233 container tightly.
Ground P240 containers and containers.

P241 Explosion Proof Type [Electric/Ventilation/Lightning/...]...Use the equipment.

	Use a P242 spark-free tool.
	P243 Take antistatic measures.
	P261 Avoid inhalation of dust/fume/gas/mist/steam/spray.
	After handling P264...Wash thoroughly.
	P271 Only handle outdoors or in well-ventilated areas.
	P272 Do not take contaminated clothing out of the workshop.
	Do not discharge into the P273 environment.
	P280 Wear protective gloves/protective glasses/facial protection.
	P284 [If ventilation is not good] Wear respirator protection.
Response	If P301+P310 swallowed: immediate medical institution/doctor/...See a doctor. P302+P352 on skin: plenty of water/...Wash with (e). P303+P361+P353 If you get it on your skin (or hair): Take off all contaminated clothing immediately. Wash your skin with water (or shower). If you inhale P304+P340: Move to a place with fresh air and rest in an easy-to-breathe position. P305+P351+P338 On your eyes: Wash carefully with water for a few minutes. Remove contact lenses if possible. Continue washing. P308+P313 If exposed or concerned about exposure: seek medical action/advice. P312 If you feel uncomfortable, medical institutions/doctors/...See a doctor. P321 ...Take care of it. P331 Don't make me vomit. P332+P313 When skin irritation appears: seek medical action/advice. P333+P313 If skin irritation or erythema appears: seek medical action/advice. P337+P313 If eye irritation persists: seek medical action/advice. If P342+P311 respiratory symptoms appear: medical institution/doctor/...See a doctor. P362+P364 Take off contaminated clothing and wash it before use again. P370+P378 In case of fire: To extinguish the fire...Use B. P403+P233 Store in a well-ventilated place. Seal the container tightly. P403+P235 Store in a well-ventilated place. Keep it low. Save with P405 lock. Dispose of contents/containers in accordance with P501 waste-related laws and regulations
Storage	
Disposal	

3. Name and content of components

Material name	Nomenclature (tolerance)	CAS number	content (%)
toluene-2,4/2,6-diisocyanate	Toluene diisocyanate toluene diisocyanate	26471-62-5	40 ~ 50
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Aromatic naphtha, Type I (Aromatic naphtha, type I)	64742-95-6	10 ~ 20
butyl acetate	n-butyl acetate Normal-butyl acetate	123-86-4	10 ~ 20
ethyl acetate	ethyl acetate ethyl acetate	141-78-6	10 ~ 20
4-Methylbenzene sulfonyl isocyanate	benzene sulfonyl isocyanate, 4-methyl- (BENZENESULFONYL ISOCYANATE, 4-METHYL-);	4083-64-1	0.1 ~ 0.5

4. First aid measures

A. When it gets into your eyes	If it gets on your eyes: Wash carefully with water for a few minutes. Remove contact lenses if possible. Keep washing. If eye irritation persists: seek medical action/advice.
B. When you come into contact with your skin	When it gets on your skin (or hair): remove all contaminated clothing immediately. Wash your skin with water (or shower).
B. When you come into contact with your skin	When skin irritation or erythema appears: seek medical action/advice. Get urgent medical attention Remove contaminated clothes and shoes and isolate contaminated areas Prevent the spread of contaminated areas during minor skin contact In case of burns, cool the area immediately with cold water as long as possible, and do not remove any clothing attached to the skin

C. When you inhale it	Wash your skin with soap and water If breathing becomes difficult by inhaling, move to a place with fresh air and rest in an easy-to-breathe position. If you are exposed or concerned about exposure: seek medical action/advice. Don't make me vomit. If respiratory symptoms appear: medical institution/doctor/...See a doctor. Remove with clean air if exposed to excess dust or fumes and take medical action if you have cough or other symptoms.
D. When I ate it	If you swallowed: immediately a medical institution/doctor/...See a doctor. Don't make me vomit. If you eat or inhale substances, do not ventilate using mouth-to-mouth mouth exercise and use appropriate respiratory equipment
E. Other precautions of doctors	Contact the medical staff in case of exposure and take special emergency measures such as follow-up. Ensure that medical personnel are aware of the substance and take protective measures

5. How to deal with explosions and fires

a. Proper (inappropriate) digestive medicine an appropriate (inappropriate) digestive medicine	Use alcohol foam, carbon dioxide or water spray for digestion related to this substance Use dry sand or soil for asphyxiation
b. Certain hazards arising from chemicals a specific hazard arising from a chemical substance	Highly flammable liquids and vapors Intense polymerization can cause fire and explosion Steam can be transferred to ignition source and ignited During burning, irritating and very toxic gases can be generated by pyrolysis or combustion Can form explosive mixtures at or above flashpoints Containers may explode when heated High Mars: easily ignited by heat, spark, and flame Leaks are at risk of fire/explosion Risk of steam explosion indoors, outdoors, and sewers Some may burn but do not ignite easily Steam can form an explosive mixture with air Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
C. Protective equipment and preventive measures to be worn in case of fire extinguishing	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces Be careful as it reacts (intensely) with water to release combustible, corrosive/toxic gases, etc If it's not dangerous, move the container out of the fire area In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment Do not allow water to enter the container In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Digest away from the area and keep a safe distance Most of them are lighter than water, so be careful Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces

	Be careful as it can be carried hot If it's not dangerous, move the container out of the fire area In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment
	In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
butyl acetate	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Most of them are lighter than water, so be careful Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
ethyl acetate	Rescuers should wear appropriate protective gear. Digest away from the area and keep a safe distance Most of them are lighter than water, so be careful Because most vapors are heavier than air, they can diffuse along the ground and accumulate in low-lying or confined spaces In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn
4-Methylbenzene sulfonyl isocyanate	Digest away from the area and keep a safe distance Please be careful as it may melt and be transported Dig a ditch for the disposal of the digester so that the material does not scatter If it's not dangerous, move the container out of the fire area In case of tank fire, extinguish fire at maximum distance or use unmanned fire extinguishing equipment In case of tank fire, cool the container with plenty of water even after extinguishing In case of a tank fire, immediately withdraw from the pressure release unit if there is a high pitch or the tank discoloration In the event of a tank fire, step back from the tank engulfed in flames In case of tank fire, use unmanned fire extinguishing equipment and, if impossible, leave to burn

6. How to deal with leakage accidents

A. Measures and protective equipment necessary to protect the human body

Avoid inhalation of dust/fume/gas/mist/steam/spray.

Remove all ignition sources as very fine particles can cause fire or explosion.

Wipe off any spills immediately, and follow the precautions of the protective equipment.

A. Measures and protective equipment necessary to protect the human body

Isolate the contaminated area.

Those who do not need to enter or are not equipped with protective equipment should not enter.

Remove all ignition sources

Be sure to ground all equipment when handling substances

If it is not dangerous, stop the leak

Do not touch damaged containers or leaks without wearing proper protective clothing

Steam suppression foam can be used to reduce steam generation

Cover with plastic sheet to stop diffusion

Avoid dust formation

Pay attention to substances and conditions that should be avoided

Do not discharge into the environment.

Prevent inflows into waterways, sewers, cellars, and enclosed spaces

Build a levee for digestion and collect water.

Absorb spills with inert substances (e.g., dry sand or soil) and place them in a chemical waste container.

Absorb liquid and wash off contaminated areas with detergent and water.

In case of large leaks, make a ditch away from liquid leaks

Use a clean explosive device to collect absorbed material

Place the leak in a clean, dry container with a clean shovel, close loosely, and transfer the container from the leak area

In case of powder leakage, cover with plastic sheet to prevent diffusion and keep dry

In case of small leaks, absorb with sand, non-combustible material and place in container

B. Measures necessary to protect the environment

C. Methods of purification or removal

7. HANDLING AND STORAGE METHOD

A. Safety instructions

Do not handle all safety precautions until you have read and understood them.

explosion proof type [electric/ventilation/lighting/...Use the equipment.

Use a non-sparking tool.

Take antistatic measures.

Avoid inhalation of dust/fume/gas/mist/steam/spray.

After handling...Wash thoroughly.

Only handle outdoors or in well ventilated areas.

Do not take contaminated clothing out of the workplace.

Do not apply pressure, cut, weld, solder, bond, pierce, grind, or expose to heat, flame, flame, static electricity, or any other ignition source.

Follow all MSDS/label precautions as product debris may remain after the container has been emptied.

Use carefully when handling/storing.

Open the cap carefully before opening.

Avoid long-term or continuous skin contact.

Be sure to ground all equipment when handling substances

Pay attention to substances and conditions that should be avoided

Watch out for high temperatures

Watch out for heat

Measure and ventilate the oxygen concentration in the air during work as there is a risk of oxygen deficiency when working in a confined space in low-lying areas

Keep away from heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking

Store in a well-ventilated place. Seal the container tightly.

Keep it in a well-ventilated place. Keep it low.

Drain the empty drum completely and block it properly, immediately return it to the drum controller or arrange it properly.

B. A safe way to store

8. Exposure Prevention and Personal Protection

A. Chemical exposure standards, biological exposure standards, etc

domestic regulations	
toluene-2,4/2,6-diisocyanate	TWA – 0.005 ppm STEL – 0.02 ppm (toluene-2,4-diisocyanate and toluene-2,6-diisocyanate, permissible)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	TWA – 150ppm STEL – 200ppm
ethyl acetate	TWA – 400 ppm ethyl acetate
4-Methylbenzene sulfonyl isocyanate	No data
ACGIH regulations	
toluene-2,4/2,6-diisocyanate	TWA 0.005 ppm
toluene-2,4/2,6-diisocyanate	STEL 0.02 ppm
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	TWA 50 ppm
butyl acetate	STEL 150 ppm
ethyl acetate	TWA 400 ppm
4-Methylbenzene sulfonyl isocyanate	No data
biological exposure standards	
toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	No data
ethyl acetate	No data
4-Methylbenzene sulfonyl isocyanate	No data
Other exposure criteria	
toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	No data
ethyl acetate	No data
4-Methylbenzene sulfonyl isocyanate	No data
B. Proper engineering management	Use process isolation, local exhaust, or other engineering management to adjust the air level below the exposure limit.
B. Proper engineering management	If dust, fumes, or mist is generated during operation, ventilate to ensure air pollution remains below the exposure limit
B. Proper engineering management	Install face wash facilities and safety showers for facilities that store or use this substance.
C. Personal protective equipment	
Respiratory protection	
toluene-2,4/2,6-diisocyanate	(Toluene-2,4-diisocyanate and toluene-2,6-diisocyanate)
toluene-2,4/2,6-diisocyanate	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 0.05 ppm, wear an appropriate filter or septic while wearing a type of respirator
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 0.125ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 0.25 ppm, wear a front or electric type or air-supplied continuous flow type/pressure requirement type respirator with appropriate filter or septic tank
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 5 ppm, wear a front or helmet/hood type, pressure-required air mask with appropriate filters or septic tanks
toluene-2,4/2,6-diisocyanate	If the exposure concentration is lower than 50 ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	For gas/liquid substances, the following respirator is recommended ♪ –Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic compounds (for acid gases in case of acid gases) or electric gas mask
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator
butyl acetate	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
butyl acetate	If the exposure concentration is lower than 1500 ppm, wear an appropriate filter or purifier while wearing a type of respirator
butyl acetate	If the exposure concentration is lower than 3750ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
butyl acetate	If the exposure concentration is lower than 7500 ppm, wear a front or electric continuous flow/pressure requirement type respirator with appropriate filter or septic tank
butyl acetate	If the exposure concentration is lower than 1500 ppm, wear a front or helmet/hood type with appropriate filter or purification tank, pressure-required air mask
butyl acetate	If the exposure concentration is lower than 1500000 ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
ethyl acetate	ethyl acetate
ethyl acetate	Wear respirators certified by the Korea Occupational Safety and Health Agency to suit the exposed gas/liquid physicochemical characteristics
ethyl acetate	If the exposure concentration is lower than 4000 ppm, wear an appropriate filter or purifier while wearing a type of respirator
ethyl acetate	If the exposure concentration is lower than 10000 ppm, wear a loose-fitting hood/helmet type electric respirator or continuous flow dust mask/gas mask (the dust mask is only for liquid aerosols)
ethyl acetate	If the exposure concentration is lower than 20000 ppm, wear a front or electric type or air-supplied continuous flow type/pressure requirement type respirator with appropriate filter or septic tank
ethyl acetate	If the exposure concentration is lower than 400000ppm, wear a front or helmet/hood type, pressure-required air mask with appropriate filters or septic tanks
ethyl acetate	If the exposure concentration is lower than 4000000 ppm, wear a self-air supply (SCBA) or pressure-required self-air supply (SCBA) respirator equipped with appropriate filters or septic tanks
4-Methylbenzene sulfonyl isocyanate	Wear respirators certified by the Occupational Safety and Health Agency that conform to the physicochemical properties of exposed gases/liquid
4-Methylbenzene sulfonyl isocyanate	For gas/liquid substances, the following respirator is recommended ♪ –Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or Isolated front gas mask (for organic compounds (for acid gases in case of acid gases) or direct front gas mask (for organic compounds (for acid gases in case of acid gases) or on the other hand gas mask (for organic compounds (for acid gases in case of acid gases) or electric gas mask
4-Methylbenzene sulfonyl isocyanate	If oxygen is low (<19.5%), wear a vent mask or self-contained air respirator

9. PHYSICAL CHEMICAL CHARACTERISTICS

A. Appearance	
character	Liquid
Color	Transparent
I. The smell	No data
C. Smell threshold	No data
D. pH	No data
E. Melting/freezing point	No data
F. Initial boiling point and boiling point range	No data
G. A flashpoint	No data
H. Evaporation rate	No data
I. Flammable (solid, gas)	No data

J. Upper/lower limits on the range of flammables or	No data
J. Steam pressure	No data
T. Solubility	No data
F. Steam density	No data
Ha. Specific gravity	1.0 ~ 1.2
G. N-octanol/water distribution coefficient (Kow)	No data
You. Natural firing temperature	No data
More. Decomposition temperature	No data
R. Viscosity	40 ~ 50 KU
M. molecular weight	No data

10. Stability and Reactivity

a. Chemical stability and possibility of adverse reactions

toluene-2,4/2,6-diisocyanate	Can decompose at high temperatures to produce toxic gases
toluene-2,4/2,6-diisocyanate	If heated or contaminated with water, containers can explode
toluene-2,4/2,6-diisocyanate	When heated, steam can be mixed with air to form an explosive mixture: indoor, outdoor, sewers at risk of explosion
toluene-2,4/2,6-diisocyanate	Some may burn but do not ignite easily
toluene-2,4/2,6-diisocyanate	Steam can travel to ignition source and flash back
toluene-2,4/2,6-diisocyanate	Some may produce combustible hydrogen gas when in contact with metal
toluene-2,4/2,6-diisocyanate	Corrosive/toxic: Inhalation, ingestion, and contact of vapor, dust, and substances can result in serious injury, burns and death
toluene-2,4/2,6-diisocyanate	Contact with molten materials can cause serious burns to the skin and eyes
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Flammable liquids and vapors
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Intense polymerization can cause fire and explosion
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Can form explosive mixtures at or above flashpoints
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Containers may explode when heated
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	High Mars: easily ignited by heat, spark, and flame
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Leaks are at risk of fire/explosion
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Risk of steam explosion indoors, outdoors, and sewers
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Steam can form an explosive mixture with air
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Steam can cause dizziness or suffocation without awareness
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Inhalation and contact irritates or burns skin and eyes
butyl acetate	Flammable liquids and vapors
butyl acetate	Intense polymerization can cause fire and explosion
butyl acetate	Can form explosive mixtures at or above flashpoints
butyl acetate	Containers may explode when heated
butyl acetate	High Mars: easily ignited by heat, spark, and flame
butyl acetate	Leaks are at risk of fire/explosion
butyl acetate	Risk of steam explosion indoors, outdoors, and sewers

butyl acetate	Steam can form an explosive mixture with air
butyl acetate	Steam can travel to ignition source and flash back
butyl acetate	Fire can cause irritable, corrosive, and toxic gases
butyl acetate	Inhalation and skin absorption may be toxic
ethyl acetate	Highly flammable liquids and vapors
ethyl acetate	Intense polymerization can cause fire and explosion
ethyl acetate	Can form explosive mixtures at or above flashpoints
ethyl acetate	Containers may explode when heated
ethyl acetate	High Mars: easily ignited by heat, spark, and flame
ethyl acetate	Leaks are at risk of fire/explosion
ethyl acetate	Risk of steam explosion indoors, outdoors, and sewers
ethyl acetate	Steam can form an explosive mixture with air
ethyl acetate	Steam can travel to ignition source and flash back
ethyl acetate	Fire can cause irritable, corrosive, and toxic gases
ethyl acetate	Inhalation and skin absorption may be toxic
4-Methylbenzene sulfonyl isocyanate	Containers may explode when heated
4-Methylbenzene sulfonyl isocyanate	Some may burn but do not ignite easily
4-Methylbenzene sulfonyl isocyanate	Non-inflammable or material itself does not burn, but decomposes when heated to cause corrosive/toxic fumes
4-Methylbenzene sulfonyl isocyanate	Fire can cause irritable, corrosive, and toxic gases
B. Conditions to avoid	
toluene-2,4/2,6-diisocyanate	Ignition sources such as heat, spark, flame, etc
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Stay away from heat, sparks, flames, and high fever – don't smoke
butyl acetate	Keep away from heat, hot surfaces, sparks, flames, and other sources of ignition. No smoking
ethyl acetate	Stay away from heat, sparks, flames, and high fever – don't smoke
4-Methylbenzene sulfonyl isocyanate	Ignition sources such as heat, spark, flame, etc
C. Substances that should be avoided	
toluene-2,4/2,6-diisocyanate	Metal
toluene-2,4/2,6-diisocyanate	Water
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	No data
ethyl acetate	No data
4-Methylbenzene sulfonyl isocyanate	combustible substances
D. Hazardous substances produced during decomposition	
toluene-2,4/2,6-diisocyanate	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	irritable, corrosive, toxic gases
butyl acetate	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
ethyl acetate	irritable, corrosive, toxic gases
4-Methylbenzene sulfonyl isocyanate	During burning, irritating and very toxic gases can be generated by pyrolysis or combustion
4-Methylbenzene sulfonyl isocyanate	Corrosive/toxic fumes

11. Information about toxicity

A. Information on most likely exposure routes

toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	No data

ethyl acetate	absorption in the body through vapor inhalation
4-Methylbenzene sulfonyl isocyanate	No data
B. Health hazard information	
acute toxicity	
an oral form	
toluene-2,4/2,6-diisocyanate	LD50 4130 mg/kg Rat (Rat count data, OECD TG 401)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	LD50 8400 mg/kg Rat
ethyl acetate	LD50 3200 mg/kg Rat (OECD TG 423)
4-Methylbenzene sulfonyl isocyanate	LD50 4934 mg/kg Rat
transdermal skin	LD50 2234 mg/kg Rat
toluene-2,4/2,6-diisocyanate	LD50 > 9400 mg/kg Rabbit (OECD Guideline 402)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	LD50 > 2000 mg/kg Rat (OECD Guideline 402, GLP)
ethyl acetate	LD50 > 17600 mg/kg Rabbit (OECD TG 402)
4-Methylbenzene sulfonyl isocyanate	No data
Inhale	No data
toluene-2,4/2,6-diisocyanate	Steam LC50 0.234mg/l 4hr Rat (OECD TG403, GLP, Similar Substances CAS No. 26471-62-5)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	증기 LC50 5.160 mg/l 4 hr Rat ((OECD TG 403, GLP) Rat no remarkable clinical signs and no mortalities)
ethyl acetate	Steam LC50 1802 mg/L Rat
4-Methylbenzene sulfonyl isocyanate	(Dark/Water LCL0 > 6000 ppm)
Corrosive or irritable skin	No data
toluene-2,4/2,6-diisocyanate	Intermediate irritation with a primary skin irritation index of 4.7 in the irritation test using rabbits
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	Skin irritation was observed in rabbits during irritation tests (OECD TG 404). Mean erythema score (5 treated animals; 24, 48, 72 hr average): 2.56.
ethyl acetate	Skin Corrosion/Stimulating Test Results in Rabbits Do Not Show Stimulus OECD TG 404 Skin Corrosion/Stimulation Test Results Using Rabbits: Stimulus that does not fully recover within 7 days. Slightly irritable. erythema index = 1.33, edema index = 0.4, OECD TG 404
4-Methylbenzene sulfonyl isocyanate	irritability
Severe eye damage or irritation	
toluene-2,4/2,6-diisocyanate	Severe eye damage/corrosion test results with rabbits showed highly stimulating reversible stimulation that completely alleviates within 14 days (Overall stimulation index = 36.5/110)/ Severe eye damage/corrosion test results with rabbits showed corneal stimulation that does not recover within 30 days when not washed out, reversible stimulation that completely alleviates within 8-19 days (Keratoconjunctival index = 0.66/4, iris index = 0.33/2, conjunctival index = 3/3, conjunctival edema = 4/4)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	No significant eye irritation was observed during irritation tests in rabbits (OECD TG 405). Mean conjunctive score (24, 48, 72 hours average): 0.05
ethyl acetate	Category 2B
4-Methylbenzene sulfonyl isocyanate	Results of severe damage/stimulation test with rabbits completely alleviated within OECD TG 405, 7 days. No irritation. Corneal index = 0.5, iris index = 0.17, conjunctival index = 1.33, conjunctival edema index = 0.67, ECHA harmonized classification into severe eye damage/eye irritation classification 2
respiratory sensitivity	irritability
toluene-2,4/2,6-diisocyanate	As a result of the skin sensitivity test using guinea pigs, CAS No. 26471-62-5 is a similar substance that causes respiratory sensitivity

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	Respiratory Sensitivity – Classification 1
skin sensitivity		
	toluene–2,4/2,6–diisocyanate	Local lymph node test LLNA shows skin sensitivity in OECD TG429
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		Non–sensitive to Buehler TEST (OECD Guidelines 406, GLP) for Guinea Pig
	butyl acetate	Buehler test result with guinea pig non–hypersensitive OECD TG 406
	ethyl acetate	
	4-Methylbenzene sulfonyl isocyanate	Skin Sensitivity Test Results Using Guinea Pig Females, Non–Sensitivity, OECD TG 406
carcinogenicity		No data
Occupational Safety and Health Act		
	toluene–2,4/2,6–diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
Ministry of Employment and Labor Examination		
	toluene–2,4/2,6–diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
IARC		
	toluene–2,4/2,6–diisocyanate	2B
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
OSHA		
	toluene–2,4/2,6–diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
ACGIH		
	toluene–2,4/2,6–diisocyanate	A4
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
NTP		
	Toluene–2,4/2,6–	R

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
EU CLP		
	toluene-2,4/2,6-diisocyanate	2
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		1B
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
Ministry of Environment		
	toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
NITE		
	toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		No data
	butyl acetate	No data
	ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate	No data
germ cell mutagenicity		
	toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		** EU CLP: 1B
	butyl acetate	AS a resul t of the
	ethyl acetate	OECD TG 471 is negative regardless of the presence or absence of metabolism in the test results using microorganisms in vitro.
	4-Methylbenzene sulfonyl isocyanate	Results of chromosomal aberration test using mammalian culture cells in vitro OECD TG 473, negative regardless of the presence or absence of metabolism
reproductive toxicity		
	toluene-2,4/2,6-diisocyanate	The results of the sister chromatid exchange test using mammalian cells in vitro are negative when there is no metabolism system and positive when there is metabolism system In vitro chromosomal complementarity in Saccharomyces cerevisiae test results positive when there is no metabolism system
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		Chromosomal aberration test using mammalian culture cells in vitro OECD TG 473, ambiguous when there is no metabolism system
	butyl acetate	Small Nucleus Test Results Using Mammalian Red Blood Cells in Vivo OECD TG 474, Negative
	ethyl acetate	
	4-Methylbenzene sulfonyl isocyanate	- In vivo micronuclear test results negative"
Specific target organ toxicity (one exposure)		
		No data

Results of the second generation inhaled reproductive toxicity test (OECD TG 416, GLP) with rats (Nasal discharge in males and red-tinged fur in females) were observed in the parent generation. Rhinitis, hyperplasia and dysplasia of the respiratory epithelium were found, and the frequency of hyperplasia increased. The incidence of rhinitis and submucosal lymphoid infiltrates in F1 increased at high concentrations. (NOAEC(P) = 0.08 ppm, NOAEC(F1) = 0.3 ppm, NOAEC(F2) = 0.02 ppm)/The results of the inhaled developmental toxicity test using rats (OECD TG 414, GLP), significant weight loss and food consumption reduction (NOAEC) = 0.1 ppm, LOAEC = 0.5 ppm) No toxic effects were observed on reproduction and development

No data

The second generation of reproductive toxicity tests in rats showed weight, weight gain and food intake reduction at 1500 ppm to 2000 ppm (NOAELsystemic toxicity, adult rats=750 ppm (normal)) (OECD TG 416, GLP) ♪

In rats, fetal developmental toxicity tests showed weight loss, reduced baby size, and rib deformities, but maternal toxicity was found to be greater than developmental toxicity (NOAELmaternal toxicity=2.5 mg/liter (normal), NOAELateratogenicity=10 mg/liter (normal)) (GLP, OECD Guideline 414).

– 13 week inhalation genotoxicity test results with rats (other guidelines: US EPA Health Effects Testing Guidelines 40 CFR Part 798.2450), no effect on sperm count and mobility (NOAEL (P, male) = 1,500 ppm)♪

– Inhalation fetal development test results wi

No data

toluene-2,4/2,6-diisocyanate

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)

butyl acetate

ethyl acetate

4-Methylbenzene sulfonyl isocyanate

Specific target organ toxicity (repeated exposure)

toluene-2,4/2,6-diisocyanate

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)

butyl acetate

ethyl acetate

4-Methylbenzene sulfonyl isocyanate

Harmful to aspiration

toluene-2,4/2,6-diisocyanate

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)

butyl acetate

ethyl acetate

4-Methylbenzene sulfonyl isocyanate

Other Hazardous Effects

toluene-2,4/2,6-diisocyanate

Respiratory irritation test ASTM Method E981-84 results RD50 decrease of respiratory irritation=2.12ppm

No data

Causes central nervous system disorders, pulmonary edema, and respiratory irritation in humans. Target organs: central nervous system, respiratory system

One exposure to specific target organ toxicity: causes upper respiratory irritation in humans. causes anesthesia and lung damage when exposed to concentrations close to lethal concentrations.

H335 (could cause respiratory irritation)

No data

No data

As a result of the 90-day repeated administration oral toxicity test on rats, central nervous system abnormalities such as ataxia and decreased activity were observed in the 600 mg/kg concentration group within 1 hour. No other special effects were observed NOAEL=level:125 mg/kg bw/day normal EPA OTS 798.2650, GLP

90-day Inhalation Toxic trial in rats, acute, short-term symptoms of decreased activity levels at moderate and highest concentrations, decreased body weight and feed intake, upper respiratory irritation symptoms of nasal NOAEC=500 ppm GLP, EPA OTS 798.2450" L011 A

No data

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	EU CLP Harmonization Classification 1
ethyl acetate	No data
4-Methylbenzene sulfonyl isocyanate	No data

12. Environmental impact

a. Ecotoxicity

Fish	
toluene-2,4/2,6-diisocyanate	LC50 164.5 mg/ℓ 96 hr
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	LC50 9.22 mg/ℓ 96 hr Oncorhynchus mykiss
butyl acetate	LC50 18 mg/ℓ 96 hr Pimephales promelas (유수식, OECD Guideline 203)
ethyl acetate	LC50 230 mg/ℓ 96 hr Pimephales promelas (US EPA method E03-05)
4-Methylbenzene sulfonyl isocyanate	LC50 133 mg/ℓ 14 day
crustaceans	
toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	EC50 6.14 mg/ℓ 48 hr Daphnia magna
butyl acetate	EC50 44 mg/ℓ 48 hr Daphnia magna
ethyl acetate	EC50 2500 mg/ℓ 24 hr Daphnia magna (other guideline: DIN 38412 pt 11)
4-Methylbenzene sulfonyl isocyanate	No data
bird	
toluene-2,4/2,6-diisocyanate	(Chemical Information Processing System)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	EC50 19 mg/ℓ 72 hr Selenastrum capricornutum
butyl acetate	EC50 335 mg/ℓ 72 hr Selenastrum capricornutum
ethyl acetate	No data
4-Methylbenzene sulfonyl isocyanate	No data

B. Residual and degradable

Residuality	
toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	log Kow 2.1 to 6 (estimated)
butyl acetate	log Kow 1.78
ethyl acetate	log Kow 0.73
4-Methylbenzene sulfonyl isocyanate	log Kow 2.34 (estimated)
Degradable	
toluene-2,4/2,6-diisocyanate	BOD5/COD (Japan MITI test, the vapor of the material is decomposed by reacting with photochemical hydroxyl radicals manufactured in the atmosphere, with a half-life of 1.7 days)
toluene-2,4/2,6-diisocyanate	COD
toluene-2,4/2,6-diisocyanate	BOD 0
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	BOD5/COD 0.43
butyl acetate	No data
ethyl acetate	BOD5/COD (COD: 1.69 g O2/g test mat)
4-Methylbenzene sulfonyl isocyanate	No data

C. Bio-enriched

Concentration	
toluene-2,4/2,6-diisocyanate	BCF 380
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data

butyl acetate	No data
ethyl acetate	BCF 30 (어류, Leuciscusidus melanotus)
4-Methylbenzene sulfonyl isocyanate	BCF 12.7
biodegradable	
toluene-2,4/2,6-diisocyanate	50 ~ 90 % 2 day (27℃)
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	No data
ethyl acetate	83 % 28 day (OECD TG 301D)
4-Methylbenzene sulfonyl isocyanate	69% 20 days (O2 consumption)
D. Soil mobility	No data
toluene-2,4/2,6-diisocyanate	No data
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	No data
ethyl acetate	No data
4-Methylbenzene sulfonyl isocyanate	No data
E. Other harmful effects	
toluene-2,4/2,6-diisocyanate	
	Crustacea: 21d-NOECDaphnia magna=1.1 mg/liter OECD TG 211, GLP CAS No. 26471-62-5, EU CLP Chronic Aquatic Environmental Hazard Classification 3
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	No data
ethyl acetate	No data
	4-Methylbenzene sulfonyl isocyanate
	No data

13. Precautions for disposal

A. Method of disposal	
toluene-2,4/2,6-diisocyanate	
	Take care of it in one of the following ways.♪
	1. Incineration.♪
	2. After treatment by evaporation and concentration, incinerate the residue.♪
	3. After purifying by separation, distillation, extraction, and filtration, incinerate the residue.♪
	4. Use neutralization, oxidation, reduction, polymerization, and condensation reactions to treat.♪
	5. Incineration of residues, or after re-treatment by means of agglomeration, sedimentation, filtration, and dehydration, incinerate residues.
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
	(1) After separating oil and water, incinerate the separated oil components, and treat the remaining water at the water pollution prevention facility.
butyl acetate	
ethyl acetate	
	2) After treatment by evaporation and concentration, incinerate or stabilize the residue.
4-Methylbenzene sulfonyl isocyanate	
	3) Incineration of the residue after treatment by agglomeration and precipitation.
	4) Refine by separation, distillation, extraction, filtration, and pyrolysis.
B. Precautions for disposal	
toluene-2,4/2,6-diisocyanate	
	5) Incineration or stabilization."
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
	(1) Treat with neutralization, hydrolysis, oxidation, and reduction.
butyl acetate	
	2) Burn at high temperature or melt at high temperature.
ethyl acetate	
	3) Solidify it."
	Reclamation shall not interfere with the performance of the cutoff facility and leachate treatment facility of the managed landfill facility where designated wastes can be reclaimed.

14. Information required for transportation

A. United Nations No	1263
B. Proper shipping name	Paint including paint, lacquer, enamel, stain, shellac solutions, varnish, polish, liquid filler, and liquid lacquer base
D. Courage rating	II
E. Marine pollutants	No data
C. Risk rating in transportation	3
F. Special safety measures that users need or need to know	
In accordance with the Dangerous Goods Safety	
Packaging and transportation in accordance with DOT	
Types of emergency measures in case of fire	F-E
Types of emergency measures in case of spillage	S-E

15. Status of legal regulations

A. Regulations under the Occupational Safety and Health Act

toluene-2,4/2,6-diisocyanate	Substances subject to process safety report (PSM) (Regulation amount: 100,000 kg manufacturing and handling storage))
toluene-2,4/2,6-diisocyanate	Hazardous substances to be managed (toluene-2,4-diisocyanate and toluene-2,6-diisocyanate)
toluene-2,4/2,6-diisocyanate	Substances subject to work environment measurement (measurement cycle: 6 months)
toluene-2,4/2,6-diisocyanate	Substances subject to special health examination (diagnostic cycle: 12 months)
toluene-2,4/2,6-diisocyanate	Exposure criteria setting substances
toluene-2,4/2,6-diisocyanate	Acceptance criteria setting substances
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Substances subject to process safety report (PSM) submission
butyl acetate	Substances subject to process safety report (PSM) submission
butyl acetate	Hazardous substances subject to management
butyl acetate	Substances subject to work environment measurement (measurement cycle: 6 months)
butyl acetate	Exposure criteria setting substances
ethyl acetate	Substances subject to process safety report (PSM) submission
ethyl acetate	Hazardous substances to be managed (ethyl acetate)
ethyl acetate	Substances subject to work environment measurement (measurement cycle: 6 months)
ethyl acetate	Exposure criteria setting substances
4-Methylbenzene sulfonyl isocyanate	No data

B. Regulations under the Chemical Substances Control Act

toluene-2,4/2,6-diisocyanate	acute hazardous substances to the human body
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	No data
ethyl acetate	accident preparation substance
4-Methylbenzene sulfonyl isocyanate	No data

C. Regulation of the Act on the Registration and Evaluation of Chemical Substances

toluene-2,4/2,6-diisocyanate	Existing chemicals
toluene-2,4/2,6-diisocyanate	acute hazardous substances to the human body

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Existing chemicals
butyl acetate	Existing chemicals
ethyl acetate	Existing chemicals
4-Methylbenzene sulfonyl isocyanate	Existing chemicals
D. Regulations under the Dangerous Goods Safety Management Act	
toluene-2,4/2,6-diisocyanate	2000 liters of 3rd petroleum non-water-soluble liquid
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	4th class 2nd petroleum (non-water soluble) 1000L
ethyl acetate	4th class 1 petroleum (non-water soluble) 200L
4-Methylbenzene sulfonyl isocyanate	No data
E. Regulation under the Waste Management Act	
toluene-2,4/2,6-diisocyanate	designated waste
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	No data
butyl acetate	designated waste
ethyl acetate	designated waste
4-Methylbenzene sulfonyl isocyanate	No data
F. Other regulations under domestic and foreign laws	
domestic regulation	
toluene-2,4/2,6-diisocyanate	
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	
butyl acetate	
ethyl acetate	
4-Methylbenzene sulfonyl isocyanate	
Other domestic regulations	
toluene-2,4/2,6-diisocyanate	Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Not applicable
butyl acetate	Not applicable
ethyl acetate	Not applicable
4-Methylbenzene sulfonyl isocyanate	Not applicable
Foreign regulations	
US Administrative Information (OSHA Regulations)	
toluene-2,4/2,6-diisocyanate	Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Not applicable
butyl acetate	Not applicable
ethyl acetate	Not applicable
4-Methylbenzene sulfonyl isocyanate	Not applicable
US Management Information (CERCLA Regulations)	
toluene-2,4/2,6-diisocyanate	45.3599kg 100lb
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Not applicable
butyl acetate	2267.995kg 5000lb
ethyl acetate	2267.995kg 5000lb
4-Methylbenzene sulfonyl isocyanate	Not applicable

US Management Information (EPCRA 302)		
toluene-2,4/2,6-diisocyanate		Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
	butyl acetate	Not applicable
	ethyl acetate	Not applicable
	4-Methylbenzene sulfonyl isocyanate	Not applicable
US Management Information (EPCRA 304)		
toluene-2,4/2,6-diisocyanate		Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
	butyl acetate	Not applicable
	ethyl acetate	Not applicable
	4-Methylbenzene sulfonyl isocyanate	Not applicable
US Management Information (EPCRA 313)		
Toluene-2,4/2,6-diisocyanate		Applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
		Not applicable
	butyl acetate	Not applicable
	ethyl acetate	Not applicable
	4-Methylbenzene sulfonyl isocyanate	Not applicable
US Management Information (Rotterdam Convention Material)		
toluene-2,4/2,6-diisocyanate		Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
	butyl acetate	Not applicable
	ethyl acetate	Not applicable
	4-Methylbenzene sulfonyl isocyanate	Not applicable
US Management Information (Stockholm Convention Material)		
toluene-2,4/2,6-diisocyanate		Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
	butyl acetate	Not applicable
	ethyl acetate	Not applicable
	4-Methylbenzene sulfonyl isocyanate	Not applicable
US Management Information (Montreal's emotional material)		
toluene-2,4/2,6-diisocyanate		Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)		
	butyl acetate	Not applicable
	ethyl acetate	Not applicable
	4-Methylbenzene sulfonyl isocyanate	Not applicable
EU classification information (final classification results)		
		Carc. 2 Acute Tox. 2 STOT SE 3 Skin Irrit. 2 Eye Irrit. 2 Resp. Sens. 1 Skin Sens. 1 Aquatic Chronic 3
toluene-2,4/2,6-diisocyanate		

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	Carc. Cat. 2; R45/Muta. Cat. 2; R46, Xn; R65
butyl acetate	Flam. Liq. 3 STOT SE 3
ethyl acetate	Flam. Liq. 2 STOT SE 3 Eye Irrit. 2
4-Methylbenzene sulfonyl isocyanate	R14Xi; R36/37/38R42
EU classification information (danger phrases)	
toluene-2,4/2,6-diisocyanate	H351 H330 H335 H315 H319 H334 H317 H412
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	R45, R65, R46
butyl acetate	H226 H336
ethyl acetate	H225 H336 H319
4-Methylbenzene sulfonyl isocyanate	R14, R36/37/38, R42
EU classification information (safety equipment)	
toluene-2,4/2,6-diisocyanate	Not applicable
Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)	S53, S45
butyl acetate	Not applicable
ethyl acetate	Not applicable
4-Methylbenzene sulfonyl isocyanate	S2, S26, S28, S30

16. Other Notes

- A. Source of data
- toluene-2,4/2,6-diisocyanate
- HSDB (Constitution)

HSDB (Color)

HSDB (B. Smell)

HSDB (E. Melting Point/Frozen Point)

ChemIDplus (F. Initial boiling point and boiling point range)

ECHA (G. Flashpoint)

ECHA (I. Flammable (solid, gas))

HSDB (K. Steam Pressure)

CHEMIDplus (Tar. Solubility)

HSDB (wave vapor density)

HSDB (b. specific gravity)

CHEMIDplus (Ger. n-octanol/water distribution coefficient (Kow))

ECHA (You. Natural Firing Temperature)

HSDB (Mer. Molecular Weight)

ECHA (Old)

ECHA (Percutaneous)

ECHA (Inhalation)

ECHA (Skin Corrosion or Irritation)

ECHA (severe eye damage or irritation)

ECHA (respiratory sensitivity)

HSDB, ECHA (Skin Sensitivity)
ECHA (Growth Toxic)
ECHA (specific target organ toxicity (1 exposure)
No data (specific target organ toxicity (repeated exposure)
HSDB (fish)
HSDB (Resolvable)
ECHA (biodegradable)
ECHA (E. Other Hazardous Effects)
EU CLP (E. Other Hazardous Effects)

Solvent naphtha (oil), hard aromatic compounds (SOLVENT NAPHTHA (PETROLEUM), LIGHT AROMATIC)

IUCLID (Original)
IUCLID (E. Melting Point/Frozen Point)
NLM (F. Initial Boiling Point and Boiling Point Range)
IUCLID (G. Flashpoint)
IUCLID (C. Steam Pressure)
IUCLID (Tar. Solubility)
IUCLID (B. Specific gravity)
IUCLID (Ger. n-octanol/water distribution coefficient (Kow))
IUCLID (You. Natural Firing Temperature)
RTECS (Old)
ECHA (Percutaneous)
ECHA (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA (severe eye damage or irritation)
ECHA (Skin Sensitivity)
EU CLP Harmonization Classification (Hazard to Inhalation)
IUCLID (Fish)
IUCLID (crustacea)
IUCLID (bird)
IUCLID (Residual)

butyl acetate

ICSC (Original)
ICSC (Color)
ECHA Registered substances(나. 냄새)
ECHA(라. pH)
ICSC (E. Melting Point/Frozen Point)
HSDB (F. Initial Boiling Point and Boiling Point Range)
ECHA Harmonized C&L
2 (H. Evaporation rate)
ICSC (J. Upper/lower limits on the range of flammability or explosion)
hSDB (K. Steam Pressure)
CHEMID PLUS (Tar. Solubility)
ICSC, hSDB (wave. vapor density)
HSDB (b. specific gravity)
HSDB (Ger. n-octanol/water distribution coefficient (Kow))
ICSC (you. natural ignition temperature)
ChemIDPlus (Mer. Molecular Weight)
ECHA (Old)
ECHA (Percutaneous)
ECHA (Inhalation)
ECHA (Skin Corrosion or Irritation)
ECHA Harmonised C&L (severe eye damage or irritation)
ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)

ECHA (Growth Toxic)
NLM (specific target organ toxicity (1 exposure)
ECHA (Specific Target Organ Toxicity (Repeated Exposure)
(Hazard of inhalation)
ECHA (Fish)
ECHA (crustacea)
ECHA (bird)
HSDB (Residual)
ECHA (biodegradable)

ethyl acetate

HSDB (Constitution)
HSDB (Color)
HSDB (B. Smell)
HSDB (C. Smell threshold)
ICSC (E. Melting Point/Frozen Point)
ICSC (F. Initial Boiling Point and Boiling Point Range)
ICSC (G. Flashpoint)
ICSC (J. Upper/lower limits on the range of flammability or explosion)
HSDB (K. Steam Pressure)
HSDB (Tar. Solubility)
ICSC (wave vapor density)
ICSC (B. Percentage)

ICSC (Ger. n-octanol/water distribution coefficient (Kow))

ICSC (you. natural ignition temperature)
HSDB (Roe. Viscosity)
ICSC (Mer. Molecular Weight)
ICSC (A. Information on most likely exposure routes)
ECHA (Old)
ECHA (Skin Corrosion or Irritation)
ECHA (severe eye damage or irritation)
ECHA (Skin Sensitivity)
ECHA (Growth Cell Mutagenicity)
ECHA (Growth Toxic)
HSDB (specific target organ toxicity (one exposure)
ECHA registration data, harmonized classification (specific target organ toxicity (repeated exposure)
ECHA (Fish)
ECHA (crustacea)
ICSC (Residual)
ECHA (Degradable)
National Academy of Environmental Sciences, NCIS (Enrichment)
ECHA (E. Other Hazardous Effects)

4-Methylbenzene sulfonyl isocyanate

14303 Chemical Products (Japan) (Nature)
14303 Chemical Products (Japan) (Color)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(마. 녹는점/어는점)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(바. 초기 끓는점과 끓는점 범위)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)(파. 증기밀도)

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(머. 분자량)

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(경구)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(경구)

EU CLP (Ventilation Sensitivity)

(TOMES;LOLI) (Specific Target Organ Toxicity (1 Exposure))

Ecological Structure Activity Relationships(ECOSAR)(어류)

Quantitative Structure Activity Relation(QSAR)(농축성)

B. Date of initial preparation 2026-07-10

C. Number of revisions and last revision date

Number of revisions

Last revision date

D. Other

○ Material safety data (MSDS) has been edited and partially modified by referring to MSDS provided by the Korea Occupational Safety and Health Agency ♪
It's data.