

Safety Data Sheet



1. Identification of the Substance/Mixture and the Supplier

Supplier : National Institute of Advanced Industrial Science and Technology (AIST)
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Identity of Substance/Mixture : Certified Reference Material NMIJ CRM 4012-a
m-Xylene
 Recommended Use of the Chemical and Restriction on Use : This reference material can be used, in calibration of toluene concentration in standard solution. Do not use this reference material for other purposes than testing/research.
 This CRM is a reference material (specified in the Japanese Industrial Standard (JIS) Q 0030).

2. Hazards Identification

GHS classification Ignitable liquid : Class 3
 Skin corrosivity/irritant : Class 2
 Severe damage to eyes/eye irritant : Class 2A
 Reproductive toxicity : Class 2
 Particular target organ/systemic toxicity (Single exposure) : Class 3(Anesthetic action)
 Particular target organ/systemic toxicity (Repeated exposure) : Class 1 (Nervous system)
 Aspiration respiratory hazard : Class 1
 Water environment toxicity (Acute) : Class 2

GHS label element:



Signal Word: Danger

Hazard and toxicity :	<p>Ignitable liquid and vapor</p> <p>Skin irritant</p> <p>Strong eye irritant</p> <p>May have adverse effects on reproductive function or embryo</p> <p>May cause drowsiness or dizziness</p> <p>Long-term or repetitive exposures cause adverse effects on organ (Nervous system)</p> <p>May be lethal if swallowed or spread into the respiratory tract</p> <p>Toxic to aquatic organisms</p>
Other hazard :and toxicity information	Inhaling the vapor may cause serious poisoning
Precautionary statement :	<p>[Preventive measures]</p> <p>No handling before reading and understanding the safety precautions fully.</p> <p>Handling activities in an outdoor area or in well ventilated area only.</p> <p>Avoid discharging to the environment.</p> <p>Wash hands well after the handling.</p> <p>Avoid inhaling gas/mist/vapor/spray</p> <p>Use protective eyeglasses/mask/gloves. If necessary, use personal protective equipment.</p> <p>[Response]</p> <p>If swallowed : If feeling ill, get medical assistance Rinse out the mouth and drink a lot of water. Do not induce vomiting</p> <p>If in eyes : Rinse carefully with plenty of water for several minutes. Get medical assistance</p> <p>If inhaled : Move to get a fresh air, take a comfortable posture to ease breathing and rest</p> <p>If on skin : Rinse away with soap and a large amount of water. Get medical assistance.</p> <p>If exposed or possibility of the exposure : Get medical assistance. Take off all the contaminated clothes and wash them if reusing the clothes.</p> <p>Recover and collect the leaked material.</p> <p>[Storage]</p> <p>Store in a locked area.</p> <p>Protect from light, store in a clean place at the temperature of about -20 °C.</p> <p>[Disposal]</p> <p>Incinerate the content and container in an appropriate incinerator, or outsource to a professional industrial waste disposal contractor licensed by the prefectural governor.</p>

Hazards not mentioned above are either not classifiable or not applicable.

3. Composition/Information on Ingredients

Single or compound product	: Single product
Chemical name	: <i>m</i> -Xylene
Other name	: 1,3-Dimethylbenzene, <i>m</i> -Xylol
Content	: 99.8 %
Chemical formula or structural formula	: C ₆ H ₄ (CH ₃) ₂
Molecular weight	: 106.16
Reference Number in Gazetted List in Japan	: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (3)-3 Industrial Safety and Health Act : Published
CAS No.	: 108-38-3
Hazardous component	: <i>m</i> -Xylene (Deleterious substance ≒ 15 ml)

4. First-aid Measures

If in eyes	: Rinse well with clean water. Get medical assistance.
If on skin	: Rinse well with clean water. Take off the contaminated clothes and shoes, etc. Get medical assistance.
If inhaled	: Move to get a fresh air, rest, keep warm. Get medical assistance.
If swallowed	: Rinse out the mouth well with water. Do not induce vomiting Get medical assistance.
Anticipated acute and delayed symptoms	: Drowsiness, dizziness, nausea
Most important characteristics and symptoms	: -
Measures to be taken to protect the person applying emergency first aid	: Use personal protective equipment.

5. Fire-fighting Measures

Extinguishing media	: Powder, foam, carbon dioxide, water(spray). Absolutely no use of straight stream firefighting nozzle.
Specific hazards at the time of fire	: Use appropriate protective equipment to avoid inhaling smoke while carrying out the extinguishing action.
Specific extinguishing measures	: Remove fire sources and extinguish using appropriate agent compatible with the substance. Transfer the movable containers to a safe place promptly. If impossible to transfer, use water spray to cool the periphery.

Protecting fire-fighting personnel : Extinguishing activities on windward side, and avoid inhaling toxic gases. Use protective equipment such as air-breathing apparatus, etc.

6. Accidental Release Measures

- Personal precautions : Promptly remove any fire source from around the substance. Ready for a fire by keeping an appropriate extinguisher at hand.
- Protective equipment and emergency procedure : If released indoor, ventilate well until the treatment is completed.
Use appropriate protective equipment to protect the skin from the airborne droplets and avoid inhaling dust and gas.
- Environmental precaution : To prevent causing environmental impact, do not release the spilled material into sewer, rivers, etc. directly. Treat the contaminated waste water appropriately before discharging to the environment.
- Recovery, neutralization : Open flames or other sources of ignition prohibited. Adsorb the spilled liquid to waste cloth or to sand and soil and wiped off completely. Collect everything used to clean up the spillage in an airtight container.
- Measures to prevent secondary accident : Rope-off the leaked area and restrict access to the area to the authorized personnel only. Evacuate the people on the leeward and work on the windward side

7. Handling and Storage

Handling

- Technological counter measures : e material such as concrete, etc. that can prevent the material from seeping underground.
Open flame or other source of ignition prohibited. Avoid contact with high temperature matter, sparks, strong oxidants, etc.
- Local ventilation/ general ventilation : Use appropriate protective equipment.
Use local exhaust ventilation system when handling indoor.
- Precautions for safe handling : Do not handle the container roughly, no dropping, knocking down nor dragging.
Prevent leakage, spillage or overflow that causes fume to form.
Wash hands and face, etc. well and gargle after the handling
Eating, drinking or smoking only at the designated areas.
Entering the handling area only by the authorized persons.
Use appropriate protective equipment to prevent inhaling, coming in contact with eyes, skin and the clothing.

Storage

- Appropriate condition : Use explosion-proof structured electrical equipment in the storage room. Earth all the equipment.
Store in a dark clean place at the temperature of about -20 °C.
Do not store near strong oxidizers or fire sources.
Store in a locked area.

Material for safe packing : Glass

8. Exposure Controls/Personal Protection

Administrative levels

Working Environment Evaluation Standards : 50 ppm

Occupational exposure limit

•ACGIH TLV-TWA : 100 ppm STEL 150 ppm

•Japan Society for Occupational Health : 50 ppm (217 mg/m³)

Occupational Health

Recommended

Reference Value

•OSHA PEL TWA : 100 ppm STEL 150 ppm

Facility Engineering

Ventilation, exhaust : Install safety shower, hand/eye washer, and indicate their location conspicuously.
Local exhaust ventilation or general ventilation system

Safety management, gas detection : Detector

Storage precaution : -

Protective equipment

Respiratory organ : Chemical cartridge respirator for organic gas, breathing apparatus

Hand : Protective gloves

Eyes : Protective eyeglasses

Skin and body : Protective clothing

Sanitary measures : Replace masks, etc. used to adsorb the substances, etc. periodically or every time of use. Check them closely because the substance affects rubber, etc. adversely

9. Physical and Chemical Properties

•Appearance, etc. : Liquid

•Color : Clear and colorless

•Odor : Peculiar odor

•pH : No data

•Melting point : No data

•Boiling point : 144 °C

•Flashing point : 23 °C(Sealed system)

•Explosive range : 1.1 vol % to 7 vol % (In air)

•Vapor pressure : 8.2 hPa (20 °C)

•Relative vapor density(Air=1) : 3.7

•Specific gravity or bulk specific gravity : 0.864 (20/4 °C)

•Solubility : Water-insoluble (0.02 g/100ml 25 °C)、miscible in

- ethanol and ether
- *n*-Octanol/water partition coefficient (Log Po/w) : 3.2
- Auto-ignition temperature : 530 °C

10. Stability and Reactivity

◇Stability

- Stable under normal condition

◇Reactivity

- Possible ignition in contact with strong oxidizers

◇Conditions to avoid

- Sunlight, heat, open flames, high temperature, spark, static electricity, other sources of ignition.

◇Hazardous decomposition products

- Carbon monoxide

11. Toxicological Information

Acute toxicity	Inhalation rats LCLo: 8000 ppm/4H (RTECS) Inhalation mice LCLo: 2010 ppm/24H Abdominal cavity mice LD50: 2003 µL/kg (RTECS) Subcutaneous rabbits LD50: 14100 µL/kg (RTECS)
Skin corrosivity/irritation	Skin irritation rabbits 20 mg/24H moderate Skin irritation rabbits 10 µg/24H severe (RTECS)
Severe damage to eyes /eye irritation	Eye irritation rabbits 5 mg/24H severe (RTECS)
Germ-cell mutagenicity	Death of embryo at dosing levels toxic to mother animals observed(CERI・NITE Hazard Assessment Report No.62 (2004)).
Particular target organ/ systemic toxicity (Single exposure)	Based on the human evidence including “an impaired sense of equilibrium (DFGOT vol.5 (1993)), and the evidence from animal studies including “changes in the posture, decrease in wakefulness and standing, a decrease in mobility, gait disorder, behavior disorder, loss of righting reflex, a decrease in the grip strength of the forelimbs, loss of coordination, increase in landing foot splay, a decrease in the reactivity to sensory stimulation” (EHC 190 (1997)) etc. are described.
Particular target organ/ systemic toxicity (Repeated exposure)	Based on the human evidence including “an impaired sense of equilibrium(DFGOT vol.5 (1993)), and the evidence from animal studies including “changes in the posture, decrease in wakefulness and standing, a decrease in mobility, gait disorder, behavior disorder, loss of righting reflex, a decrease in the grip strength of the forelimbs, loss of coordination, increase in landing foot splay, a decrease in the reactivity to sensory stimulation”(EHC 190 (1997))etc. are described.
Aspiration hazard	Potential chemical pneumonia due to aspiration(ICSC (J) (2002))

12. Ecological Information

Degradability, concentration

- No data available

Bioaccumulation

- No data available

Ecotoxicity

- Crustacean(Daphnia magna)EC50:2.3 mg/L/48h(CERI•NITE Hazard Assessment Report, 2005)

13. Disposal Consideration

- Incinerate in an incinerator equipped with after burner and scrubber

14. Transport Information

UN Number	: 1307
UN Classification	: Class 3 (Ignitable liquid)
Material name	: Xylene
Container grade	: PG III
ICAO/IATA	: Class 3 Grade III
Marine pollutant	: Applicable
Precautions	: Transfer with caution by avoiding direct sunlight and fire source at the temperature about -20 °C. Protect from leakage or spill due to fall or drop.

15. Regulatory Information

- ◇Fire Service Act
 - Hazardous material Category 4 No 2 Petroleum (water insoluble) Hazard class 3
- ◇Poisonous and Deleterious Substances Control Act
 - Deleterious substance Packing Group 3
- ◇Industrial Safety and Health Act (Law)
 - Article 57 (Enforcement Order: Article 18) Hazardous substance whose name, etc. must be labeled.
 - Article 57-2 of the Law (Article 18-2 of the Order) , Toxic substances of which the names etc. are subject to the notification No. 136.
 - Ordinance on the Prevention of Organic Solvent: Class 2 Organic solvent
- ◇Ship Safety Act
 - Ignitable liquid
- ◇Law Relating to the Prevention of Marine Pollution and Maritime Disaster
 - Enforcement Order, Appended Table No. 1 Toxic liquid substance Category Y substance
- ◇Offensive Odor Control Act
 - Enforcement Order, Article 1(Specified offensive odor substance)
- ◇Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof
 - Class 1 Designated chemical substance No.80

- ◎ **This SDS is originally prepared for the use of the material in Japan, thus the stated laws and regulations are stipulated and carried out in Japan. The use of the material in other countries should be referred to and by application of the relevant laws and regulations of the country in which the material will be used.**

16. Other Information

Others

The information in this document is not intended to be exhaustive and is based on currently available information and data. The measures given in this document are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety measures appropriate to each specific application and context of use. This document is intended to provide information and not intended to guarantee anything in handling this reference material.
