Safety Data Sheet

National Institute of Advanced Industrial Science and Technology
AIST

1. Identification of the Substance/Mixture and the Supplier

Supplier : The National Institute of Advanced Industrial Science and Technology
Address : 1-3-1, Kazumigaseki, Chiyoda, Tokyo, Japan
Department : Reference Material Office, Center for Quality Management of Metrology, The National Metrology Institute of Japan
Person in Charge : Certified Reference Material Staff
Phone Number : 029-861-4059 Fax Number : 029-861-4009
Emergency Contact : Same as above

Prepared on : October 16, 2013
Revised on : April 1, 2015
ID Number : 4222001

Identity of Substance/Mixture : Certified reference material: NMIJ CRM 4222-a
Water in Mesitylene (0.1 mg/g)
(Water in Mesitylene (0.1 mg/g))

Recommended Use of the Chemical and Restriction on Use : This reference material is standard solution for water analysis which uses mesitylene as matrix, and it can be used, in water quantification by using Karl Fischer (KF) moisture meter, for calibration of analysis equipment as well as quality control of analysis and validation of analysis method/equipment. Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS Classification :

Flammable liquid	: Hazard Category 3
Skin corrosion/irritation	: Hazard Category 2
Serious eye damage/ Eye irritation	: Hazard Category 2B
Specific target organ toxicity/Systemic toxicity (Single exposure)	: Hazard Category 3 (for anesthesia)
Aspiration hazard	: Hazard Category 1
Toxic to the aquatic environment (Acute)	: Hazard Category 2
Toxic to the aquatic environment (Chronic)	: Hazard Category 2

GHS Label Element :

Signal Word : Danger

Hazards Statement :
Flammable liquid and vapor
Causes skin irritation
Causes eye irritation
May cause drowsiness or dizziness
May be fatal if swallowed and enters airways
Toxic to aquatic life
Toxic to aquatic life with long lasting effects

Other Hazards Statement :	-
Precautionary Statement :	［Safety Precaution］ Use only outdoors or a well-ventilated area. Use only non-sparking tools. Avoid release to the environment. Wash hands thoroughly after handling this reference material. Take precautions against electrostatic discharge. Keep away from ignition sources such as heat/sparks/open flames/hot surfaces. – No smoking. Avoid breathing gas/mist/vapor/spray. Use protective gloves and eye protector/face protector. Use explosion-proof electrical/ventilating/lighting equipment. Ground container and receiving equipment. Keep container tightly closed. ［Action］ If swallowed : Get medical advice/attention immediately. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention if eye irritation prolongs If feeling unwell, get medical advice/attention. If inhaled : Remove victim to fresh air and keep at rest in a position comfortable for breathing. If on skin: Wash with plenty of soap and water. Take off/Remove all contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical advice/attention. ［Storage］ Store in light-shielded clean environment at temperature ranging from 15 °C to 30 °C. ［Disposal］ Comply with applicable legislation and local government ordinance. Entrust disposal of this reference material to a professional waste disposal company licensed by prefectural governor. The other hazards than the above do not result in classification or are not covered by the GHS.

3. Composition/Information on Ingredients

Substance/Mixture	: Substance
Chemical Identity	: Mesitylene
Synonym	: 1,3,5-trimethyl benzene
Content	: 98 % or more
Chemical Formula or Structural Formula	Molecular formula: $C_6H_3(CH_3)_3$
Molecuar Weight	: 120.19
ID Number in Official Gazette	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.: (3)－7 The Industrial Safety and Health Law: 3-3427
CAS Number	: 108-67-8
Hazardous Ingredient	: Mesitylene

4. First-Aid Measures

If in eyes	: Rinse away with plenty of water immediately for 15 minutes or more. Get medical advice/attention immediately.

If on skin	:	Wash with plenty of soap and water. Get medical advice/attention if inflammation occurs.
If inhaled	:	Remove victim to fresh air and keep warm and at rest. Get medical advice/attention immediately.
If swallowed	:	Make victim drink plenty of water or salt solution to induce vomiting. Get medical advice/attention immediately.
Expected Acute and Delayed Symptom	:	Cause mental confusion, coughing, dizziness, lethargy, headache, sore throat and vomiting if inhaled.
Most Critical Characteristic and Symptom	:	-
Protection of First-Aid Responder	:	First-aid responders must use personal protective equipment such as rubber gloves and tightly-sealed goggle.

5. Fire-Fighting Measures

Extinguishing Media	:	Powder, Carbon dioxide (CO_2), Foam (alcohol-resistant foam), Dry sand
Fire-Specific Hazards	:	As irritating or toxic fume (or gas) is generated in the case of fire, use appropriate personal protective equipment to avoid breathing it.
Specific Fire-Fighting Method	:	Eliminate ignition sources at the origin of a fire and put out fire by using extinguishing media. Remove movable containers promptly to a safe place. In the case of immovable containers, cool their surroundings with sprayed water.
Protection of Fire-Fighters	:	Carry out fire-fighting from the windward in order to avoid breathing hazardous gas. Use personal protective equipment such as fireproof clothing, heat-resistant clothing, protective clothing, compressed air open-circuit self-contained breathing apparatus, compressed oxygen closed-circuit self-contained breathing apparatus, rubber gloves and rubber boots.

6. Accidental Release Measures

Personal Precaution	:	Remove potential ignition sources from the vicinity promptly. Get fire-fighting kit ready to be prepared for ignition.
Personal Protective Equipment and Emergency Procedures	:	Ventilate the affected areas thoroughly, if it is in an indoor environment, until the clean-up operation is completed. Use appropriate personal protective equipment during the operation to avoid skin contact of splash etc. and inhalation of dust and gas.
Environmental Precautions	:	Take precautions to prevent spillage from draining into rivers etc. to adversely impact the environment. Make it sure to appropriately treat contaminated wastewater in order to prevent untreated wastewater from being released into the surrounding environment.
Recovery and Neutralization	:	Collect spillage in empty containers by getting it adsorbed to wiping cloth, rag or earth and sand, etc. Rinse away the remains with plenty of water.
Prevention of Secondary Disaster	:	Mark the restricted area with rope etc. to keep out unauthorized people. Carry out the clean-up operation from the windward and make people on the leeward side evacuate. Take precautions as wet surface is slippery.

7. Handling and Storage Precautions

Handling

Engineering Precautions	:	Strict ban on fire. Keep away from hot surfaces and sparks. Avoid contact with strong oxidizers.

Local and General Ventilation	:	Use local ventilation system and keep container tightly closed if vapor/mist is generated.
Precautions for Safe Handling	:	Avoid rough handling such as turning over, dropping, giving a shock to or dragging containers. Prevent spill, overflow and scattering, and avoid vapor generation. Keep container tightly closed after use. Wash hands, face etc. thoroughly and gargle after handling this reference material. Restrict drinking, eating and smoking to a designated area. Do not bring gloves and other contaminated personal protective equipment into staff room. Make a place handling this reference material a restricted area to keep out unauthorized people. Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin and clothing. Use local ventilation system in indoor handling areas.

Storage

Appropriate Storage Conditions	:	Store in light-shielded clean environment at temperature ranging from 15 °C to 30 °C. Use only explosion-proof electrical equipment in storage area. Ground all equipment. Strict ban on fire. Avoid storing near strongly oxidizing substances and ignition sources.
Safe Container Packaging Material	:	Glass

8. Exposure Controls/Personal Protection

Threshold Limit Value

Not specified

Permissible Concentration

・ACGIH TLV-TWA	:	TWA 25 ppm
・Value recommended by Japan Society for Occupational Health	:	Not specified
・OSHA PEL TWA	:	Not specified

Engineering Controls

Ventilation/Exhaust	:	Local or general ventilation equipment
Safety Control/ Gas Detection	:	Install safety shower and facilities to rinse eyes and to wash hands in the vicinity of a place handling this reference material and label them clearly.
Storage Precautions	:	Strict ban on fire. Keep away from strongly oxidizing substances and ignition sources.

Personal Protective Equipment (PPE)

Respiratory System	:	Chemical cartridge respirator for organic gas, Compressed air open-circuit self-contained breathing apparatus
Hands	:	Protective gloves
Eyes	:	Eye protector
Skin and Body	:	Protective clothing, Protective boots

9. Physical and Chemical Properties

・Appearance, etc.	:	Liquid
・Color	:	Colorless
・Odor	:	Peculiar aromatic odor
・pH	:	No data available
・Melting Point	:	-44.72 °C
・Boiling Point	:	164.72 °C
・Flash Point	:	43 °C
・Explosive Range	:	Upper limit: 6.1 vol%, Lower limit: 0.9 vol%
・Vapor Pressure	:	2 hPa (20 °C)
・Relative Vapor Density (Air=1)	:	4.1
・Specific Gravity or Bulk Specific Gravity	:	0.865 g/ml(20 ℃)
・Solubility	:	Insoluble in water (0.002 g/ml water), Soluble in ethanol and benzene
・Partition Coefficient : n-octanol/water log Po/w	:	3.93
・Spontaneous Ignition Point	:	550 °C
・Decomposition Temperature	:	No data available
・Combustibility	:	No data available
・Viscosity Coefficient	:	1.154 cP (25 °C)
・Specific Gravity of Vapor	:	4.17 (Air＝1)

10. Stability and Reactivity

◇Stability

・Stable under normal conditions

◇Reactivity

・May react if in contact with strong oxidizer

◇Conditions to Avoid

・Sunlight, heat, open flames, high temperature, sparks, static electricity, other ignition sources

◇Hazardous Decomposition Products

・Carbon monoxide (CO)

11. Toxicological Information

Acute Toxicity	Oral Rat LC50: 24 g/m³/4H Abdominal cavity Guinea pig LDL0: 1303 mg/kg LC50 4,900 ppm (equivalent to 4 hours) was obtained when calculation formula was applied to result of (mist) inhalation exposure study using rats: LC50 24 mg/l (4 hours)
Skin Corrosion/ Irritation	Result of skin irritation study using rabbits: “erythema and edema were observed and skin irritation was reported in accordance with EEC classification” and “medium-level irritation”
Serious Eye Damage/ Eye Irritation	“Light irritation” was observed in eye irritation study using rabbits (duration period is unknown)
Respiratory Sensitization	Human health effects: It is reported that erethism, tension, uneasiness and bronchial asthma were observed in 27 workers involved in production of products containing 30 % of this reference material and 50 % of 1,2,4-trimethyl benzene for several

	years and exposed to hydrocarbon vapor (concentration: 10-60 ppm). As the products also contain other isomers, however, these symptoms cannot be specifically attributed to this reference material. Cannot be classified due to insufficient data.
Skin Sensitization	Cannot be classified due to insufficient data.
Germ Cell Mutagenicity	No inter-generation mutagenicity study, No germ cell in vivo mutagenicity study Negative in somatic cell in vivo mutagenicity study (micronucleus study)
Carcinogenicity	No data available
Specific target organ toxicity/Systemic toxicity (Single exposure)	Experimental animals: “At 5,075-7,105 ppm, sedation effects were observed. At 7,105-9,135 ppm, loss of reflex and damage to neutral nerve were observed.”
Aspiration hazard	May be fatal if swallowed and enters airways

12. Ecological Information

Persistence and Degradability

・Not degraded by microorganisms etc.
0% by BOD

Bioaccumulative Potential

・Concentration rate (BCF): 23 to 342 (Concentration: 150 μg/l), 42 to 328(Concentration: 15 μg/l)

Ecotoxicity

・Oryzias latipes LC50: 8.6 mg/l/48H

・Crustacea (Daphnia magna) LC50: 6000 μg/l/48H

13. Disposal Considerations

Residual Waste	:	Incineration method Use incinerator equipped with scrubber. Dispose of this reference material in accordance with applicable legislation and local government ordinance. When the above-mentioned treatments are not possible, entrust disposal of residual waste to a professional waste disposal company licensed by prefectural governor.
Contaminated Container and Package	:	Dispose of containers after thoroughly removing their contents.

14. Transport Information

UN Number	:	2325
UN Classification	:	Class 3
Shipping Name	:	1,3,5-trimethyl benzene
Packing Group	:	PG Ⅲ
ICAO/IATA	:	Glass 3 Grade Ⅲ
Marine Pollutant	:	Hazardous liquid material (Class X)
Precautions	:	Transport this reference material carefully while keeping it away from direct sunlight and fire and preventing accidental release due to falling, overturning, etc.

15. Applicable Legislation

◇Fire Defense Law

・Dangerous substance Class 4 Class 2 petroleum (insoluble in water) Danger Rating 3

◇Pollutant Release and Transfer Register Act (PRTR Act)

・Class 1 Designated Chemical Substance (Government Order 297)

◇Industrial Safety and Health Law

・Enforcement Order Appendix 1-4 Dangerous Materials Flammables

・Article 57-2 (Enforcement Order: Article 18-2) Hazardous substance whose name, etc. must be notified: No.404

◇Road Act

・Enforcement Order 19-13 Restricted-Traffic Substances

◇Marine Pollution Prevention Law

・Enforcement Order Appendix 1 Hazardous Liquid Materials Class X

◇Ship Safety Law

・Dangerous Material Rule Article 3 Dangerous Material Announcement Appendix 1 Flammable Liquids

◇Civil Aeronautics Act

・Enforcement Regulation Article 194 Dangerous Material Announcement Appendix 1 Flammable Liquids

◇Port Regulation Law

・Enforcement Regulation Article 12 Dangerous Material Announcement Flammable Liquids

◇Living Environment Item (Enforcement Order Article 3-1)

・[Emission Limit]160 mg/l or less (Daily average: 120 mg/l or less)

Note: Comply with add-on emission limit, if any, separately stipulated by ordinance etc..

◇Export Trade Control Order

・Appendix 1-16 (Catch-all Controls) Class 29 Organic Chemicals

HS Code (Export Statistics Item Number): 2902.90-200 “Cyclic hydrocarbon – Others – Others”

16. Other Information

Others

The information in this Safety Data Sheet is not intended to be exhaustive and is based on currently-available information and data. The precautions given in this data sheet are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety precautions appropriate to each specific application and context of use. This Safety Data Sheet (SDS) is intended to provide information and not intended to guarantee anything in handling the reference material. This Safety Data Sheet (SDS) is prepared based on JIS Z7253, and presents identical information to Material Safety Data Sheet (MSDS) prepared based on JIS Z7250:2010.