SAFETY DATA SHEET

Updated on 05/11/2024

1. Material Identification

Product Name : Diaminotoluene
Catalog Number : io-2113
CAS Number : 823-40-5
Identified uses : Laboratory chemicals, manufacture of chemical compounds
Company : Ionz

>> R&D Use only

2. Hazards Identification

GHS Classification:

Flammable liquid (category 2)
Acute toxicity, oral (Category 3)
Acute toxicity, dermal (Category 3)
Acute toxicity, inhalation (Category 3)
Specific target organ toxicity, single exposure (Category 1)

Pictogram(s)

>> Warning

GHS Hazard Statements

>> H302 (100%): Harmful if swallowed [Warning Acute toxicity, oral]

>> H312 (100%): Harmful in contact with skin [Warning Acute toxicity, dermal]

>> H317 (100%): May cause an allergic skin reaction [Warning Sensitization, Skin]

>> H341 (100%): Suspected of causing genetic defects [Warning Germ cell mutagenicity]

>> H411 (100%): Toxic to aquatic life with long lasting effects [Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P203, P261, P264, P270, P272, P273, P280, P301+P317, P302+P352, P317, P318, P321, P330, P333+P317, P362+P364, P391, P405, and P501

Health Hazards:

>> ACUTE/CHRONIC HAZARDS: This compound is toxic. It is a local irritant. (NTP, 1992)

>> Flash point data for this chemical are not available. It is probably combustible. (NTP, 1992)

>> Combustible.

3. Composition/Information On Ingredients

Chemical name : Diaminotoluene
CAS Number : 823-40-5
Molecular Formula : C7H10N2
Molecular Weight : 122.1700 g/mol

4. First Aid Measures

First Aid:

>> EYES: First check the victim for contact lenses and remove if present. Flush victim's eyes with water or normal saline solution for 20 to 30 minutes while simultaneously calling a hospital or poison control center. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

>> SKIN: IMMEDIATELY flood affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

>> INHALATION: IMMEDIATELY leave the contaminated area; take deep breaths of fresh air. If symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop, call a physician and be prepared to transport the victim to a hospital. Provide proper respiratory protection to rescuers entering an unknown atmosphere. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used; if not available, use a level of protection greater than or equal to that advised under Protective Clothing.

>> INGESTION: DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical and IMMEDIATELY call a hospital or poison control center. Be prepared to transport the victim to a hospital if advised by a physician. If the victim is convulsing or unconscious, do not give anything by mouth, ensure that the victim's airway is open and lay the victim on his/her side with the head lower than the body. DO NOT INDUCE VOMITING. IMMEDIATELY transport the victim to a hospital. (NTP, 1992)

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Skin First Aid

>> Remove contaminated clothes. Rinse skin with plenty of water or shower.

Eye First Aid

>> First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Ingestion First Aid

>> Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention .

5. Fire Fighting Measures

>> Fires involving this material can be controlled with a dry chemical, carbon dioxide or Halon extinguisher. (NTP, 1992)

>> Use water spray, foam, dry powder.

6. Accidental Release Measures

Isolation and Evacuation:

Isolation and evacuation measures to take when a large amount of this chemical is accidentally released in an emergency.

>> Excerpt from ERG Guide 171 [Substances (Low to Moderate Hazard)]:

>> IMMEDIATE PRECAUTIONARY MEASURE: Isolate spill or leak area in all directions for at least 50 meters (150 feet) for liquids and at least 25 meters (75 feet) for solids.

>> SPILL: Increase the immediate precautionary measure distance, in the downwind direction, as necessary.

>> FIRE: If tank, rail tank car or highway tank is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. (ERG, 2024)

Spillage Disposal:

Methods for containment and safety measures to protect workers dealing with a spillage of this chemical.

>> Personal protection: P2 filter respirator for harmful particles. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

>> Well closed.

Storage Conditions:

>> Well closed.

8. Exposure Control/ Personal Protection

Inhalation Risk:

>> Evaporation at 20 °C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

Effects of Short Term Exposure:

>> The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the blood. This may result in the formation of methaemoglobin. The effects may be delayed. Medical observation is indicated.

Effects of Long Term Exposure:

>> Repeated or prolonged contact with skin may cause dermatitis. Repeated or prolonged contact may cause skin sensitization.

Fire Prevention

>> NO open flames.

Exposure Prevention

>> AVOID ALL CONTACT!

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

>> Wear safety goggles.

Ingestion Prevention

>> Do not eat, drink, or smoke during work. Wash hands before eating.

9. Physical And Chemical Properties

Molecular Weight:

>> 122.17

Exact Mass:

>> 122.084398327

Physical Description:

>> 2,6-diaminotoluene is a colorless prisms (from water). (NTP, 1992)

>> COLOURLESS CRYSTALS. TURNS BROWN ON EXPOSURE TO AIR.

Color/Form:

>> Prisms from benzene, water

Boiling Point:

>> 289 °C

Melting Point:

>> 223 °F (NTP, 1992)

>> 105-106 °C

Solubility:

>> Soluble (NTP, 1992)

>> Solubility in water: poor

Vapor Pressure:

>> 2.13 kPa at 150 °C /0.000246 mm Hg at 25 °C/ (extrapolated)

>> Vapor pressure, kPa at 150 °C: 2.13

Decomposition:

>> When heated to decomposition it emits toxic fumes of nitrogen oxides.

10. Stability And Reactivity

>> Water soluble.

11. Toxicological Information

EPA Provisional Peer-Reviewed Toxicity Values:

This section provides the EPA Provisional Peer-Reviewed Toxicity Values (PPRTVs) and links of related assessment documents.

Chemical Substance

>> 2,6-Toluenediamine

Reference Dose (RfD), Chronic

>> 3 x 10^-2 mg/kg-day

Reference Dose (RfD), Subchronic

>> 6 x 10^-2 mg/kg-day

PPRTV Assessment

>> PDF Document

Last Revision

>> 2005

Exposure Routes:

>> The substance can be absorbed into the body by inhalation, through the skin and by ingestion.

Inhalation Exposure

>> Blue lips, fingernails and skin. Cough. Dizziness. Headache. Shortness of breath. Confusion. Convulsions. Nausea. Unconsciousness.

Skin Exposure

>> Redness.

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> Further see Inhalation.

Adverse Effects:

An adverse effect is an undesired harmful effect resulting from a medical treatment or other intervention.

>> Occupational hepatotoxin - Secondary hepatotoxins: the potential for toxic effect in the occupational setting is based on cases of poisoning by human ingestion or animal experimentation.

>> Methemoglobinemia - The presence of increased methemoglobin in the blood; the compound is classified as secondary toxic effect

>> Reproductive Toxin - A chemical that is toxic to the reproductive system, including defects in the progeny and injury to male or female reproductive function. Reproductive toxicity includes developmental effects. See Guidelines for Reproductive Toxicity Risk Assessment.

>> Skin Sensitizer - An agent that can induce an allergic reaction in the skin.

Interactions:

>> 2,4-, 2,5-, 2,6- and 3,4-Toluene diamine (TDA) were tested for their ability to enhance the transformation of primary hamster embryo cells (HEC) by Simian adenovirus 7 (SA7) when administered either prior to or after virus inoculation and for their ability to transform secondary HEC. 2,4-TDA was inactive when given prior to SA7, but active if given after. 2,5-TDA was active in both protocols. 2,6-TDA was marginally active if administered before virus and was the most active of the isomers when administered after virus. 3,4-TDA was the most active compound when added prior to SA7, and was also active when given after virus. All the isomers were capable of producing good dose--responses and absolute increases in the number of virus-transformed foci per dish in one or both of the experimental regimens. Each isomer chemically transformed secondary HEC but good dose--responses were rare, and none of the chemicals were active in more than 50% of the 5 or 6 separate tests performed on each.

Antidote and Emergency Treatment:

>> /SRP:/ Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on the left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Organic bases/Amines and related compounds/

Human Toxicity Excerpts:

>> /SIGNS AND SYMPTOMS/ In human beings, as in animals, diaminotoluenes are considered to be irritants for the mucous membranes and skin, and to lead to conjunctivitis and corneal opacities. When solutions come into contact with skin, they can cause irritation, severe dermatitis, and blistering. In case of the inhalation of fumes, coughing, dyspnea, and respiratory distress can result. ... In the case of ingestion of massive amounts, nausea, vomiting, and diarrhea would occur, with the possible production of methemoglobinemia. /Diaminotoluene/

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ The toluenediamines appear not to be primary irritants, according to tests on rabbit eyes in which 0.02 M solutions of each of the isomers all at pH 6.5 were tested by dropping on rabbit eyes for ten minutes after mechanical removal of the corneal epithelium to permit penetration. The eyes healed and returned to normal within two to four days without evidence of chemical injury. /Toluenediamines/

Non-Human Toxicity Values:

>> LD50 Rat (female) oral 1000 mg/kg bw

National Toxicology Program Studies:

Reports from the National Toxicology Program, an interagency program supported by three government agencies (NIH, FDA, and CDC) within the Department of Health and Human Services. This program plays a critical role in generating, interpreting, and sharing toxicological information about chemicals of public health concerns.

>> F344 rats of each sex were fed 2,6-toluenediamine dihydrochloride at 250 or 500 ppm for 103 wk; B6C3F1 mice of each sex were fed at 2 doses, 50 or 100 ppm for 103 wk. 2,6-Toluenediamine dihydrochloride was not carcinogenic for male and female rats or for male and female mice.

TSCA Test Submissions:

Under the Toxic Substances Control Act (TSCA), EPA has broad authority to issue regulations designed to require manufacturers (including importers) or processors to test chemical substances and mixtures for health and environmental effects. This section provides information on test reports submitted for this chemical under TSCA.

>> The ability of 2,6-toluene diamine to induce 6-thioguanine resistant mutants in Chinese hamster ovary (CHO) cells was evaluated in the presence and absence of Aroclor-induced rat liver S9 metabolic activation. Nonactivated and activated cultures were tested at concentrations up to 5,000 ug/mL. Choice of test concentrations and relative growth after treatment were not reported. 2,6-Toluene diamine produced mutant frequencies greater than the solvent control with and without metabolic activation, and a dose-response relationship was observed in experiments with metabolic activation.

12. Ecological Information

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms.

13. Disposal Considerations

Spillage Disposal

>> Personal protection: P2 filter respirator for harmful particles. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

Disposal Methods

>> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number U221, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> SRP: Wastewater from contaminant suppression, cleaning of protective clothing/equipment, or contaminated sites should be contained and evaluated for subject chemical or decomposition product concentrations. Concentrations shall be lower than applicable environmental discharge or disposal criteria. Alternatively, pretreatment and/or discharge to a permitted wastewater treatment facility is acceptable only after review by the governing authority and assurance that "pass through" violations will not occur. Due consideration shall be given to remediation worker exposure (inhalation, dermal and ingestion) as well as fate during treatment, transfer and disposal. If it is not practicable to manage the chemical in this fashion, it must be evaluated in accordance with EPA 40 CFR Part 261, specifically Subpart B, in order to determine the appropriate local, state and federal requirements for disposal.

14. Transport Information

DOT

Diaminotoluene

Reportable Quantity of 10 lb or 4

IATA

Diaminotoluene

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15. Regulatory Information

TSCA Requirements:

This section provides information on requirements concerning this chemical under the Toxic Substances Control Act (TSCA) of 1976. TSCA provides EPA with authority to require reporting, record-keeping and testing requirements, and restrictions relating to chemical substances and/or mixtures. Certain substances are generally excluded from TSCA, including, among others, food, drugs, cosmetics and pesticides.

>> Pursuant to section 8(d) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule. The section 8(d) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. 1,3-Benzenediamine, 2-methyl- is included on this list. Effective date: 4/29/83; Sunset date: 4/29/93.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: 1,3-Benzenediamine, 2-methyl-

REACH Registered Substance

>> Status: Cease Manufacture Update: 01-05-2018 https://echa.europa.eu/registration-dossier/-/registered-dossier/24310

16. Other Information

Toxic Combustion Products:

Toxic products (e.g., gases and vapors) produced from the combustion of this chemical.

>> On combustion, forms toxic fumes of nitrogen oxides.

Other Safety Information

Chemical Assessment

>> IMAP assessments - 1,3-Benzenediamine, 2-methyl-: Environment tier I assessment

>> IMAP assessments - 1,3-Benzenediamine, 2-methyl-: Human health tier II assessment