SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Cacodylic acid
Catalog Number : io-1894
CAS Number : 75-60-5
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)

GHS Hazard Statements

>> H301 (94.1%): Toxic if swallowed [Danger Acute toxicity, oral]

>> H331 (94.1%): Toxic if inhaled [Danger Acute toxicity, inhalation]

>> H400 (90.2%): Very toxic to aquatic life [Warning Hazardous to the aquatic environment, acute hazard]

>> H410 (98%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard]

Precautionary Statement Codes

>> P261, P264, P270, P271, P273, P301+P316, P304+P340, P316, P321, P330, P391, P403+P233, P405, and P501

Health Hazards:

>> Chemical is essentially non-irritating in contact with skin or eyes. Ingestion causes arsenic poisoning, but symptoms are delayed. (USCG, 1999)

ERG 2024, Guide 151 (Cacodylic acid)

>> Highly toxic, may be fatal if inhaled, ingested or absorbed through skin.

>> Avoid any skin contact.

>> Fire may produce irritating, corrosive and/or toxic gases.

>> Runoff from fire control or dilution water may be corrosive and/or toxic and cause environmental contamination.

>> Behavior in Fire: May form toxic oxides of arsenic when heated. (USCG, 1999)

ERG 2024, Guide 151 (Cacodylic acid)

>> Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.

>> Containers may explode when heated.

>> Runoff may pollute waterways.

3. Composition/Information On Ingredients

Chemical name : Cacodylic acid
CAS Number : 75-60-5
Molecular Formula : C2H7AsO2
Molecular Weight : 138.0000 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: Some heavy metals are VERY TOXIC POISONS, especially if their salts are very soluble in water (e.g., lead, chromium, mercury, bismuth, osmium, and arsenic). IMMEDIATELY call a hospital or poison control center and locate activated charcoal, egg whites, or milk in case the medical advisor recommends administering one of them. Also locate Ipecac syrup or a glass of salt water in case the medical advisor recommends inducing vomiting. Usually, this is NOT RECOMMENDED outside of a physician's care. If advice from a physician is not readily available and the victim is conscious and not convulsing, give the victim a glass of activated charcoal slurry in water or, if this is not available, a glass of milk, or beaten egg whites and IMMEDIATELY transport victim to a hospital. If the victim is convulsing or unconscious, do not give anything by mouth, assure 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)

ERG 2024, Guide 151 (Cacodylic acid)

>> General First Aid:

>> Call 911 or emergency medical service.

>> Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and avoid contamination.

>> Move victim to fresh air if it can be done safely.

>> Administer oxygen if breathing is difficult.

>> If victim is not breathing:

>> DO NOT perform mouth-to-mouth resuscitation; the victim may have ingestedor inhaled the substance.

>> If equipped and pulse detected, wash face and mouth, then give artificial respiration using a proper respiratory medical device (bag-valve mask, pocket mask equipped with a one-way valve or other device).

>> If no pulse detected or no respiratory medical device available, provide continuouscompressions. Conduct a pulse check every two minutes or monitor for any signs of spontaneous respirations.

>> Remove and isolate contaminated clothing and shoes.

>> For minor skin contact, avoid spreading material on unaffected skin.

>> In case of contact with substance, remove immediately by flushing skin or eyes with running water for at least 20 minutes.

>> For severe burns, immediate medical attention is required.

>> Effects of exposure (inhalation, ingestion, or skin contact) to substance may be delayed.

>> Keep victim calm and warm.

>> Keep victim under observation.

>> For further assistance, contact your local Poison Control Center.

>> Note: Basic Life Support (BLS) and Advanced Life Support (ALS) should be done by trained professionals.

>> In Canada, an Emergency Response Assistance Plan (ERAP) may be required for this product. Please consult the shipping paper and/or the "ERAP" section.

5. Fire Fighting Measures

>> Excerpt from ERG Guide 151 [Substances - Toxic (Non-Combustible)]:

>> SMALL FIRE: Dry chemical, CO2 or water spray.

>> LARGE FIRE: Water spray, fog or regular foam. If it can be done safely, move undamaged containers away from the area around the fire. Dike runoff from fire control for later disposal. Avoid aiming straight or solid streams directly onto the product.

>> FIRE INVOLVING TANKS, RAIL TANK CARS OR HIGHWAY TANKS: Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks in direct contact with flames. For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn. (ERG, 2024)

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 151 [Substances - Toxic (Non-Combustible)]:

>> 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)

Evacuation: ERG 2024, Guide 151 (Cacodylic acid)

>> 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

>> For non-highlighted materials: 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.

Accidental Release Measures

Public Safety: ERG 2024, Guide 151 (Cacodylic acid)

>> CALL 911. Then call emergency response telephone number on shipping paper. If shipping paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.

>> Keep unauthorized personnel away.

>> Stay upwind, uphill and/or upstream.

Spill or Leak: ERG 2024, Guide 151 (Cacodylic acid)

>> Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.

>> Stop leak if you can do it without risk.

>> Prevent entry into waterways, sewers, basements or confined areas.

>> Cover with plastic sheet to prevent spreading.

>> Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

>> DO NOT GET WATER INSIDE CONTAINERS.

>> For solids, prevent dust cloud and avoid inhalation of dust.

7. Handling And Storage

Storage Conditions:

>> KEEP WELL CLOSED.

8. Exposure Control/ Personal Protection

Emergency Response: ERG 2024, Guide 151 (Cacodylic acid)

>> Small Fire

>> Dry chemical, CO2 or water spray.

>> Large Fire

>> Water spray, fog or regular foam.

>> If it can be done safely, move undamaged containers away from the area around the fire.

>> Dike runoff from fire control for later disposal.

>> Avoid aiming straight or solid streams directly onto the product.

>> Fire Involving Tanks, Rail Tank Cars or Highway Tanks

>> Fight fire from maximum distance or use unmanned master stream devices or monitor nozzles.

>> Do not get water inside containers.

>> Cool containers with flooding quantities of water until well after fire is out.

>> Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.

>> ALWAYS stay away from tanks in direct contact with flames.

>> For massive fire, use unmanned master stream devices or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

Exposure Control and Personal Protection

Protective Clothing: ERG 2024, Guide 151 (Cacodylic acid)

>> Wear positive pressure self-contained breathing apparatus (SCBA).

>> Wear chemical protective clothing that is specifically recommended by the manufacturer when there is NO RISK OF FIRE.

>> Structural firefighters' protective clothing provides thermal protection but only limited chemical protection.

9. Physical And Chemical Properties

Molecular Weight:

>> 138.00

Exact Mass:

>> 137.966199

Physical Description:

>> Cacodylic acid appears as a colorless, odorless crystalline solid. Melting point 195-196 °C. Toxic by ingestion and irritating to skin and eyes.

Color/Form:

>> Crystals from alcohol and ether

Odor:

>> Odorless

Boiling Point:

>> greater than 392 °F at 760 mmHg (NTP, 1992)

Melting Point:

>> 383 to 385 °F (NTP, 1992)

Solubility:

>> Very soluble (NTP, 1992)

Density:

>> greater than 1.1 at 68 °F (est.) (USCG, 1999)

Vapor Pressure:

>> 0.0000001 [mmHg]

Stability/Shelf Life:

>> COMPLETELY STABLE IN STORAGE.

Decomposition:

>> When heated to decomposition it emits toxic fumes of /arsenics/.

Corrosivity:

The ability of a chemical to damage or destroy other substances when it comes into contact.

>> All formulations are mildly corrosive.

Dissociation Constants:

>> pKa = 1.57

Collision Cross Section:

Collision cross section (CCS) represents the effective area for the interaction between an individual ion and the neutral gas through which it is traveling (e.g., in ion mobility spectrometry (IMS) experiments). It quantifies the probability of a collision taking place between two or more particles.

>> 112.5 Å² [M+H]+ [CCS Type: TW; Method: calibrated with polyalanine and drug standards]

10. Stability And Reactivity

>> Hygroscopic. Water soluble.

11. Toxicological Information

Evidence for Carcinogenicity:

Evidence that this chemical does or may cause cancer. The information here is collected from various sources by the Hazardous Substances Data Bank (HSDB).

>> Cancer Classification: Group B2 Probable Human Carcinogen

Carcinogen Classification:

This section provides the International Agency for Research on Cancer (IARC) Carcinogenic Classification and related monograph links. In the IARC Carcinogenic classification, chemicals are categorized into four groups: Group 1 (carcinogenic to humans), Group 2A (probably carcinogenic to humans), Group 2B (possibly carcinogenic to humans), and Group 3 (not classifiable as to its carcinogenicity to humans).

IARC Carcinogenic Agent

>> Dimethylarsinic acid

IARC Carcinogenic Classes

>> Group 2B: Possibly carcinogenic to humans

IARC Monographs

>> Volume 100C: (2012) Arsenic, Metals, Fibres, and Dusts

Adverse Effects:

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

>> IARC Carcinogen - Class 3: Chemicals are not classifiable by the International Agency for Research on Cancer.

Toxicity Data:

>> LCLo (rat) = 4,900 mg/m3/4h

Interactions:

>> The influence of the methyltransferase inhibitor periodate oxidized adenosine on the metabolism of arsenite was investigated in mice and rabbits. Groups of male NMRI-mice and New Zealand rabbits were given intraperitoneal (ip) injections of 100 um periodate oxidized adenosine per kilogram (kg) 15 min before an intravenous injection of 0.04 mg/kg (74)As labeled arsenite or injections of (74)As labeled arsenite only. These animals were kept for 16 to 72 hr in metabolic cages designed to separate urine and feces. The urinary concn of dimethylarsenic acid (DMA), the major arsenic metabolite, was measured. Other groups of animals were injected with (74)As labeled arsenite and periodate oxidized adenosine or (74)As labeled arsenite only and killed between 1 to 72 hr. Blood, liver, kidney, lung, epididymis, and portions of skin were removed and measured for (74)As content in a gamma scintillation counter. Also, subcellular fractionation of liver tissue was performed and the concentration of (74)As was ascertained. The urinary excretion of (74)As was lower in mice and rabbits treated with periodate oxidized adenosine prior to arsenite administration than in animals treated with arsenite only. Injection of periodate oxidized adenosine prior to arsenite produced a 25 to 70% decrease in the production of dimethylarsenic acid, implying that S-adenosylmethionine was the methyl donor for the methylation of inorganic arsenic in vivo. The fecal excretion of (74)As was less than 4% of the dose, independent of treatment and animal species. Periodate oxidized adenosine treated animals had 2 to 6 times higher concentrations of (74)As in tissues than that in controls, the effect being first observed in liver tissues. The subcellular distribution of (74)As in liver of mice was not affected by periodate oxidized adenosine treatment in that 50% was found in the soluble cytoplasmic fraction and 20 to 30% was found in thenuclear fraction, independent of the treatment.

Antidote and Emergency Treatment:

>> FIRST AID: Get medical aid. Eyes, skin, flush with flowing water immediately and continuously for 15 minutes. Inhalation, materials nonvolatile but if spray drift is inhaled, treat as ingestion. ... May be treated as for general arsenic poisoning.

Human Toxicity Excerpts:

>> /CACODYLIC ACID IS/ HARMFUL IF SWALLOWED. AVOID INHALATION OF SPRAY MIST.

Non-Human Toxicity Excerpts:

>> 100 & 1000 PPM BY WT ... CACODYLIC ACID /IN 60% SUCROSE SYRUP IS/ ... EXTREMELY TOXIC TO NEWLY EMERGED WORKER BEES ... MODERATELY TOXIC @ 10 PPM BY WT. ... NO DIFFERENCES IN TOXICITY ... OBSERVED BETWEEN PURIFIED & COMMERCIALLY FORMULATED HERBICIDES.

Non-Human Toxicity Values:

>> LD50 Rat oral 700 mg/kg

12. Ecological Information

Resident Soil (mg/kg)

>> 1.30e+03

Industrial Soil (mg/kg)

>> 1.60e+04

Tapwater (ug/L)

>> 4.00e+02

MCL (ug/L)

>> 8.0E+01(G)

Risk-based SSL (mg/kg)

>> 1.10e-01

Chronic Oral Reference Dose (mg/kg-day)

>> 2.00e-02

Volatile

>> Volatile

Mutagen

>> Mutagen

Fraction of Contaminant Absorbed in Gastrointestinal Tract

>> 1

Fraction of Contaminant Absorbed Dermally from Soil

>> 0.1

13. Disposal Considerations

Disposal Methods

>> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number D004, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> Generators of waste (equal to or greater than 100 kg/mo) containing this contaminant, EPA hazardous waste number U136, must conform with USEPA regulations in storage, transportation, treatment and disposal of waste.

>> Storage: To convert the gas-cleaning residues obtained during the metallurgical processing of arsenic-containing ores into a portable and less water-soluble form, the metals are precipitated as hydroxides by using an excess of lime water and the arsenic is precipitated as calcium arsenate and calcium arsenite. This "arsenic sludge" is recycled, on the one hand, in order not to lose the valuable metals, and on the other, in order to reduce the problem of arsenic sludge disposal.

>> A poor candidate for incineration.

14. Transport Information

DOT

Cacodylic acid

Reportable Quantity of 1 lb or 0

IATA

Cacodylic acid

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15. Regulatory Information

Federal Drinking Water Standards:

Federal drinking water standards (e.g. maximum containment level (MCL)) for this chemical. These standards are legally enforceable.

>> 10 ug/l /Arsenic/

Clean Water Act Requirements:

The Clean Water Act (CWA) of 1972 establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under CWA, the U.S. Environmental Protection Agency (EPA) developed the Toxic Pollutant List (40 CFR Part 401.15) and the Priority Pollutant List (40 CFR Part 423, Appendix A). These lists are to be used by EPA and States to develop the Effluent Guidelines regulations and ensure water quality criteria and standards.

>> Toxic pollutant designated pursuant to section 307(a)(1) of the Federal Water Pollution Control Act and is subject to effluent limitations. /Arsenic & cmpd/

Regulatory Information

REACH Restricted Substance

>> Restricted substance: Dimethylarsinic acid

>> EC: 200-883-4

New Zealand EPA Inventory of Chemical Status

>> Arsinic acid, dimethyl-: Does not have an individual approval but may be used under an appropriate group standard

16. Other Information

Toxic Combustion Products:

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

>> May form toxic oxides of arsenic when heated.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Arsinic acid, dimethyl-: Environment tier I assessment

>> IMAP assessments - Arsinic acid, dimethyl-: Human health tier I assessment

"The information provided is believed to be accurate but is not comprehensive and should be used as a reference. It reflects our current knowledge and is intended for safety guidance related to the product. This document does not constitute a warranty of the product's properties. Ionz is not responsible for any damages resulting from handling or contact with the product incorrectly."