ionz

SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Isopentane
Catalog Number : io-2537
CAS Number : 78-78-4
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

>> H224 (95.7%): Extremely flammable liquid and vapor [Danger Flammable liquids]

>> H304 (100%): May be fatal if swallowed and enters airways [Danger Aspiration hazard]

>> H336 (99.9%): May cause drowsiness or dizziness [Warning Specific target organ toxicity, single exposure; Narcotic effects]

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

Precautionary Statement Codes

>> P210, P233, P240, P241, P242, P243, P261, P271, P273, P280, P301+P316, P303+P361+P353, P304+P340, P319, P331, P370+P378, P391, P403+P233, P403+P235, P405, and P501

NFPA 704 Diamond

NFPA Health Rating

>> 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA Fire Rating

>> 4 - Materials that rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and burn readily.

NFPA Instability Rating

>> 0 - Materials that in themselves are normally stable, even under fire conditions.

Health Hazards:

>> Inhalation causes irritation of respiratory tract, cough, mild depression, irregular heartbeat. Aspiration causes severe lung irritation, coughing, pulmonary edema; excitement followed by depression. Ingestion causes nausea, vomiting, swelling of abdomen, headache, depression. (USCG, 1999)

ERG 2024, Guide 128 (Isopentane)

>> CAUTION: Petroleum crude oil (UN1267) may contain TOXIC hydrogen sulphide gas.

>> Inhalation or contact with material may irritate or burn skin and eyes.

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

>> Vapors may cause dizziness or asphyxiation, especially when in closed or confined areas.

>> Runoff from fire control or dilution water may cause environmental contamination.

>> Behavior in Fire: Highly volatile liquid. Vapors may explode when mixed with air. (USCG, 1999)

ERG 2024, Guide 128 (Isopentane)

>> HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.

>> Vapors may form explosive mixtures with air.

>> Vapors may travel to source of ignition and flash back.

>> Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks, etc.).

>> Vapor explosion hazard indoors, outdoors or in sewers.

>> Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.

>> Runoff to sewer may create fire or explosion hazard.

>> Containers may explode when heated.

>> Many liquids will float on water.

>> Substance may be transported hot.

>> For hybrid vehicles, GUIDE 147 (lithium ion or sodium ion batteries) or GUIDE 138 (sodium batteries) should also be consulted.

>> If molten aluminum is involved, refer to GUIDE 169.

>> Extremely flammable. Heating will cause rise in pressure with risk of bursting. Vapour/air mixtures are explosive.

3. Composition/Information On Ingredients

Chemical name : Isopentane
CAS Number : 78-78-4
Molecular Formula : C5H12
Molecular Weight : 72.1500 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. Volatile chemicals have a high risk of being aspirated into the victim's lungs during vomiting which increases the medical problems. 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. IMMEDIATELY transport the victim to a hospital. 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)

ERG 2024, Guide 128 (Isopentane)

>> 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.

>> Specific First Aid:

>> Wash skin with soap and water.

>> In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin.

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

First Aid Measures

Inhalation First Aid

>> Fresh air, rest. Refer for medical attention.

Skin First Aid

>> First rinse with plenty of water for at least 15 minutes, then remove contaminated clothes and rinse again.

Eye First Aid

>> Rinse with plenty of water (remove contact lenses if easily possible).

Ingestion First Aid

>> Rinse mouth. Do NOT induce vomiting. Refer immediately for medical attention.

5. Fire Fighting Measures

>> Flash back possible over considerable distance. Container explosion may occur under fire conditions. Vapors may form explosive mixture with air.

>> Fire Extinguishing Agents Not to Be Used: Water may be ineffective

>> Fire Extinguishing Agents: Dry chemical, foam, or carbon dioxide (USCG, 1999)

>> Use powder, carbon dioxide, alcohol-resistant foam, water spray. In case of fire: keep drums, etc., cool by spraying with water.

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 128 [Flammable Liquids (Water-Immiscible)]:

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

>> LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet).

>> 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 128 (Isopentane)

>> Immediate precautionary measure

>> Isolate spill or leak area for at least 50 meters (150 feet) in all directions.

>> Large Spill

>> Consider initial downwind evacuation for at least 300 meters (1000 feet).

>> 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.

Spillage Disposal:

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

>> Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours of low boiling point adapted to the airborne concentration of the substance. Remove all ignition sources. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer.

Accidental Release Measures

Public Safety: ERG 2024, Guide 128 (Isopentane)

>> 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.

>> Ventilate closed spaces before entering, but only if properly trained and equipped.

Spill or Leak: ERG 2024, Guide 128 (Isopentane)

>> ELIMINATE all ignition sources (no smoking, flares, sparks or flames) from immediate area.

>> All equipment used when handling the product must be grounded.

>> Do not touch or walk through spilled material.

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

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

>> A vapor-suppressing foam may be used to reduce vapors.

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

>> Use clean, non-sparking tools to collect absorbed material.

>> Large Spill

>> Dike far ahead of liquid spill for later disposal.

>> Water spray may reduce vapor, but may not prevent ignition in closed spaces.

7. Handling And Storage

Safe Storage:

>> Fireproof. Well closed. Separated from strong oxidants. Store in an area without drain or sewer access. Provision to contain effluent from fire extinguishing.

Storage Conditions:

>> Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Recommended storage temperature 2-8 °C Refrigerate before opening. Handle and open container with care.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 120 ppm (350 mg/m³)

REL-C (Ceiling)

>> 610 ppm (1800 mg/m³) [15 minutes]

>> 1000.0 [ppm]

PEL-TWA (8-Hour Time Weighted Average)

>> 1000 ppm (2950 mg/m³)

>> 1000.0 [ppm]

>> 1000 ppm as TWA.

TLV-TWA (Time Weighted Average)

>> 1000 ppm [2013]

EU-OEL

>> 3000 mg/m

MAK (Maximale Arbeitsplatz Konzentration)

>> 3000 mg/m

Emergency Response: ERG 2024, Guide 128 (Isopentane)

>> CAUTION: The majority of these products have a very low flash point. Use of water spray when fighting fire may be inefficient.

>> CAUTION: For mixtures containing alcohol or polar solvent, alcohol-resistant foam may be more effective.

>> Small Fire

>> Dry chemical, CO2, water spray or regular foam. If regular foam is ineffective or unavailable, use alcohol-resistant foam.

>> Large Fire

>> Water spray, fog or regular foam. If regular foam is ineffective or unavailable, use alcohol-resistant foam.

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

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

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

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

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

>> For petroleum crude oil, do not spray water directly into a breached tank car. This can lead to a dangerous boil over.

>> 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.

Inhalation Risk:

>> A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20 °C.

Effects of Short Term Exposure:

>> If swallowed the substance easily enters the airways and could result in aspiration pneumonitis. Inhalation of high concentrations of the vapour may cause depression of the central nervous system.

Effects of Long Term Exposure:

>> The substance defats the skin, which may cause dryness or cracking.

Fire Prevention

>> NO open flames, NO sparks and NO smoking. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT use compressed air for filling, discharging, or handling. Use non-sparking handtools.

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection.

Skin Prevention

>> Protective gloves.

Eye Prevention

>> Wear safety spectacles or eye protection in combination with breathing protection.

Ingestion Prevention

>> Do not eat, drink, or smoke during work.

Exposure Control and Personal Protection

Protective Clothing: ERG 2024, Guide 128 (Isopentane)

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

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

Maximum Allowable Concentration (MAK)

>> 1000.0 [ppm]

9. Physical And Chemical Properties

Molecular Weight:

>> 72.15

Exact Mass:

>> 72.093900383

Physical Description:

>> Watery colorless liquid with a gasoline-like odor. Floats on water. Flammable, irritating vapor is produced. Boiling point is 82 °F. (USCG, 1999)

>> COLOURLESS LIQUID WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Volatile liquid or gas

Odor:

>> Pleasant odor

Boiling Point:

>> 82 °F at 760 mmHg (NTP, 1992)

>> 28 °C

Melting Point:

>> -255.8 °F (NTP, 1992)

>> -160 °C

Flash Point:

>> -70 °F (NTP, 1992)

Solubility:

>> less than 1 mg/mL at 73 °F (NTP, 1992)

>> Solubility in water: none

Density:

>> 0.62 at 68 °F (USCG, 1999) - Less dense than water; will float

>> Relative density (water = 1): 0.6

Vapor Density:

>> 2.48 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 2.5

Vapor Pressure:

>> 400 mmHg at 50.9 °F ; 595 mmHg at 70.0 °F (NTP, 1992)

>> Vapor pressure, kPa at 20 °C: 79

LogP:

>> 2.3

Stability/Shelf Life:

>> Stable under recommended storage conditions.

Autoignition Temperature:

>> 800 °F (USCG, 1999)

>> 420 °C

Decomposition:

>> When heated to decomposition it emits acrid smoke and irritating fumes.

Viscosity:

>> 0.214 cP at 20 °C

>> 0.3 mm^2/s at 20 °C

Heat of Combustion:

>> Gas: 3239 kJ/mol at 20 °C; Liquid: 3264 kJ/mol at 20 °C

Heat of Vaporization:

>> 26.43 kJ/mol at 25 °C

Surface Tension:

>> 15.00 dynes/cm at 20 °C; 13.93 dynes/cm at 30 °C

Odor Threshold:

>> Odor Threshold Low: 400.0 [mmHg]

>> Odor threshold from ACGIH

Refractive Index:

>> Index of refraction = 1.3537 at 20 °C/D

10. Stability And Reactivity

>> Highly flammable. Insoluble in water.

>> Highly Flammable

11. Toxicological Information

Toxicity Summary:

>> IDENTIFICATION AND USE: Isopentane is a volatile liquid or gas. It is used as a solvent, in the manufacture of chlorinated derivatives, and as a blowing agent for polystyrene. HUMAN STUDIES: Inhalation can cause dizziness, drowsiness, headache, and unconsciousness. Skin exposure leads to dry skin. Ingestion can cause nausea and vomiting. Isopentane is an aspiration hazard. If swallowed the substance easily enters the airways and could result in aspiration pneumonitis. Isopentane causes CNS depression between 270 and 400 mg/L, and is a weak cardiac sensitizer. High vapor concentrations are irritating to the skin and eyes. ANIMAL STUDIES: In dogs, 120,000 ppm isopentane was required to induce light anesthesia. Isopentane was lethal to dogs at levels of 150,000-170,000 ppm. Mice exposed to 90,000 ppm isopentane for 11 min showed light anesthesia. At higher concentrations (110,000 and 120,000 ppm), the CNS depression effect appeared within 4 and 2 min, respectively. In rats, no treatment-related effects of isopentane were found in relation to the reproductive capacity of parental animals or the pre- and post-natal development of the F1 generation. There were no treatment-related effects in either gender at </= 300 mg/kg/day. The mutagenic activity of isopentane has been assayed using the Ames test. At concentrations of 100,000 ppm, it was not mutagenic in the presence and absence of a metabolic activating system.

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).

>> Isopentane is found in gasoline, which is possibly carcinogenic to humans (Group 2B). (L135)

Health Effects:

>> Pentane is a central nervous system depressant and can cause loss of consciousness and coma at high doses. Ingestion may cause pulmonary toxicity due to pentane aspiration, including chemical pneumonitis, acute lung injury, and hemorrhage. Cardiovascular effects may include ventricular dysrhythmias and sudden death. (T29, A600)

Exposure Routes:

>> Oral (T29) ; inhalation (T29) ; dermal (T29)

Inhalation Exposure

>> Dizziness. Drowsiness. Headache. Unconsciousness.

Skin Exposure

>> Dry skin.

Eye Exposure

>> No acute symptoms expected.

Ingestion Exposure

>> Nausea. Vomiting. Aspiration hazard!

>> Pentane is a central nervous system depressant and can cause anorexia, euphoria, dizziness, headache, depression, confusion, inability to concentrate, anoxia, narcosis, and loss of consciousness and coma at high concentrations. Contact with the skin results in cause drying, erythema, hyperpigmentation, hyperemia, dermatitis, burning pain, and blisters. (T14, T29, A600)

Adverse Effects:

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

>> Neurotoxin - Acute solvent syndrome

Toxicity Data:

>> LCLo (mice) = 419,000 mg/m3/2H

Treatment:

Treatment when exposed to toxin

>> Treatment is mainly symptomatic and supportive. Gastric lavage, emesis, and the administration of activated charcoal should be avoided, as vomiting increases the risk of aspiration. (A600)

Antidote and Emergency Treatment:

>> 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. /Aliphatic hydrocarbons and related compounds/

Human Toxicity Excerpts:

>> /HUMAN EXPOSURE STUDIES/ Inhalation of </= 500 ppm isopentane appear to have no effect on humans.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ In dogs, 120,000 ppm /isopentane/ was required to induce light anesthesia.

Non-Human Toxicity Values:

>> LC50 Mouse inhalation 1000 mg/L/1 hr (estimated)

12. Ecological Information

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms. It is strongly advised not to let the chemical enter into the environment.

Sediment/Soil Concentrations:

Concentrations of this compound in sediment/soil.

>> SEDIMENT: Isopentane was detected in 9 of 10 near shore sediment samples taken at a depth ranging 48-230 cm at a maximum concentration of 0.78 ng/g dry weight in Walvis Bay, South Africa, but it was not detected in samples taken further off shore; the authors concluded that it may arise from natural production(1).

13. Disposal Considerations

Spillage Disposal

>> Evacuate danger area! Consult an expert! Personal protection: filter respirator for organic gases and vapours of low boiling point adapted to the airborne concentration of the substance. Remove all ignition sources. Do NOT let this chemical enter the environment. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations. Do NOT wash away into sewer.

Disposal Methods

>> SRP: Recycle any unused portion of the material for its approved use or return it to the manufacturer or supplier. Ultimate disposal of the chemical must consider: the material's impact on air quality; potential migration in air, soil or water; effects on animal, aquatic and plant life; and conformance with environmental and public health regulations. If it is possible or reasonable use an alternative chemical product with less inherent propensity for occupational harm/injury/toxicity or environmental contamination.

>> 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.

>> Product: Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material; Contaminated packaging: Dispose of as unused product.

>> Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. All federal, state, and local environmental regulations must be observed.

14. Transport Information

DOT

Isopentane
3
UN Pack Group: I

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Isopentane
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15. Regulatory Information

DHS Chemicals of Interest (COI):

This section provides the Department of Homeland Security (DHS) Chemicals of Interest (COI) and related information (Ref: 6 eCFR part 27 - https://www.ecfr.gov/current/title-6/chapter-I/part-27).

Chemicals of Interest(COI)

>> Isopentane

Release: Minimum Concentration (%)

>> 1

Release: Screening Threshold Quantities (in pounds)

>> 10000

Security Issue: Release - Flammables

>> Flammable chemical that can be released at a facility.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Butane, 2-methyl-

REACH Registered Substance

>> Status: Active Update: 06-02-2023 https://echa.europa.eu/registration-dossier/-/registered-dossier/15838

>> Status: Active Update: 13-03-2014 https://echa.europa.eu/registration-dossier/-/registered-dossier/7339

New Zealand EPA Inventory of Chemical Status

>> Butane, 2-methyl-: HSNO Approval: HSR001177 Approved with controls

16. Other Information

Toxic Combustion Products:

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

>> Special hazards arising from the substance or mixture: Carbon oxides.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Butane, 2-methyl-: 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."