SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Butyl acrylate
Catalog Number : io-1878
CAS Number : 141-32-2
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)

Note

>> Pictograms displayed are for > 99.9% (3533 of 3534) of reports that indicate hazard statements. This chemical does not meet GHS hazard criteria for < 0.1% (1 of 3534) of reports.

Pictogram(s)

>> Warning

GHS Hazard Statements

>> H226 (> 99.9%): Flammable liquid and vapor [Warning Flammable liquids]

>> H315 (> 99.9%): Causes skin irritation [Warning Skin corrosion/irritation]

>> H317 (> 99.9%): May cause an allergic skin reaction [Warning Sensitization, Skin]

>> H319 (> 99.9%): Causes serious eye irritation [Warning Serious eye damage/eye irritation]

>> H332 (75.5%): Harmful if inhaled [Warning Acute toxicity, inhalation]

>> H335 (> 99.9%): May cause respiratory irritation [Warning Specific target organ toxicity, single exposure; Respiratory tract irritation]

>> H412 (73.9%): Harmful 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, P264, P264+P265, P271, P272, P273, P280, P302+P352, P303+P361+P353, P304+P340, P305+P351+P338, P317, P319, P321, P332+P317, P333+P317, P337+P317, P362+P364, P370+P378, P403+P233, P403+P235, P405, and P501

NFPA 704 Diamond

NFPA Health Rating

>> 3 - Materials that, under emergency conditions, can cause serious or permanent injury.

NFPA Fire Rating

>> 2 - Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air.

NFPA Instability Rating

>> 2 - Materials that readily undergo violent chemical changes at elevated temperatures and pressures.

Health Hazards:

>> Vapor is irritating when breathed at high concentrations. Contact with liquid causes irritation of skin and burning of eyes. (USCG, 1999)

>> Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious); polymerization hazard]:

>> 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. (ERG, 2024)

>> Flammable. Above 36 °C explosive vapour/air mixtures may be formed.

3. Composition/Information On Ingredients

Chemical name : Butyl acrylate
CAS Number : 141-32-2
Molecular Formula : C7H12O2
Molecular Weight : 128.1700 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. Refer for medical attention.

Skin First Aid

>> Remove contaminated clothes. Rinse skin with plenty of water or shower. Refer for medical attention .

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. Do NOT induce vomiting. Give one or two glasses of water to drink. Refer for medical attention .

5. Fire Fighting Measures

>> Excerpt from ERG Guide 129 [Flammable Liquids (Water-Miscible / Noxious); polymerization hazard]:

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

>> SMALL FIRE: Dry chemical, CO2, water spray or alcohol-resistant foam. Do not use dry chemical extinguishers to control fires involving nitromethane (UN1261) or nitroethane (UN2842).

>> LARGE FIRE: Water spray, fog or 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. 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)

>> Use powder, AFFF, foam, carbon dioxide. 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 129 [Flammable Liquids (Water-Miscible / Noxious); polymerization hazard]:

>> 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)

Spillage Disposal:

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

>> Personal protection: chemical protection suit and filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Remove all ignition sources. Collect leaking and spilled liquid in covered containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

7. Handling And Storage

Safe Storage:

>> Fireproof. Cool. Keep in the dark. Separated from strong oxidants. Store only if stabilized.

Storage Conditions:

>> Do not store unless stabilized. Before entering a confined space where butyl acrylate may be present, check to make sure that an explosive concentration does not exist. Store in tightly closed containers in a cool, well ventilated, fireproof area. Metal containers involving the transfer of this chemical should be grounded and bonded. Where possible, automatically pump liquid from drums or other storage containers to process containers. Drums must be equipped with self-closing valves, pressure vacuum bungs, and flame arresters. Use only nonsparking tools and equipment, especially when opening and closing containers of this chemical. Sources of ignition, such as smoking and open flames, are prohibited where this chemical is used, handled, or stored in a manner that could create a potential fire or explosion hazard.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 10 ppm (55 mg/m³)

>> TWA 10 ppm (55 mg/m³)

>> none See Appendix G

>> 2.0 [ppm]

>> 2 ppm as TWA; A4 (not classifiable as a human carcinogen); (SEN).

TLV-TWA (Time Weighted Average)

>> 2 ppm [1996]

EU-OEL

>> 11 mg/m

MAK (Maximale Arbeitsplatz Konzentration)

>> 11 mg/m

>> ERPG-1: 0.05 ppm - one hour exposure limit: 1 = mild transient health effects or objectionable odor [AIHA]

>> ERPG-2: 25 ppm - one hour exposure limit: 2 = impaired ability to take protective action [AIHA]

>> ERPG-3: 250 ppm - one hour exposure limit: 3 = life threatening health effects [AIHA]

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:

>> The substance is irritating to the eyes, skin and respiratory tract. If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

Effects of Long Term Exposure:

>> Repeated or prolonged contact may cause skin sensitization.

Fire Prevention

>> NO open flames, NO sparks and NO smoking. NO contact with strong oxidizing agents. Above 36 °C use a closed system, ventilation and explosion-proof electrical equipment. NO contact with strong oxidizing agents.

Exposure Prevention

>> PREVENT GENERATION OF MISTS! AVOID ALL CONTACT!

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection.

Skin Prevention

>> Protective gloves. Protective clothing.

Eye Prevention

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

Ingestion Prevention

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

Exposure Control and Personal Protection

Maximum Allowable Concentration (MAK)

>> 2.0 [ppm]

9. Physical And Chemical Properties

Molecular Weight:

>> 128.17

Exact Mass:

>> 128.083729621

Physical Description:

>> Butyl acrylate appears as a clear colorless liquid with a sharp characteristic odor. Very slightly soluble in water and somewhat less dense than water. Hence forms surface slick on water. Flash point 105 °F. Density 7.5 lb / gal. Used for making paints, coatings, caulks, sealants, adhesives.

>> COLOURLESS LIQUID WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Colorless liquid

Odor:

>> Sharp, fragrant

Boiling Point:

>> 295 to 298 °F at 760 mmHg (NTP, 1992)

>> 145-149 °C

Melting Point:

>> -84.3 °F (NTP, 1992)

>> -64 °C

Flash Point:

>> 120 °F (NTP, 1992)

>> 36 °C c.c.

Solubility:

>> less than 1 mg/mL at 68 °F (NTP, 1992)

>> Solubility in water, g/100ml: 0.14

Density:

>> 0.899 at 68 °F (USCG, 1999) - Less dense than water; will float

>> Relative density (water = 1): 0.90

Vapor Density:

>> 4.42 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 4.42

Vapor Pressure:

>> 10 mmHg at 95.9 °F ; 4 mmHg at 68 °F (NTP, 1992)

>> Vapor pressure, kPa at 20 °C: 0.43

LogP:

>> log Kow = 2.36

>> 2.38

Autoignition Temperature:

>> 534 °F (USCG, 1999)

>> 267 °C

Decomposition:

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

Heat of Combustion:

>> 974.46 kcal/mol

Heat of Vaporization:

>> 8.11 kcal/mol

Polymerization:

Polymerization is a process of reacting monomer molecules together in a chemical reaction to form polymer chains or three-dimensional networks.

>> Hazardous polymerization may occur. Polymerization may be caused by elevated temperature, oxidizers, peroxides, or sunlight. ... Uninhibited monomer vapor may form polymer in vents and other confined spaces.

Odor Threshold:

>> Odor Threshold Low: 0.00096 [mmHg]

>> Odor Threshold High: 0.1 [mmHg]

>> Odor threshold from AIHA

Refractive Index:

>> Index of refraction: 1.4185 at 20 °C/D

10. Stability And Reactivity

>> Flammable. Very slightly soluble in water.

>> Highly Flammable

>> Polymerizable

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).

>> Evaluation: No epidemiological data relevant to the carcinogenicity of n-butyl acrylate were available. There is inadequate evidence in experimental animals for the carcinogenicity of n-butyl acrylate. Overall Evaluation: n-Butyl acrylate is not classifiable as to its carcinogenicity to humans (Group 3).

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

>> n-Butyl acrylate

IARC Carcinogenic Classes

>> Group 3: Not classifiable as to its carcinogenicity to humans

IARC Monographs

>> Volume 39: (1986) Some Chemicals Used in Plastics and Elastomers

>> Volume Sup 7: Overall Evaluations of Carcinogenicity: An Updating of IARC Monographs Volumes 1 to 42, 1987; 440 pages; ISBN 92-832-1411-0 (out of print)

>> Volume 71: (1999) Re-evaluation of Some Organic Chemicals, Hydrazine and Hydrogen Peroxide (Part 1, Part 2, Part 3)

Exposure Routes:

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

>> inhalation, skin absorption, ingestion, skin and/or eye contact

Inhalation Exposure

>> Burning sensation. Cough. Shortness of breath. Sore throat.

Skin Exposure

>> Redness. Pain.

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> Abdominal pain. Nausea. Vomiting. Diarrhoea.

>> irritation eyes, skin, upper respiratory system; sensitization dermatitis; dyspnea (breathing difficulty)

Target Organs:

Organs that are affected by exposure to this chemical. Information in this section reflects human data unless otherwise noted.

>> Eyes, skin, respiratory system

Adverse Effects:

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

>> Lacrimator (Lachrymator) - A substance that irritates the eyes and induces the flow of tears.

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

>> Toxic Pneumonitis - Inflammation of the lungs induced by inhalation of metal fumes or toxic gases and vapors.

>> ACGIH Carcinogen - Not Classifiable.

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 as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on 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. /Esters and related compounds/

Human Toxicity Excerpts:

>> /HUMAN EXPOSURE STUDIES/ Human skin sensitization to n-butyl acrylate was reported. Patch test concentration ranged from 0.1 to 0.5%. 6 out of 124 patients were positive, but also /it was noted/ that those results should be interpreted with caution, due to clinical history of the patients and purity of the different tested acrylates ... Another /study/ described ... a data collection of 82 patients between 1987 and 1992 suspected of occupational acrylic sensitization, showed in the patch test with 1% in petrolatum 2 patients to be sensitized to n-butyl acrylate.

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ n-Butyl acrylate was applied to the skin of rabbits (strain unknown) with an occlusive covering for one minute, 5 minutes, 15 minutes and 20 hours. After 24 hours, moderate to strong erythema and edema were observed in all exposure groups. The 20-hour exposure also caused weak necrosis. The effects were reversible and much weaker 8 days after exposure.

Non-Human Toxicity Values:

>> LD50 Rat oral 3,730 mg/kg

12. Ecological Information

ICSC Environmental Data:

>> The substance is toxic to aquatic organisms.

13. Disposal Considerations

Spillage Disposal

>> Personal protection: chemical protection suit and filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Remove all ignition sources. Collect leaking and spilled liquid in covered containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

Disposal Methods

>> SRP: The most favorable course of action is to use an alternative chemical product with less inherent propensity for occupational harm/injury/toxicity or environmental contamination. 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 soil or water; effects on animal and plant life; and conformance with environmental and public health regulations.

>> Disposal method suggested: Incineration /SRP: with emissions Controls/

>> The following wastewater treatment technologies have been investigated for butyl acrylate: Activated carbon.

14. Transport Information

DOT

Butyl acrylate
3
UN Pack Group: III

IATA

Butyl acrylate
3,
UN Pack Group: III

15. Regulatory Information

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: 2-Propenoic acid, butyl ester

REACH Registered Substance

>> Status: Active Update: 28-03-2023 https://echa.europa.eu/registration-dossier/-/registered-dossier/15779

New Zealand EPA Inventory of Chemical Status

>> 2-Propenoic acid, butyl ester: HSNO Approval: HSR001100 Approved with controls

16. Other Information

Toxic Combustion Products:

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

>> Poisonous gases are produced in fire.

Other Safety Information

Chemical Assessment

>> IMAP assessments - 2-Propenoic acid, butyl ester: Human health tier II 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."