ionz

SAFETY DATA SHEET

Updated on 26/09/2024

1. Material Identification

Product Name : Butyl acetate
Catalog Number : io-1874
CAS Number : 123-86-4
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)

Note

>> Pictograms displayed are for > 99.9% (4338 of 4339) of reports that indicate hazard statements. This chemical does not meet GHS hazard criteria for < 0.1% (1 of 4339) of reports.

Pictogram(s)

>> Warning

GHS Hazard Statements

>> H226 (99.4%): Flammable liquid and vapor [Warning Flammable liquids]

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

Precautionary Statement Codes

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

NFPA 704 Diamond

NFPA Health Rating

>> 2 - Materials that, under emergency conditions, can cause temporary incapacitation or residual injury.

NFPA Fire Rating

>> 3 - Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions.

NFPA Instability Rating

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

Health Hazards:

>> SKIN: prolonged or frequently repeated exposures may lead to drying. INHALATION: headaches, dizziness, nausea, irritation of respiratory passages and eyes. (USCG, 1999)

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

>> 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 22 °C explosive vapour/air mixtures may be formed.

3. Composition/Information On Ingredients

Chemical name : Butyl acetate
CAS Number : 123-86-4
Molecular Formula : C6H12O2
Molecular Weight : 116.1600 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.

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. Refer for medical attention .

5. Fire Fighting Measures

>> Hazardous decomposition products formed under fire conditions: Carbon oxides.

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

>> 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 AFFF, alcohol-resistant foam, dry powder, 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)]:

>> 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: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable metal or glass 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. Separated from strong oxidants, strong bases and strong acids. Cool.

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.

8. Exposure Control/ Personal Protection

REL-TWA (Time Weighted Average)

>> 150 ppm (710 mg/m³)

REL-STEL (Short Term Exposure Limit)

>> 200 ppm (950 mg/m³)

>> TWA 150 ppm (710 mg/m3) ST 200 ppm (950 mg/m3)

>> 150.0 [ppm]

PEL-TWA (8-Hour Time Weighted Average)

>> 150 ppm (710 mg/m³)

>> 50.0 [ppm]

TLV-STEL

>> 150.0 [ppm]

>> 50 ppm as TWA; 150 ppm as STEL.

TLV-TWA (Time Weighted Average)

>> 50 ppm [2015]

TLV-STEL (Short Term Exposure Limit)

>> 150 ppm [2015]

EU-OEL

>> 241 mg/m

MAK (Maximale Arbeitsplatz Konzentration)

>> 480 mg/m

>> ERPG-1: 5 ppm - one hour exposure limit: 1 = mild transient health effects or objectionable odor [AIHA]

>> ERPG-2: 200 ppm - one hour exposure limit: 2 = impaired ability to take protective action [AIHA]

>> ERPG-3: 3,000 ppm - one hour exposure limit: 3 = life threatening health effects [AIHA]

Inhalation Risk:

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

Effects of Short Term Exposure:

>> The substance is irritating to the eyes and respiratory tract. The substance may cause effects on the central nervous system. Exposure far above the OEL could cause lowering of consciousness.

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. Above 22 °C use a closed system, ventilation and explosion-proof electrical equipment.

Inhalation Prevention

>> Use ventilation, local exhaust or breathing protection.

Skin Prevention

>> Protective gloves.

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)

>> 100.0 [ppm]

9. Physical And Chemical Properties

Molecular Weight:

>> 116.16

Exact Mass:

>> 116.083729621

Physical Description:

>> Butyl acetate appears as a clear colorless liquid with a fruity odor. Flash point 72 - 88 °F. Density 7.4 lb / gal (less than water). Hence floats on water. Vapors heavier than air.

>> COLOURLESS LIQUID WITH CHARACTERISTIC ODOUR.

Color/Form:

>> Colorless liquid

Odor:

>> Strong fruity odor

Taste:

The sensation of flavor perceived in the mouth and throat on contact with a substance.

>> Burning and then sweet taste reminiscent of pineapple

Boiling Point:

>> 259.7 °F at 760 mmHg (NTP, 1992)

>> 126 °C

Melting Point:

>> -108.2 °F (NTP, 1992)

>> -78 °C

Flash Point:

>> 72 °F (NTP, 1992)

>> 22 °C c.c.

Solubility:

>> 1 to 5 mg/mL at 68 °F (NTP, 1992)

>> Solubility in water, g/100ml at 20 °C: 0.7

Density:

>> 0.875 at 68 °F (USCG, 1999) - Less dense than water; will float

>> Relative density (water = 1): 0.88

Vapor Density:

>> 4 (NTP, 1992) - Heavier than air; will sink (Relative to Air)

>> Relative vapor density (air = 1): 4.0

Vapor Pressure:

>> 10 mmHg at 68 °F (NTP, 1992)

>> Vapor pressure, kPa at 20 °C: 1.2

LogP:

>> log Kow = 1.78

>> 1.82

Stability/Shelf Life:

>> Stable under recommended storage conditions.

Autoignition Temperature:

>> 760 °F (USCG, 1999)

>> 420 °C

Decomposition:

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

Viscosity:

>> 1.002 mPa.s at 0 °C; 0.685 mPa s at 25 °C; 0.500 mPa.s at 50 °C; 0.383 mPa.s at 75 °C; 0.305 mPa.s at 100 °C

Heat of Combustion:

>> -13.130 Btu/Lb = -7294 cal/g = -305.4X10+5 J/kg

Heat of Vaporization:

>> 36.28 kJ/mol at BP; 43.86 kJ/mol at 25 °C

Surface Tension:

>> 14.5 dynes/cm = 0.0145 newtons/m at 25 °C

Ionization Potential:

>> 10.00 eV

Odor Threshold:

>> Odor Threshold Low: 0.06 [mmHg]

>> Odor Threshold High: 7.4 [mmHg]

>> Detection odor threshold from AIHA (mean = 0.31 ppm)

Refractive Index:

>> Index of Refraction: 1.3941 at 20 °C/D

Relative Evaporation Rate:

The rate at which a material will vaporize (evaporate, change from liquid to vapor), compared to the rate of vaporization of a specific known material.

>> 1.0 (Butyl acetate = 1)

10. Stability And Reactivity

>> Highly flammable. Very slightly soluble in water.

>> Highly Flammable

11. Toxicological Information

Toxicity Summary:

>> IDENTIFICATION AND USE: n-Butyl acetate is a colorless liquid. It is used in manufacture of lacquer, artificial leather, photographic films, plastics, and safety glass. It is also used as an organic solvent and synthetic flavoring ingredient. HUMAN STUDIES: Male and female volunteers were exposed to different concentrations of n-butyl acetate vapor for 2 to 5 minutes. With exposure at 200 ppm for 3 to 5 minutes, the majority of the subjects complained of throat irritation; at 300 ppm for 3 to 5 minutes, the majority reported eye and nose irritation and severe throat irritation. In cases of severe overexposure, weakness, drowsiness, and unconsciousness have been seen. Chronic exposure to n-butyl acetate in humans has been associated with mild skin irritation. Repeated contact of the skin with the liquid may lead to defatting and cracking. Workers exposed chronically to n-butyl acetate have reported conjunctival irritation, feeling of chest constriction, and coughing. However, permanent lesions of the eyes and respiratory tract and other systemic effects have been reported in an occupational setting only when n-butyl acetate is present in a mixture with other solvents, and these effects appear to be due to the other solvents. ANIMAL STUDIES: n-Butyl acetate showed no sensitization potential when tested in a maximization test using guinea-pigs. Following 24 hr application of 0.01 mL of the neat material to the clipped skin of five albino rabbits, n-butyl acetate was slightly irritating. Guinea pigs exposed for 1 to 810 minutes at vapor concentration of 0.33, 0.7, or 1.4% by volume of n-butyl acetate were examined. At 0.33%,

only eye irritation occurred. Irritation of the nose and eyes, lacrimation, incoordination, CNS depression, and respiratory disturbances were noted at the two higher concentration. Deaths were recorded only at the 1.4% concentration after 4 hours and occurred during exposure; slight to moderate congestion of the brain, lungs, and kidneys were noted. In mice, minimally effective concentrations for activity-decreasing effects were 2000 ppm for ethyl acetate and 8000 ppm for n-butyl acetate. The mutagenicity of n-butyl acetate in Salmonella typhimurium (TA98, TA100, TA1535, TA1537, and TA1538) and Escherichia coli (WP2uvrA) was examined. The mutation test was performed in the absence and presence of rat microsomal activation. No mutagenic activity was observed with n-butyl acetate.

Exposure Routes:

>> The substance can be absorbed into the body by inhalation of its vapour.

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

Inhalation Exposure

>> Cough. Sore throat. Dizziness. Headache.

Skin Exposure

>> Dry skin.

Eye Exposure

>> Redness. Pain.

Ingestion Exposure

>> Nausea.

>> irritation eyes, skin, upper respiratory system; headache, drowsiness, narcosis

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, central nervous system

Adverse Effects:

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

>> Neurotoxin - Acute solvent syndrome

>> 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.

Toxicity Data:

>> LC50 (rat) = 390 ppm/4H

Interactions:

>> The effects of combined exposure to n-butyl alcohol and n-butyl acetate on rotarod performance and hot plate behavior in rats and respiratory rate in mice were investigated in the condition of an acute inhalation experiment. Rotarod performance and hot-plate behavior were tested in rats exposed to various concentrations of n-butyl alcohol, n-butyl acetate and their mixture consisting of 50 vol-% n-butyl alcohol and 50 vol-% n-butyl acetate immediately after termination of a 4 hr exposure period. The respiratory rate in mice was recorded continuously before the exposure to solvents, during 6 min of exposure and 6 min after termination of exposure using whole body plethysmographic method. Mice were exposed to vapors of single solvents and their 50:50 vol-% mixture. Both solvents and their mixture caused concentration-dependent disturbances of rotarod performance in rat. The medial effective concentration (EC50) for the effect amounted to 7559 ppm, 8339 ppm, and 10,672 ppm for n-butyl alcohol, n-butyl acetate and their mixture, respectively. Both solvents and their mixture decreased sensitivity to the pain and changes were concentration -dependent. In condition of combined exposure the results obtained in rotarod and hot-plate behavior test indicate the summation of individual solvent effects. The tested solvents resulted in concentration-dependent decrease in respiratory rate in mice. n-Butyl alcohol produced maximal decrease in respiratory rate in the first minute of exposure whereas n-butyl acetate in the sixth minute.

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/ No evidence of irritation or sensitization was reported in unpublished studies involving repeated insult patch tests with n-butyl acetate (4% in petrolatum) or as a nail enamel containing 25.5% n-butyl acetate on the skin of groups of (10-55) volunteers. ...

Non-Human Toxicity Excerpts:

>> /LABORATORY ANIMALS: Acute Exposure/ Slight irritation was observed when 0.1 mL of n-butyl acetate (99% purity) was instilled into the conjunctival sac of four rabbits for 24 hr. A maximum Draize score of 7.5 (out of a possible total of 110) was recorded; scores at 48 hr, 72 hr, and 7 days were 2.0, 2.0, and 0.5, respectively. In a similar study, iritis and minor to moderate conjunctivitis (both of which had healed within 48 hr), but no corneal damage, were observed when 0.1 mL was instilled into the eyes of six rabbits. A maximum Draize score of 14.7/110 (occurring at 4 hr) was recorded. ...

Non-Human Toxicity Values:

>> LD50 Rabbit dermal >14,112 mg/kg bw

12. Ecological Information

ICSC Environmental Data:

>> The substance is harmful to aquatic organisms.

Fish/Seafood Concentrations:

Concentrations of this compound in fish or seafood.

>> n-Butyl acetate was found in Charybdis feriatus crabs at 0.9, 0.8 and 1.5 ug/kg in the leg, body and carapace, respectively(1).

13. Disposal Considerations

Spillage Disposal

>> Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Ventilation. Remove all ignition sources. Collect leaking and spilled liquid in sealable metal or glass 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: 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.

>> 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.

>> 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

Butyl acetate
3
UN Pack Group: II
Reportable Quantity of 5000 lb or 2270 kg

IATA

Butyl acetate
3,
UN Pack Group: II

15. Regulatory Information

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.

>> Butyl acetate is designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance. This designation includes any isomers and hydrates, as well as any solutions and mixtures containing this substance.

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.

>> A testing consent order is in effect for n-butyl acetate for health effects testing. FR citation: 1/23/95.

Regulatory Information

The Australian Inventory of Industrial Chemicals

>> Chemical: Acetic acid, butyl ester

REACH Registered Substance

>> Status: Active Update: 15-05-2023 https://echa.europa.eu/registration-dossier/-/registered-dossier/15948

>> Status: Active Update: 05-02-2019 https://echa.europa.eu/registration-dossier/-/registered-dossier/27693

>> Status: No longer Valid Update: 11-01-2016 https://echa.europa.eu/registration-dossier/-/registered-dossier/6316

New Zealand EPA Inventory of Chemical Status

>> Acetic acid, butyl ester: HSNO Approval: HSR001091 Approved with controls

16. Other Information

Toxic Combustion Products:

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

>> Toxic vapors and gases (such as carbon monoxide) may be released in a fire involving butyl acetate.

Other Safety Information

Chemical Assessment

>> IMAP assessments - Acetate esters (C2-C4): Human health tier II assessment

>> IMAP assessments - Acetic acid, butyl ester: Environment 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."