Safety Data Sheet iso-BUTYL ALCOHOL

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SECTION 1: Identification

GHS Product identifier

Product name	iso-BUTYL ALCOHOL

Other means of identification

Product	Product Code
2-methylpropan-1-ol AR	BA011
2-methylpropan-1-ol LR	BL011
2-methylpropan-1-ol TG	BT011

Recommended use of the chemical and restrictions on use

Organic synthesis, latent solvent in paints and lacquers, paint remover, intermediate for amino coating resins, fluorometric determinations, liquid chromatography, fruit flavour concentrates, substitute for n-butanol and laboratory reagent.

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com.au

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Serious eye damage/eye irritation, Cat. 1
- Flammable liquids, Cat. 3
- Skin corrosion/irritation, Cat. 2
- Specific target organ toxicity following single exposure, Cat. 3

GHS label elements, including precautionary statements

Pictograms

Signal word	**Danger**

Hazard statement(s)

H226	Flammable liquid and vapor
H315	Causes skin irritation
H318	Causes serious eye damage
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER/doctor/physcian if you feel unwell.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use agents recommended in Section 5 of SDS for extinction
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight	74.12

Component	Identification	Weight %
Isobutyl alcohol	CAS no.: 78-83-1 EC no.: 201-148-0 Index no.: 603-108-00-1	100 % (volume)

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain in work area.

If inhaled	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.
In case of skin contact	Rinse with plenty of water. Get medical attention if irritation develops and persists.
In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Do not attempt to remove contact lenses unless trained. Seek immediate medical assistance.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.

Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary
For advice, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Small fire: Use alcohol resistant foam, dry chemical, CO2 or water spray.
Large fire: Use alcohol resistant foam, fog or water spray - Do not use water jets.
If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after the fire is out. Avoid getting water inside containers. Alcohol resistant foam is preferred firefighting medium, but if not avaliable, normal foam can be used.

Specific hazards arising from the chemical
Hazards from Combustion Products: Carbon monoxide, carbon dioxide and isobutylene.

May be ignited by heat, sparks or flame. Vapours may form explosive mixtures with air. Vapours may travel to source of ignition and flash back. Vapours are heavier than air and will collect in low or confined areas (drains, basements, tanks). Liquids is lighter than water. Containers may explode when heated. Vapours from runoff may create explosion hazard. Fire will produce irritating, poisonous and/or corrosive gases.

Special protective actions for fire-fighters
Wear SCBA and fully-encapsulating, gas-tight suit when handling these substances. Structural firefighter's uniform is NOT effective for these materials.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.

Wear protective clothing specified for normal operations (see Section 8)

Methods and materials for containment and cleaning up
ELIMINATE all ignition sources (no smoking, flares, sparks or flames) within at least 25m - All equipment used when handling the product must be earthed. Do not touch or walk through spilled material. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas. Vapour-suppressing foam may be used to control vapours - Water spray may be used to knock down or divert vapour clouds. Absorb with earth, sand or other non-combustible material. Use clean, non-sparking tools to collect absorbed material and place it into loosely-covered metal or plastic containers for later disposal.
SEEK EXPERT ADVICE ON HANDLING AND DISPOSAL.

SECTION 7: Handling and storage

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion-proof equipment. Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge. For precautions see section 2.2.

Conditions for safe storage, including any incompatibilities
Store away from oxidizing agents. Keep container tightly closed in a dry, well-ventilated place away from direct sunlight and other sources of heat or ignition. Store away from acids. Store away from bases.

Unsuitable Materials: Aluminium; some forms of plastics, rubber and coatings.

SECTION 8: Exposure controls/personal protection

Control parameters

CAS: 78-83-1
Isobutyl alcohol
AU/SWA (Australia): 50 ppm; 152 mg/m3 TWA inhalation

Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection
The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection
Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Body protection
Footwear: Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection: Clean clothing or protective clothing should be worn, preferably with and apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Respiratory protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/ NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Liquid
Appearance	
Color	Clear, colourless

Odor	Disagreeable, sweet, musty odour.
Odor threshold	0.66-40 ppm (detection); 1.8-53 ppm (recognition); 100 ppm (300 mg/m^3) (irritation).
Melting point/freezing point	-106 °C
Boiling point or initial boiling point and boiling range	106 - 108 °C
Flammability	Flammable
Lower and upper explosion limit/ flammability limit	Flammable Limits - Lower: 1.5 %vol. [1K] Flammable Limits - Upper: 12 %vol.
Flash point	28 °C - closed cup
Explosive properties	Vapours can form explosive mixtures with air.
Auto-ignition temperature	430 °C
Decomposition temperature	n/d
pH	pH 7 (8% solution)
Kinematic viscosity	Dynamic Viscosity: 4.7 cP (4.7 mPa.s) at 15 °C; 4.0 cP (4.0 mPa.s) at 20 °C.
Solubility	Solubility in Water: Soluble [13] Solubility in Organic Solvents: Soluble in alcohol and ether.
Partition coefficient n-octanol/ water (log value)	Log P(oct) = 0.65; Log P(oct) = 0.83.
Vapor pressure	10 mm Hg @ 22 °C
Evaporation rate	0.8 (BuAc=1)
Density and/or relative density	Specific Gravity: 0.803
Relative vapor density	2.55
Particle characteristics	n/a

Further safety characteristics (supplemental)
Saturated Vapour Concentration: 11580 ppm at 20 °C; 13160 ppm at 25 °C (calc.)

Other Information: Conversion factor: 1 ppm = 3.03 mg/m3; 1 mg/m3 = 0.331 ppm @ 25 °C
Dipole moment: 1.79 Debye @ 20 °C
Dielectric constant: 17.7 @ 20 °C
Heat of evaporation: 577 kJ/kg @ 108 °C
Refractive index: 1.3955 @ 20 °C

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Risk of ignition. Vapours may form explosive mixtures with air

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions
Contact with oxidizing agents increases risk of fire and explosion. Butanols are ignited by chromium trioxide, due to vigorous oxidation of the alcohol. Mixtures or reactions of alcohols with the following materials may cause explosions: barium perchlorate, chlorine, ethylene oxide, hexamethylene diisocyanate and other isocyanates, hydrogen peroxide and sulfuric acid, hypochlorous acid, nitrogen tetroxide, hot perchloric acid, permonosulfuric acid and tri-isobutyl aluminium. Isobutyl alcohol will attack some forms of plastics, rubber and coatings.

Conditions to avoid
Static discharge, sparks, heat, open flames, ignition sources and incompatibles.

Incompatible materials
Strong oxidizing agents (e.g. peroxides, perchlorates, nitrates), chromium trioxide, barium perchlorate, chlorine, ethylene oxide, hexamethylene diisocyanate and other isocyanates, hydrogen peroxide and sulfuric acid, hypochlorous acid, nitrogen tetroxide, hot perchloric acid, permonosulfuric acid and tri-isobutyl aluminium, inorganic acids, aldehydes, alkali metals, alkaline earth metals, strong acids, strong alkalis and aluminium.

Hazardous decomposition products
Burning may produce carbon monoxide, carbon dioxide and isobutylene.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Acute Toxicity - Oral: LD50 (rat): 3350 mg/kg.
Acute Toxicity - Inhalation: LD50 (rat): 24.6 mg/l/4h.

Ingestion: Ingestion may cause nausea, vomiting, and diarrhea. After absorption: CNS depression effects such as stomach and chest pain, headache, weakness, drowsiness, dizziness, inebriation, drop in blood pressure, cardiovascular disorders, depressed respiration, narcosis. Large doses may cause central nervous system damage, pulmonary edema, liver and kidney damage, collapse, coma and death. Aspiration (inhalation of fluid) of a small amount of undiluted alcohol may result in sudden respiratory failure and cardiac arrest, based on animal studies of various alcohols.

Inhalation: May cause irritation of the nose, throat and respiratory tract, headache, dizziness, drowsiness, muscle weakness, coughing, chest discomfort, incoordination, confusion, and coma. High concentrations can cause central nervous system damage and depression leading to loss of coordination, inebriation, impaired judgement, depressed respiration, narcosis and on prolonged exposure, unconsciousness; drop in blood pressure, cardiovascular disorders, pulmonary edema, and liver and kidney damage. Death may occur from respiratory failure.

Skin corrosion/irritation
Acute Toxicity - Dermal: LD50 (rat): 2460 mg/kg.

Causes skin irritation. May cause redness, pain and swelling. May be absorbed through the skin; symptoms of absorption may be similar to those from ingestion exposure.

Serious eye damage/irritation
Causes serious eye damage. Vapour cause irritation, redness, and blurred vision. Splashes and direct eye contact with the liquid may cause moderate to severe irritation or eye damage.
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Respiratory or skin sensitization
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

Specific target organ toxicity (STOT) - single exposure
Specific target organ toxicity - Single Exposure Category 3, Respiratory system, central nervous system.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Specific target organ toxicity (STOT) - repeated exposure
Not classified based on available information.

Aspiration hazard
Not classified based on available information.

Additional information
Chronic Effects: Repeated or prolonged contact may cause reddening, drying and cracking of the skin (dermatitis). Excessive and repeated or prolonged exposure by inhalation may cause symptoms of central nervous system depression (nausea, dizziness, vomiting) and one case of marked ringing in the ears has been reported.

SECTION 12: Ecological information

Persistence and degradability
Biodegradation: 99 %/14d modified OECD screening test. Readily biodegradable.
BOD 64 % from TOD/5 d;
COD 100% from TOD; TOD: 2.60 g/g.

Bioaccumulative potential
No bioaccumulation is to be expected (log P(o/w <1).

Mobility in soil
Distribution: log P(o/w): 0.65.

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Sewage disposal
No bioaccumulation is to be expected (log P(o/w <1).

Other disposal recommendations
Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)
UN Number: 1212
Class: 3
Packing Group: III
Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

Hazchem emergency action code (EAC)

3[Y]

IMDG
UN Number: 1212
Class: 3
Packing Group: III
EMS Number:
Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

IATA
UN Number: 1212
Class: 3
Packing Group: III
Proper Shipping Name: ISOBUTANOL (ISOBUTYL ALCOHOL)

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP
Poison Schedule: NS

SECTION 16: Other information

Further information/disclaimer
ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'
Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.
Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.
Safe Work Australia, Workplace Exposure Standards for Airbourne Contaminants, December 2019
Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au
IATA, Dangerous Goods Regulations (DGR)
IMO, International Maritime Dangerous Goods Code (IMDG)