

## MATERIAL SAFETY DATA SHEET

Version Number:- 02

PRODUCT NAME: 2-BUTANOL

CAS Number: 78-92-2

**1. IDENTIFICATION:**

**Product Code** : 96019,94083

**Company Name** : ADVENT CHEMBIO PRIVATE LIMITED

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**2. HAZARDS IDENTIFICATION:****Hazard classification****Physical hazards**

**Flammable liquids** : Category 3

**Health hazards**

**Eye irritation** : Category 2

**Specific target organ toxicity - single exposure,** : Category 3

**Central nervous system**

**Specific target organ toxicity - single exposure,** : Category 3

**Respiratory system**

**Labels elements** :

**Hazard symbol** :  

**Signal word** : Warning

**Hazard statement** : Flammable liquid and vapor.  
: Causes serious eye irritation.  
: May cause respiratory irritation.  
: May cause drowsiness or dizziness.

**Precautionary statement**

**Prevention** : Obtain special instructions before use.  
Do not breathe dust/ fume/ gas/ mist/ vapors/ spray. Do not handle until all safety precautions have been read and understood.  
Wear protective gloves/ protective clothing/ eye protection/ face protection.  
Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.  
Keep container tightly closed. Ground/ bond container and receiving equipment.  
Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
Use only non-sparking tools. Take precautionary measures against static discharge.



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- Response** : IF exposed or concerned: Get medical advice/ attention.  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
IF SWALLOWED: Immediately call a poison center or doctor/physician.
- Storage** : Store in a dry & well-ventilated place. Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Disposal** : Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
- Other hazards which do not result in GHS classification** : Static accumulating flammable liquid can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion.

**3. COMPOSITION/ INFORMATION ON INGREDIENTS:**

Ingredient	CAS Number	Percent	Hazardous
2-Butanol	78-92-2	NLT 99.5%	Yes

**4. FIRST AID MEASURES:**

- General information** : Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
- Ingestion** : Call a physician or poison control center immediately. Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Move to fresh air. Call a physician or poison control center immediately. If breathing stops, provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms persist.
- Inhalation** : provide artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms persist.
- Skin contact** : Immediately flush with plenty of water for at least 15 minutes. Get medical attention.
- Eye contact** : Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention.
- Most important symptoms/effects, acute and delayed** : The most important known symptoms and effects are described in the labelling.
- Indication of immediate medical attention and special treatment needed** : No data available.

**5. FIRE FIGHTING MEASURES:**

- General information** : No data available.

**Suitable (and unsuitable) extinguishing media**

- Suitable extinguishing media** : Water Foam Carbon dioxide (CO2) Dry powder.



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<b>Unsuitable extinguishing media</b>	:	For this substance/mixture no limitations of extinguishing agents are given.
<b>Specific hazards arising from the chemical</b>	:	Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Vapor from the solvent may accumulate in container headspace resulting in flammability hazard. Heat may cause the containers to explode.
<b>Special protective equipment and precautions for firefighters</b>		
<b>Special firefighting procedures</b>	:	Carbon oxides Sulphur oxides Hydrogen chloride gas Combustible. Development of hazardous combustion gases or vapours possible in the event of fire.
<b>Special protective equipment for fire-fighters</b>	:	Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

**6. ACCIDENTAL RELEASE MEASURES:**

<b>Personal precautions, protective equipment and emergency procedures</b>	:	Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
<b>Methods and material for containment and cleaning up</b>	:	Eliminate all ignition sources if safe to do so. Use only non-sparking tools. Take precautionary measures against static discharges. Stop leak if possible without any risk. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.
<b>Notification Procedures</b>	:	Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

**7. HANDLING AND STORAGE:**

<b>Precautions for safe handling</b>	:	Do not handle until all safety precautions have been read and understood. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting/equipment. Use only non-sparking tools. Wear protective gloves/protective clothing/eye protection/ face protection. Avoid contact with eyes, skin, and clothing. Do not breathe mist or vapor. Use only with adequate ventilation. Wash hands thoroughly after handling.
<b>Conditions for safe storage, including any incompatibilities</b>	:	Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a dry, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks.

**8. EXPOSURE CONTROLS PERSONAL PROTECTION:**

<b>Appropriate engineering controls</b>	:	No data available
<b>Individual protection measures, such as personal protective equipment</b>		
<b>General information</b>	:	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an

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acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.

**Eye/face protection** : Wear safety glasses with side shields (or goggles).

**Hand protection** : Chemical resistant gloves.

**Other** : Wear suitable protective clothing.

**Respiratory protection** : In case of inadequate ventilation use suitable respirator. Chemical respirator with organic vapor cartridge.

**Hygiene measures** : Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower. Avoid contact with eyes, skin, and clothing.

**9. PHYSICAL AND CHEMICAL PROPERTIES:**

**Appearance** : Clear colourless liquid.

**Odor** : Alcohol-like

**Solubility** : No data available.

**Formula** : C<sub>4</sub>H<sub>10</sub>O

**Molecular Weight** : 74.12 g/mol

**Density** : 0.808 g/cm<sup>3</sup> at 25 °C - lit.

**pH** : No data available.

**% Volatiles by volume @ 21C (70F)** : No data available.

**Boiling Point** : 98 °C - lit.

**Melting Point** : -115 °C - lit.

**Flash Point** : 27 °C - closed cup

**Vapor Density (Air=1)** : No data available.

**Vapor Pressure (mm Hg)** : 15.3 hPa at 20 °C

**Evaporation Rate (BuAc=1)** : No data available.

**10. STABILITY AND REACTIVITY:**

**Reactivity** : Vapour/air-mixtures are explosive at intense warming.

**Chemical stability** : Material is stable under ambient conditions.

**Possibility of hazardous reactions** : Exothermic reaction with: Alkali metals Alkaline earth metals Strong oxidizing agents strong reducing agents Aluminum acid halides chromium(VI) oxide.

**Conditions to avoid** : Heating.

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**Incompatible materials** : Aluminum, rubber, various plastics, Strong oxidizing agents.

**Hazardous decomposition products** : In the event of fire: see section 5

**11. TOXICOLOGICAL INFORMATION:****Information on toxicological effects****Acute toxicity (list all possible routes of exposure)**

**Oral Product** : LD50 Oral - Rat - male and female - 2.193 mg/kg  
(OECD Test Guideline 423)

**Dermal Product** : LD50 Dermal - Rat - male and female - > 2.000 mg/kg  
(OECD Test Guideline 402)

**Inhalation Product** : LC50 Inhalation - Rat - 4 h - 48,5 mg/l - vapor  
Remarks: (RTECS)

**Repeated dose toxicity Product** : No data available.

**Skin corrosion/irritation Product** : Skin - Rabbit  
Result: No skin irritation - 4 h  
(OECD Test Guideline 404)

**Serious eye damage/eye irritation Product** : Eyes - Rabbit  
Result: Eye irritation  
(OECD Test Guideline 405)

**Respiratory or skin sensitization Product** : Maximization Test - Guinea pig  
(OECD Test Guideline 406)

**Carcinogenicity Product** : No data available

**IARC Monographs on the Evaluation of Carcinogenic Risks to Humans** : No data available

**US. National Toxicology Program (NTP) Report on Carcinogens** : No data available

**US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)** : No data available.

**Germ cell mutagenicity** : Test Type: Ames test  
Test system: S. typhimurium  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
Test Type: Chromosome aberration test in vitro  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

**Reproductive toxicity Product** : No data available.

**Specific target organ** : No data available.



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**toxicity - single exposure****Product****Specific target organ****toxicity - repeated** : No data available.**exposure Product****Aspiration hazard Product** : No data available.**Other effects**

: No data available.

**12. ECOLOGICAL INFORMATION:****Ecotoxicity****Acute hazards to the aquatic environment****Fish Product**

: static test LC50 - Leuciscus idus melanotus - 3.520 mg/l - 48 h Remarks: (ECHA)

**Aquatic invertebrates****Product**

: static test EC50 - Daphnia magna (Water flea) - 2.300 mg/l - 24 h Remarks: (ECHA)

**Chronic hazards to the aquatic environment****Fish Product**

: No data available.

**Aquatic invertebrates****Product**

: No data available.

**Toxicity to Aquatic Plants****Product:**

: No data available.

**Persistence and degradability****Biodegradation Product**

: No data available.

**BOD/COD ratio Product**

: No data available.

**Bioaccumulative potential****Bioconcentration factor****(BCF) Product**

: No data available on bioaccumulation.

**Partition coefficient n-****octanol / water (log Kow)****Product**

: No data available.

**Mobility in soil**

: No data available.

**Other adverse effects**

: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**13. DISPOSAL CONSIDERATION:****Disposal instructions**

: Discharge, treatment, or disposal may be subject to national, state, or local laws. Disposal recommendations are based on uncontaminated material.

**Contaminated packaging**

: Since emptied containers retain product residue, follow label warnings even after container is emptied.

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14. TRANSPORT INFORMATION:

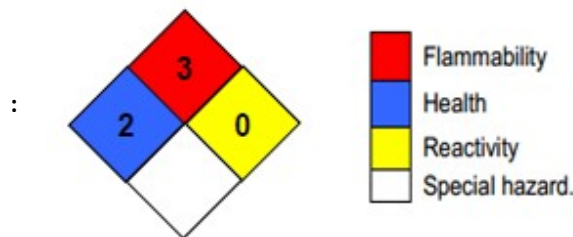
	UN No.	UN proper shipping name	Hazard Class(es)	Packaging group	Environmental hazards
ADR/RID	UN 1120	2-Butanol	3	III	No
IMDG	UN 1120	2-Butanol	3	III	No
IATA	UN 1120	2-Butanol	3	III	No

15. REGULATORY INFORMATION:

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006. Safety, health and environmental regulations/legislation specific for the substance or mixture No Data Available.

16. OTHER INFORMATION:

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

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