

SAFETY DATA SHEET**Product: n-BUTANOL.**

Revision: 04

Date: 10/28/2010

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1- IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND COMPANY/UNDERTAKING

Product name: n-BUTANOL.

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United Kingdom
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e-mail: ces-reachit-contact.reach@intertek.com**2- HAZARDS IDENTIFICATION**

Most important hazards: Flammable liquid and vapour. Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause respiratory irritation. May cause drowsiness or dizziness. Causes damage to the central nervous system and auditory organ through prolonged or repeated exposure.

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Product effects

Adverse effects to the human health: Causes irritation to the skin and eyes. May cause irritation to the respiratory and gastrointestinal tract. May cause central nervous system (CNS) effects. May cause liver damage if ingested. Causes damage to the CNS and auditory organ through chronic exposure.

Environmental effects: It is not expected that the product presents danger to aquatic organisms.

Physical and chemical hazards: Flammable product. Containers may explode when heated.

Classification of the substance or mixture:
Regulation 1272:2008 (GHS):
Flammable liquids – Category 3
Acute toxicity – Oral – Category 4
Skin corrosion/irritation – Category 2
Serious eye damage – Category 2A
Specific target organ toxicity following single exposure – category 3
Specific target organ toxicity following repeated exposure – category 1

Label elements according to Regulation 1272:2008 (GHS)

Symbol:



Signal word:

DANGER

Hazard Statement:

H226: Flammable liquid and vapour.
H302: Harmful if swallowed.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.
H336: May cause drowsiness or dizziness.
H372: Causes damage to central nervous system and auditory organ through prolonged or repeated exposure.

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Precaution Statement:

P210: Keep away from heat/sparks/open flames/hot surfaces. -No smoking.

P233: Keep container tightly closed.

P240: Ground/bond container and receiving equipment.

P241: Use explosion-proof electrical/ventilating/lighting/.../equipment.

P242: Use only non-sparking tools.

P243: Take precautionary measures against static discharge.

P260: Do not breath dust/fume/gas/mist/vapours/spray.

P264: Wash the hands thoroughly after handling.

P270: Do not eat, drink or smoke when using this product.

P271: Use only outdoors or in a well-ventilated area.

P370 + P378: In case of fire: Use foam, carbon dioxide (CO₂), dry chemical or water mist for extinction.

P280: Wear protective gloves/protective clothing/eye protection/ face protection.

P301 + P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P330: Rinse mouth.

P332 + P313: If skin irritation occurs: Get medical advice/attention.

P362: Take off contaminated clothing and wash before reuse.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313: If eye irritation persists: Get medical advice/attention.

P304 + P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

P312: Call a POISON CENTER or doctor/physician if you feel unwell.

P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

P403 + P235: Store in well-ventilated place. Keep cool.

P405: Store locked up.

P501: Dispose of contents/container in accordance to local legislation.

Label elements according to Directive 67/548/EEC

Symbol: F

Risk Phrases: R10: Flammable.

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Safety Phrases:	R22: Harmful if swallowed.
	R36: Irritating to eyes.
	R37: Irritating to respiratory system.
	R38: Irritating to skin.
	R65: Harmful: May cause lung damage if swallowed
	R67: Vapours may cause drowsiness and dizziness.
	S2: Keep out of the reach of children.
S7/9: Keep container tightly closed and in a well-ventilated place.	
S13: Keep away from food, drink and animal feedingstuffs.	
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.	
S37/39 : Wear suitable gloves and eye/face protection.	
S46 : If swallowed, seek medical advice immediately and show this container or label.	

3- COMPOSITION/INFORMATION ON INGREDIENTS

Substance	
Chemical name:	n-butanol.
Synonyms:	N-butyl alcohol, Propilcarbinol, N-butanol, 1 butanol, 1 Hidroxibutano.
CAS n°:	71-36-3
EC n°:	200-751-6
Ingredients or impurities that contribute to the hazard (%m):	This product doesn't have impurities that contribute to the hazard classification.

4- FIRST-AID MEASURES

Inhalation:	Remove the victim to fresh air. Monitor respiratory function. If there is breathing difficulty, provide oxygen. If necessary, give artificial respiration. Seek medical attention. Take this SDS.
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Ingestion: Rinse mouth of victim with plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek medical attention. Take this SDS.

Skin contact: Remove contaminated clothing and shoes. Wash with plenty of soap and water. Seek medical attention. Take this SDS.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention. Take this SDS.

Most important symptoms and effects, both acute and delayed: Headache, dizziness and drowsiness. Redness, pain and dry skin. Ocular pain and redness. Abdominal pain, nausea, vomiting and diarrhea. Cough and dyspnea.

Indication of any immediate medical attention and special treatment needed: Avoid contact with this product while helping the victim; keep the victim warmed. Symptomatic treatment should include, above all, measured of support as correction of hydro electrolytic and metabolic disturbances and respiratory failure.

5- FIREFIGHTING MEASURES

Fire Extinguishing Media: Can be used foam, carbon dioxide (CO₂), dry chemical or water mist.

Special hazards arising from the substance or mixture: Flammable products. Fire may produce irritating and toxic gases. Containers may explode when heated. Vapors may form explosive mixtures with air. Explosion hazard indoors.

Advice for firefighters: Use self-contained breathing apparatus (SCBA) operated in positive pressure mode and complete protective clothing.

6- ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Control of dust: Not applicable (liquid).

Removal of ignition sources: Eliminate all ignition sources. Do not smoke in the area.

Provision of sufficient ventilation: Use in a well ventilated area or with exhaustion system adequate to eliminate vapors and mists.

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Prevention of inhalation and skin, mucous membranes and eyes contact: Do not touch damage containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation, eye and skin contact. Use appropriate personal protective equipment as indicated in – Section 8.

Environmental precautions: Do not let this chemical enter the environment (soil, waterways and groundwater).

Methods and material for containment and cleaning up: Discard any product, waste, container or wrapper available in an appropriate manner as not to harm the environment, according to federal regulations, state and local.

7- HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with skin, eyes and clothing. Avoid breathing the product. Remove ignition sources and heat. Use proper personal protective equipment as indicated in Section 8.

Hygiene advice: Do not eat, drink or smoke when using this product. Wash hands before eating, drinking, smoking or going to the toilet. Take off all contaminated clothing and wash before reuse.

Conditions for safe storage, including any incompatibilities: Keep only in original container, in a cool, dry, well ventilated place. Keep away from food. Store locked up. Keep out of reach of children. Avoid static electricity by grounding. Damaged or perforated packages should be emptied. Incompatible with: Strong oxidizing agents (like fluorite, perchlorates, chlorine dioxide, nitrates, permanganates and peroxides).

Packaging materials: Cans and metal drums.

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8- EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit values:	Ingrediente	TLV – TWA (ACGIH)	REL – TWA (NIOSH)	PEL - TWA (OSHA)
		(ppm)	(ppm)	(ppm)
	n-butanol	20	50	100

Appropriate engineering controls: Provide mechanical ventilation or direct exhaust to the external media. It is recommended safety shower and eye bath available near work site. The engineering controls measures are the most effective to reduce exposure to the product.

Individual protection measures, such as personal protective equipment

Eye/face protection: Protective safety goggles. Avoid wearing contact lenses while using this product.

Skin and hand protection: Protective gloves of PVC or nitrilic rubber.

Respiratory protection: Respiratory protective equipment to filter against vapors / mists. In case of exposure to high concentrations should be used with supplied air respirator, full face-piece operated in positive pressure mode, can also be used in any type of respirator (SCBA), full face piece, operated in positive pressure.

Thermal hazard: Complete air-ventilated suit, with air supply, or any thermo-resistant clothing available.

Environmental exposure controls: Do not discharge directly into the environment or into the sewer system. The dilution water from fire fighting can cause pollution.

9- PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless liquid
Odor:	Strong, similar to alcohol.
Odor threshold:	Not determined.
pH:	Not determined.
Melting point/freezing point:	- 89°C

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Initial boiling point and boiling range	117,7 °C
Flashpoint:	36°C (closed cup).
Evaporation Rate	Not determined.
Flammability:	Flammable.
Upper/lower flammability or explosive limits:	1.4 – 11.2% (LEL, UEL)
Vapour density (Air=1):	2,55.
Vapour Pressure (mm Hg):	5 mmHg (20°C)
Relative density:	0,80980 (20°C) - 0,81337 (15°C) (water = 1).
Solubility:	Soluble in ether, alcohol and aromatic and aliphatic solvent.
Partition coefficient: n-octanol/water:	logKow = 0.88
Auto-ignition temperature:	343°C
Decomposition temperature:	Not determined.
Viscosity:	Not determined.
Explosive properties:	Not determined.
Oxidizing properties:	No oxidizing properties.

10- STABILITY AND REACTIVITY

Chemical stability:	Stable under normal conditions of storage and handling. Polymerization will not occur.
Possibility of hazardous reactions:	Reacts with strong oxidizers such as chromium trioxide forming a flammable / explosive gas (hydrogen).
Incompatible materials:	Strong oxidizers.
Conditions to avoid:	Ignition sources, flame/heat, high temperatures and contact with incompatible materials.
Hazardous decomposition products:	When heated produces acrid and toxic smoke and fumes

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11- TOXICOLOGICAL INFORMATION

Acute toxicity:	May cause gastrointestinal disturbances with nausea, vomiting and diarrhea. If ingested in large quantities, may cause death. LD ₅₀ (oral, rats): 790 mg/Kg LC ₅₀ (dermal, rabbit): 3400 mg/Kg
Skin corrosion/irritation:	Irritating to skin with redness, pain and dryness.
Serious eye damage/irritation:	Irritating and may cause damage to eyes with redness and pain.
Respiratory or skin sensitization:	It's not expected any sensitization.
Germ cell mutagenicity:	Based on animal studies, it's not considered a germ cell mutagenic.
Carcinogenicity:	Not classified as carcinogen to humans.
Reproductive toxicity:	Based on animal studies, it's not considered toxic to reproduction.
STOT – single exposure:	The vapour is irritating to the eyes and the respiratory tract. May cause central nervous system disorders with headache, muscle weakness, dizziness and unconsciousness. Exposure far above the OEL could cause lowering of consciousness.
STOT – repeated exposure:	Cause damage to the central nervous system and the ear with damaged hearing and sense of balance. May cause dryness after repeated and prolonged contact with skin.
Aspiration hazard:	If this liquid is swallowed, aspiration into the lungs may result in chemical pneumonitis.

12- ECOLOGICAL INFORMATION

Toxicity:	Not classified as hazardous to aquatic organisms.
Persistence and degradability:	It's expected low persistence and high degradability.
Bioaccumulative potential:	It's expected low bioaccumulative potential in aquatic organisms. BCF: 3 Log Kow of 0.88
Mobility in soil:	High mobility in soil.
Results of PBT and vPvB assessment:	Not available.

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13- DISPOSAL CONSIDERATION

Product:	The treatment and disposal should be evaluated specifically for each product. Can be deposited in landfills, sent to an appropriate incineration or other means of disposal provided they meet the requirements of local law.
Product waste:	Keep the product remains in their original containers and properly sealed. Disposal should be performed as established for the product.
Contaminated packaging:	Do not reuse empty containers. These may contain residues of the product and must be kept closed and sent for destruction in the appropriate place. In some cases the packaging should be returned to the registering company or supplier.

14- TRANSPORT INFORMATION

National and international regulations	
Land (Road/rail):	UN – “United Nations” Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations, 16th Edition, 2009.
Waterways (sea/inland):	IMO - “International Maritime Organization” International Maritime Dangerous Goods Code (IMDG Code) - Incorporating Amendment 34-08; 2008 Edition.
Air:	IATA - “International Air Transport Association” Dangerous Goods Regulation (DGR) - 51th Edition, 2010.
UN number:	UN1120
UN proper shipping name:	BUTANOLS
Transport hazard class:	3
Packing group:	III
Environmental hazards:	Not hazardous.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:	It’s not listed.

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15- REGULATORY INFORMATION

Commission Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

Regulation 1272:2008: GHS, United Nations, 3th Revised Edition, 2009

ECB: Directives 67/548 e 1999/45

UN Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations, 16th Edition, 2009

1 – Shall not be used in:

- Ornamental objects, intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
- Trick and jokes,
- Games for one or more participants, or any object intended to be used as such, even with ornamental aspects.

Restrictions:

2 – Without prejudice to paragraph 1, substances and preparations which:

- Present an aspiration hazard and are labelled with 65, and
- Can be used as fuel in decorative lamps, and
- Are placed on the market in packaging of a capacity of 15 litres or less,

Shall not contain a colouring agent, unless required for fiscal reasons, or perfume or both.

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16- OTHER INFORMATION

The company warns that the manuscript of any chemical substance requires the previous knowledge of its hazards for the user. It is contained in the using company of the product promotes training of its employees about possible risks come upon of the product.

SDS elaborated by InterTox: october, 2010 – <http://www.intertox.com.br>

Abbreviations:

ACGIH: American Conference of Industrial Hygienists

CAS: Chemical Abstracts Service

EC: European Commission

IARC: International Agency for Research on Cancer

LC₅₀: Lethal Concentration 50%

LD₅₀: Lethal dose 50%

LEL: Lower explosive limit

TLV: Threshold Limit Value

TWA: Time Weighted Average

UEL: Upper explosive limit

UN: United Nations

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