

SAFETY DATA SHEET

According to regulations (CE) No. 1907/2006 and 2015/830



Revision date : 06/12/2015

Version 15.1

SECTION 1. Identification of the substance/mixture and of the company /undertaking

1.1 Product identifier

Catalogue N° **943**

Product name **Butanol with bromophenol blue**

REACH Registration Number This product is a mixture. REACH Registration Number see section 3.

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses Reagent for analysis

1.3 Details of the supplier of the safety data sheet

Company Laboratoires Dujardin-Salleron 37210 Noizay France Phone. +33 (0)2 47 25 58 25
mail: info@dujardin-salleron.com - website : www.dujardin-salleron.com

1.4 Emergency phone number INRS : +33 (0)1 45 42 59 59

SECTION 2. Hazards identification

2.1 Classification of the substance or mixture

Classification (Regulation (EC) N° 1272/2008)

Flammable liquid, Category 3, H226
Acute toxicity, Category 4, Oral, H302
Specific target organ toxicity - single exposure, Category 3, H335
Skin irritation, Category 2, H315
Serious eye damage, Category 1, H318
Specific target organ toxicity - single exposure, Category 3, H336

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labeling (Regulation (EC) N° 1272/2008)

Hazard pictograms



Signal word

Danger

Hazard statements

H226 Flammable liquid and vapors.
H302 Harmful if swallowed.
H315 Causes skin irritation.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H336 May cause drowsiness or dizziness.

Precautionary statements

Prevention

P210 Keep away from heat.
P280 Wear eye protection.

Response

P302 + P352 IF ON SKI N: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

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P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P313 Get medical advice/ attention.

2.3 Other hazards

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

SECTION 3. Composition/information on ingredients

Chemical nature: Solution

3.1 Substance : not applicable

3.2 Mixture:

Hazardous components (Regulation (EC) No 1272/2008)

Chemical name (Concentration)

n butanol (≤ 100%)

This substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

| CAS N° | EC N° | REACH N° | Classification |
|---------|-----------|-----------------------|---|
| 71-36-3 | 200-751-6 | 01-2119484630-38-XXXX | Flammable liquid, Category 3, H226 Acute toxicity, Category 4, H302 Specific target organ toxicity - single exposure, Category 3, H335 Skin irritation, Category 2, H315 Serious eye damage, Category 1, H318 Specific target organ toxicity - single exposure, Category 3, H336 |

For the full text of the H-Statements mentioned in this Section, see Section 16.

Non-hazardous components (Regulation (EC) No 1272/2008)

Chemical name (Concentration)

Bromophenol blue (≈ 0,1%)

| CAS N° | EC N° | REACH N° | Classification |
|---------|-----------|----------|---|
| 76-59-5 | 200-971-2 | - | Substance not classified as dangerous according to European Union legislation |

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air. Consult doctor if feeling unwell.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Consult a physician.

4.2 Most important symptoms and effects, both acute and delayed

Irritant effects, Cough, depressed respiration, Shortness of breath, Drowsiness, Dizziness, narcosis, inebriation, Nausea, Vomiting, cardiovascular disorders, drowsiness, CNS disorders

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

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SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, carbon dioxide (CO₂), foam, dry powder.

Unsuitable extinguishing media

For this mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture

Combustible.

Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air at elevated temperatures.

Development of hazardous combustion gases or vapors possible in the event of fire.

5.3 Advice for firefighters

Special protective equipment for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment, see section 8.

6.2 Environmental precautions

Do not empty into drains. Risk of explosion.

6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Trivorex ® (PREVOR)). Dispose of properly. Clean up affected area.

6.4 Various indications

Remove immediately spillages of material.

SECTION 7. Handling and storage

7.1 Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

Hygiene measures

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with mixture.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Storage temperature: no restrictions.

7.3 Specific end use(s)

See exposure scenario in the Annex to this SDS.

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SECTION 8. Exposure controls / personal protection

8.1 Control parameters

Components with occupational exposure limit values

n-Butanol (71-36-3)

| Basis | Value | Threshold limits | Remarks | | | |
|---|----------------------------------|---------------------------------|----------------------------------|------------------------------|------------------------|-------------|
| Limit value for occupational exposure (VLEP France) | Short Term Exposure limit (STEL) | 50 ppm 150 mg/m ³ | Indicative limit value | | | |
| Derived No Effect Level (DNEL) | | | | | | |
| Worker DNEL, long term | | Local effects | inhalation 310 mg/m ³ | | | |
| Consumer DNEL, long term | | Local effects | inhalation 55 mg/m ³ | | | |
| Consumer DNEL, long term | | Systemic effects | oral 3,125 mg/kg Body weight | | | |
| Predicted No Effect Concentration (PNEC) | | | | | | |
| <i>n</i> -Butanol (71-36-3) | | | | | | |
| Fresh water | Fresh water sediment | Marine water | Marine sediment | Aquatic intermittent release | Sewage treatment plant | Soil |
| 0.082 mg/l | 0.178 mg/kg | 0.0082 mg/l | 0.0178 mg/kg | 2.25 mg/l | 2476 mg/l | 0.015 mg/kg |

8.2 Exposure controls

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
See section 7.1.

Individual protection measures

Wear suitable chemical resistant protective clothing, provided with a CE marking

Eye/face protection

Safety glasses

Hand protection

Wear exclusively gloves special chemistry provided with a CE marking. If gloves must be reused, clean them before removing them and keeping them in a well ventilated place.

full contact:

Glove material: Nitrile rubber
Glove thickness: 0.38 mm
Break through time: > 480 min

Splash contact:

Glove material: Nitrile rubber
Glove thickness: 0,11 mm
Break through time: > 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374.

Respiratory protection

Required when vapors/aerosols are generated.

Recommended filter type: A-(P 2)

The company has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented

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Environmental exposure controls

Do not empty into drains.

Risk of explosion.

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|--|--------------------------------|
| Form | liquid |
| Color | yellow-orange |
| Odor | ethanoic |
| Odor Threshold | 0.004 – 48.7 ppm |
| pH | 7 à 10 g/l at 20°C. |
| Melting point | -89 °C. |
| Boiling point/boiling range | 116-118°C at 1013 hPa. |
| Flash point | 34 °C. |
| Evaporation rate | No information available. |
| Flammability (solid, gas) | No information available. |
| Lower explosion limit | 1.4 % (V). |
| Upper explosion limit | 11.3 % (V). |
| Vapor pressure | 6.7 hPa at 20°C. |
| Relative vapor density | 2.6 at 20°C. |
| Relative density | 0.81 g/cm ³ at 20°C |
| Water solubility | soluble à 20°C. |
| Partition coefficient: n - octanol/water | log Pow : 0.88. |
| Auto-ignition temperature | No information available. |
| Decomposition temperature | No information available. |
| Viscosity, dynamic | 2.95 mPa.s at 20°C. |
| Explosive properties | Not classified as explosive. |
| Oxidizing properties | none |

9.2 Other data

| | |
|-----------------------|---------------------------|
| Ignition temperature | 340°C (Method: DIN 51794) |
| Bulk density | No information available. |
| Refraction index | No information available. |
| Dissociation constant | No information available. |
| Surface tension | No information available. |
| Henry constant | No information available. |

SECTION 10. Stability and reactivity

10.1 Reactivity

Vapors/air-mixtures are explosive at intense warming.

10.2 Chemical stability

The product is chemically stable for 2 years, under standard ambient conditions (room temperature).

10. Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapors with:
strong oxidizing agents, chromium(VI) oxide

Exothermic reaction with:

Alkali metals, Alkaline earth metals, Aluminum, strong reducing agents, Acid chlorides

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10.4 Conditions to avoid

Heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

10.5 Incompatible materials

rubber, various plastics.

10.6 Hazardous decomposition products

no information available

SECTION 11. Toxicological information

11.1 Information on toxicological affects

Acute oral toxicity

LD50 rat: 790 mg/kg (RTECS)

Absorption

Symptoms: Nausea, Vomiting, Risk of aspiration upon vomiting., Pulmonary failure possible after aspiration of vomit.

Acute inhalation toxicity

Absorption

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

LC50 rat > 18 mg/l, 4 h (IUCLID)

LCLO human: 0.08 mg (IUCLID)

Acute dermal toxicity

LD50 rabbit: 3,400 mg/kg (RTECS)

Irritant and caustic effect

Skin irritation

Causes skin irritation.

Rabbit, result: Irritations (IUCLID)

Eye irritation

Causes serious eye damage.

Rabbit, result: severe irritations (OECD Test Guideline 405)

Sensitization

This information is not available

Specific target organ toxicity - single exposure

May cause respiratory irritation. May cause drowsiness or dizziness

Specific target organ toxicity - repeated exposure

This information is not available

CMR effects (carcinogenicity, mutagenicity and toxic for reproduction)

Carcinogenicity

This information is not available

Germ cell mutagenicity Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative (IUCLID)

Reproductive toxicity

This information is not available

Teratogenicity

This information is not available

Aspiration hazard

This information is not available

11.2 Further information

After absorption: CNS disorders, dizziness, inebriation, drop in blood pressure, cardiovascular disorders, depressed respiration, narcosis.

Damage to liver, kidney

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Further data:

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

12.1 Toxicity

Toxicity to fish

LC50 *Leuciscus idus* (Golden orfe): 1,200 – 1,700 mg/l; 96 h (IUCLID)

Toxicity to daphnia and other aquatic invertebrates

EC50 *Daphnia magna*: 1,983 mg/l; 48 h (DIN 38412)

Toxicity to daphnia and other aquatic invertebrates

IC50 *Desmodesmus subspicatus* (green algae): > 500 mg/l; 72 h (IUCLID)

Toxicity to bacteria

EC10 *Pseudomonas putida*: 2,250 mg/l; 16 h (IUCLID)

12.2 Persistence and degradability

Biodegradability 98 %; 28 d (OECD Test Guideline 301E)

Readily biodegradable.

Ratio BOD/ThBOD DBO5 33 % (IUCLID)

12.3 Bio accumulative potential

Partition coefficient: n-octano//water log Pow: 0,88 (experimental) (Lit.)

Bioaccumulation is not expected.

12.4 Mobility in soil

No information available

12.5 Results of PBT and vPvB assessment

This mixture does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

12.6 Other adverse effects

Additional ecological information

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

Waste treatment methods

Waste must be disposed of in accordance with the Directive on waste 2008/98/EC and with local and national regulations. Leave chemicals in original containers. No mixing with other waste. Treat uncleaned containers like the product itself.

SECTION 14. Transport information

Land transport (ADR/RID)

| | |
|-----------------------------------|----------|
| 14.1 UN number | 1120 |
| 14.2 Proper shipping name | BUTANOLS |
| 14.3 Class | 3 |
| 14.4 Packing group | III |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | yes |
| Tunnel restriction code | D/E |

Air transport (IATA)

| | |
|-----------------------------------|----------|
| 14.1 UN number | 1120 |
| 14.2 Proper shipping name | BUTANOLS |
| 14.3 Class | 3 |
| 14.4 Packing group | III |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | no |

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Sea transport (IMDG)

| | |
|---|--------------|
| 14.1 UN number | 1120 |
| 14.2 Proper shipping name | BUTANOLS |
| 14.3 Class | 3 |
| 14.4 Packing group | III |
| 14.5 Environmentally hazardous | -- |
| 14.6 Special precautions for user | yes |
| EMS | F-E S-D |
| 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | Not relevant |

SECTION 15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

| | |
|--|--|
| Aquatic Class risk (WGK) | WGK1 (slightly hazardous for water). |
| Occupational restrictions | Take note of Directive 94/33/EC on the protection of young people at work and Directive 92/85/EEC on the safety and health at work of pregnant women |
| Substances of very high concern (SVHC) | This product does not contain substances of very high concern above the respective regulatory limit (> 0.1% (w/w) Regulation (EC) N° 1907/2006 (REACH), Article 57 |

15.2 Chemical Safety Assessment

No information available.

SECTION 16. Other information

Full text of H-Statements referred to under sections 2 and 3.

| | |
|------|------------------------------------|
| H226 | Flammable liquid and vapors. |
| H302 | Harmful if swallowed. |
| H315 | Causes skin irritation. |
| H318 | Causes serious eye damage. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |

Training advice

Provide adequate information, instruction and training for operators.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

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ANNEX: extract from the exposure scenario (ES n° 2) for workers and environment applicable to the professional use of n butanol, in accordance with regulation (EC) N° 1907/2006 (REACH).

1. Professional use (Reagent for analysis)

Sectors of end-use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Chemical product category

PC21 Laboratory chemicals

Process categories

PROC15 Use as laboratory reagent

Environmental Release Categories

ERC2 Formulation of preparations

ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)

2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling environmental exposure for: ERC2, SpERC ESVOC 4

Amount used

Daily amount per site 133 t

Environment factors not influenced by risk management

Flow rate 18.000 m³/d

Dilution Factor (River) 10

Dilution Factor (Coastal Areas) 100

Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air 0.05 %

Emission or Release Factor: Water 0.02 %

Emission or Release Factor: Soil 0 %

Conditions and measures related to municipal sewage treatment plant

Type of sewage treatment plant Municipal sewage treatment plant

Flow rate of sewage treatment 2.000 m³/d

plant effluent

Effectiveness (of a measure) 87.4 %

2.2 Contributing scenario controlling environmental exposure for: ERC6a: NOT APPLICABLE

2.3 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 % unless stated differently.

Physical Form (at time of use) Medium volatile liquid

Process Temperature < 62 °C

Frequency and duration of use

Frequency of use 5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor without local exhaust ventilation (LEV), Outdoor

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours

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3. Exposure estimation and reference to its source

Environment

| CS | Use descriptor | Msafe | Compartment | RCR | Exposure Assessment Method |
|-----|----------------|-------|------------------------|---------|----------------------------|
| 2.1 | ERC2 | | Fresh water | 0.247 | ECETOC TRA |
| | | | Fresh water sediment | 0.805 | ECETOC TRA |
| | | | Marine water | 0.566 | ECETOC TRA |
| | | | Marine sediment | 0.865 | ECETOC TRA |
| | | | Soil | 0.196 | ECETOC TRA |
| | | | Sewage treatment plant | < 0.001 | ECETOC TRA |
| 2.2 | ERC6a | | Fresh water | 0.156 | ECETOC TRA |
| | | | Fresh water sediment | 0.509 | ECETOC TRA |
| | | | Marine water | 0.175 | ECETOC TRA |
| | | | Marine sediment | 0.568 | ECETOC TRA |
| | | | Soil | 0.198 | ECETOC TRA |
| | | | Sewage treatment plant | < 0.001 | ECETOC TRA |

Travailleurs

| CS | Use descriptor | Exposure duration, route, effect | RCR | Exposure Assessment Method |
|-----|----------------|----------------------------------|-----|----------------------------|
| 2.3 | PROC15 | long term, inhalation, local | 0.1 | ECETOC TRA |