

Linx Thermochromic Black to Blue Ink 1291

Date of compilation: 06/09/2019


Revised: 16/08/2024

Version: 7 (Replaced 6)

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1 Product identifier:** Linx Thermochromic Black to Blue Ink 1291
- Other means of identification:**
Not relevant
- 1.2 Relevant identified uses of the substance or mixture and uses advised against:**
Relevant uses: Printing ink
Uses advised against: All uses not specified in this section or in section 7.3
- 1.3 Details of the supplier of the safety data sheet:**
- | | |
|--|---|
| Linx Printing Technologies Ltd
Linx House, 8 Stocks Bridge Way, Compass Point Business Park
PE27 5JL St Ives - Cambridgeshire - UK
Phone: +44 (0) 1480 302100
sds@linx.co.uk
www.linxglobal.com | Supplier:
ITW Marking and Coding
1 Research Park Drive
St. Charles, MO 63304-5685 USA
800-526-2531 / 636-300-2000 |
|--|---|
- 1.4 Emergency telephone number:** 24HR: (+1)-352-323-3500
USA: 1-800-535-5053
- UK NPIS For Healthcare Professionals Only: 0344 892 0111

SECTION 2: HAZARDS IDENTIFICATION

- 2.1 Classification of the substance or mixture:**
- GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567):**
Classification of this product has been carried out in accordance with GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567).
Aquatic Acute 1: Hazardous to the aquatic environment, acute hazard, Category 1, H400
Aquatic Chronic 2: Hazardous to the aquatic environment, long-term hazard, Category 2, H411
Eye Dam. 1: Serious eye damage, Category 1, H318
Flam. Liq. 2: Flammable liquids, Category 2, H225
Skin Corr. 1B: Skin corrosion, Category 1B, H314
STOT SE 3: Specific toxicity causing drowsiness and dizziness, single exposure, Category 3, H336
- 2.2 Label elements:**
- GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567):**
Danger
- 
- Hazard statements:**
Aquatic Chronic 1: H410 - Very toxic to aquatic life with long lasting effects.
Flam. Liq. 2: H225 - Highly flammable liquid and vapour.
Skin Corr. 1B: H314 - Causes severe skin burns and eye damage.
STOT SE 3: H336 - May cause drowsiness or dizziness.
- Precautionary statements:**
P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P280: Wear protective gloves/face protection/protective clothing/respiratory protection/protective footwear.
P301+P330+P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370+P378: In case of fire: Use Foam extinguisher (AB), Dry Chemical Powder (ABC) Fire Extinguisher, Carbon dioxide extinguisher (BC) to extinguish.
- Supplementary information:**
EUH066: Repeated exposure may cause skin dryness or cracking.
- Substances that contribute to the classification**
Butanone; Quaternary ammonium compounds; 2-methoxy-1-methylethyl acetate; butan-1-ol



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SECTION 2: HAZARDS IDENTIFICATION (continued)

Acute Toxicity Estimate (ATE mix):

10 % (oral), 10 % (dermal) of the mixture consists of ingredient(s) of unknown toxicity

2.3 Other hazards:

Product does not meet PBT/vPvB criteria

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance:

Non-applicable

3.2 Mixture:

Chemical description: Mixture of substances

Components:

In accordance with Annex II of The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020, the product contains:

Identification	Chemical name/Classification	Concentration
CAS: 78-93-3	Butanone Eye Irrit. 2: H319; Flam. Liq. 2: H225; STOT SE 3: H336; EUH066 - Danger	40 - <60 %
CAS: 64-17-5	ethanol Eye Irrit. 2: H319; Flam. Liq. 2: H225 - Danger	20 - <40 %
CAS: Non-applicable	Quaternary ammonium compounds Acute Tox. 3: H311; Acute Tox. 4: H302; Aquatic Acute 1: H400; Aquatic Chronic 1: H410; Eye Dam. 1: H318; Skin Corr. 1B: H314 - Danger	5 - <10 %
CAS: 108-65-6	2-methoxy-1-methylethyl acetate Flam. Liq. 3: H226; STOT SE 3: H336 - Warning	5 - <10 %
CAS: 71-36-3	butan-1-ol Acute Tox. 4: H302; Eye Dam. 1: H318; Flam. Liq. 3: H226; Skin Irrit. 2: H315; STOT SE 3: H335; STOT SE 3: H336 - Danger	1 - <5 %
CAS: 109-60-4	Propyl acetate Eye Irrit. 2: H319; Flam. Liq. 2: H225; STOT SE 3: H336; EUH066 - Danger	1 - <5 %
CAS: 67-63-0	propan-2-ol Eye Irrit. 2: H319; Flam. Liq. 2: H225; STOT SE 3: H336 - Danger	1 - <5 %

To obtain more information on the hazards of the substances consult sections 11, 12 and 16.

Other information:

Identification	M-factor	
	Quaternary ammonium compounds CAS: Non-applicable	Acute
	Chronic	1

Identification	Specific concentration limit
ethanol CAS: 64-17-5	% (w/w) >=50: Eye Irrit. 2 - H319

Acute toxicity estimate for the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008 or as determined in accordance with Annex I to that Regulation:

Identification	Acute toxicity		Genus
	Quaternary ammonium compounds CAS: Non-applicable	LD50 oral	
	LD50 dermal	429 mg/kg	Rabbit
	LC50 inhalation	Not relevant	
butan-1-ol CAS: 71-36-3	LD50 oral	800 mg/kg	Rat
	LD50 dermal	Not relevant	
	LC50 inhalation	Not relevant	

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures:



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SECTION 4: FIRST AID MEASURES (continued)

Request medical assistance immediately, showing the SDS of this product.

By inhalation:

Remove the person affected from the area of exposure, provide with fresh air and keep at rest. In serious cases such as cardiorespiratory failure, artificial resuscitation techniques will be necessary (mouth to mouth resuscitation, cardiac massage, oxygen supply, etc.) requiring immediate medical assistance.

By skin contact:

Remove contaminated clothing and footwear, rinse skin or shower the person affected if appropriate with plenty of cold water and neutral soap. In serious cases see a doctor. If the product causes burns or freezing, clothing should not be removed as this could worsen the injury caused if it is stuck to the skin. If blisters form on the skin, these should never be burst as this will increase the risk of infection.

By eye contact:

Rinse eyes thoroughly with lukewarm water for at least 15 minutes. Do not allow the person affected to rub or close their eyes. If the injured person uses contact lenses, these should be removed unless they are stuck to the eyes, in which case this could cause further damage. In all cases, after cleaning, a doctor should be consulted as quickly as possible with the SDS of the product.

By ingestion/aspiration:

Request immediate medical assistance, showing the SDS of this product. Do not induce vomiting, because its expulsion from the stomach can be hazardous to the mucus of the main digestive tract, and also risk damage to the respiratory system through inhalation. Rinse out the mouth and throat, as they may have been affected during ingestion. In the case of loss of consciousness do not administer anything orally unless supervised by a doctor. Keep the person affected at rest.

4.2 Most important symptoms and effects, both acute and delayed:

Acute and delayed effects are indicated in sections 2 and 11.

4.3 Indication of any immediate medical attention and special treatment needed:

Not relevant

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media:

Suitable extinguishing media:

Foam extinguisher (AB), Dry Chemical Powder (ABC) Fire Extinguisher, Carbon dioxide extinguisher (BC)

Unsuitable extinguishing media:

Water jet

5.2 Special hazards arising from the substance or mixture:

As a result of combustion or thermal decomposition reactive sub-products are created that can become highly toxic and, consequently, can present a serious health risk.

5.3 Advice for firefighters:

Depending on the magnitude of the fire it may be necessary to use full protective clothing and self-contained breathing apparatus (SCBA). Minimum emergency facilities and equipment should be available (fire blankets, portable first aid kit, ...).

Additional provisions:

Act in accordance with the Internal Emergency Plan and the Information Sheets on actions to take after an accident or other emergencies. Eliminate all sources of ignition. In case of fire, cool the storage containers and tanks for products susceptible to combustion, explosion or BLEVE as a result of high temperatures. Avoid spillage of the products used to extinguish the fire into an aqueous medium.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Isolate leaks provided that there is no additional risk for the people performing this task. Evacuate the area and keep out those without protection. Personal protection equipment must be used against potential contact with the spilled product (See section 8). Above all prevent the formation of any vapour-air flammable mixtures, through either ventilation or the use of an inert medium. Remove any source of ignition. Eliminate electrostatic charges by interconnecting all the conductive surfaces on which static electricity could form, and also ensuring that all surfaces are connected to the ground.



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SECTION 6: ACCIDENTAL RELEASE MEASURES (continued)

For emergency responders:

Wear protective equipment. Keep unprotected persons away. See section 8.

6.2 Environmental precautions:

Avoid at all cost any type of spillage into an aqueous medium. Contain the product absorbed appropriately in hermetically sealed containers. Notify the relevant authority in case of exposure to the general public or the environment.

6.3 Methods and material for containment and cleaning up:

It is recommended:

Absorb the spillage using sand or inert absorbent and move it to a safe place. Do not absorb in sawdust or other combustible absorbents. For any concern related to disposal consult section 13.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A.- General precautions for safe use

Comply with the current legislation concerning the prevention of industrial risks. Keep containers hermetically sealed. Control spills and residues, destroying them with safe methods (section 6). Avoid leakages from the container. Maintain order and cleanliness where dangerous products are used.

B.- Technical recommendations for the prevention of fires and explosions

Transfer in well ventilated areas, preferably through localized extraction. Fully control sources of ignition (mobile phones, sparks,...) and ventilate during cleaning operations. Avoid the existence of dangerous atmospheres inside containers, applying inertization systems where possible. Transfer at a slow speed to avoid the creation of electrostatic charges. Against the possibility of electrostatic charges: ensure a perfect equipotential connection, always use groundings, do not wear work clothes made of acrylic fibres, preferably wearing cotton clothing and conductive footwear. Comply with the essential security requirements for equipment and systems defined in The Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 and with the minimum requirements for protecting the security and health of workers under the selection criteria of The Dangerous Substances and Explosive Atmospheres Regulations 2002, 2002 No. 2776. Consult section 10 for conditions and materials that should be avoided.

C.- Technical recommendations on general occupational hygiene

Do not eat or drink during the process, washing hands afterwards with suitable cleaning products.

D.- Technical recommendations to prevent environmental risks

Due to the danger of this product for the environment it is recommended to use it within an area containing contamination control barriers in case of spillage, as well as having absorbent material in close proximity.

7.2 Conditions for safe storage, including any incompatibilities:

A.- Specific storage requirements

Store in a cool, dry, well-ventilated location

B.- General conditions for storage

Avoid sources of heat, radiation, static electricity and contact with food. For additional information see subsection 10.5

7.3 Specific end use(s):

Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters:

Substances whose occupational exposure limits have to be monitored in the workplace:

EH40/2005 Workplace exposure limits, fourth edition, published 2020:

Identification	Occupational exposure limits		
	WEL (8h)	200 ppm	600 mg/m ³
Butanone CAS: 78-93-3	WEL (15 min)	300 ppm	899 mg/m ³



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EH40/2005 Workplace exposure limits, fourth edition, published 2020:

Identification	Occupational exposure limits		
	WEL (8h)	1000 ppm	1920 mg/m ³
ethanol CAS: 64-17-5	WEL (15 min)		
	WEL (8h)	50 ppm	274 mg/m ³
2-methoxy-1-methylethyl acetate ⁽¹⁾ CAS: 108-65-6	WEL (15 min)	100 ppm	548 mg/m ³
	WEL (8h)		
butan-1-ol CAS: 71-36-3	WEL (15 min)	50 ppm	154 mg/m ³
	WEL (8h)	200 ppm	849 mg/m ³
Propyl acetate CAS: 109-60-4	WEL (15 min)	250 ppm	1060 mg/m ³
	WEL (8h)	400 ppm	999 mg/m ³
propan-2-ol CAS: 67-63-0	WEL (15 min)	500 ppm	1250 mg/m ³

⁽¹⁾ Skin

Biological limit values:

BIOLOGICAL MONITORING GUIDANCE VALUES (BMGVs) - EH40/2005

Identification	NULL	NULL	NULL
Butanone CAS: 78-93-3	5 mg/L	Butan-2-one in urine	Post shift

DNEL (Workers):

Identification		Short exposure		Long exposure	
		Systemic	Local	Systemic	Local
Butanone CAS: 78-93-3 EC: 201-159-0	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	1161 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	600 mg/m ³	Not relevant
ethanol CAS: 64-17-5 EC: 200-578-6	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	343 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	950 mg/m ³	Not relevant
Quaternary ammonium compounds CAS: Non-applicable EC: 939-607-9	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	4.7 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	3.32 mg/m ³	Not relevant
2-methoxy-1-methylethyl acetate CAS: 108-65-6 EC: 203-603-9	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	796 mg/kg	Not relevant
	Inhalation	Not relevant	550 mg/m ³	275 mg/m ³	Not relevant
butan-1-ol CAS: 71-36-3 EC: 200-751-6	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	Not relevant	Not relevant
	Inhalation	Not relevant	Not relevant	Not relevant	310 mg/m ³
Propyl acetate CAS: 109-60-4 EC: 203-686-1	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	Not relevant	Not relevant
	Inhalation	Not relevant	840 mg/m ³	Not relevant	420 mg/m ³
propan-2-ol CAS: 67-63-0 EC: 200-661-7	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	888 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	500 mg/m ³	Not relevant

DNEL (General population):

Identification		Short exposure		Long exposure	
		Systemic	Local	Systemic	Local
Butanone CAS: 78-93-3 EC: 201-159-0	Oral	Not relevant	Not relevant	31 mg/kg	Not relevant
	Dermal	Not relevant	Not relevant	412 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	106 mg/m ³	Not relevant
ethanol CAS: 64-17-5 EC: 200-578-6	Oral	Not relevant	Not relevant	87 mg/kg	Not relevant
	Dermal	Not relevant	Not relevant	206 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	114 mg/m ³	Not relevant

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

Identification		Short exposure		Long exposure	
		Systemic	Local	Systemic	Local
Quaternary ammonium compounds CAS: Non-applicable EC: 939-607-9	Oral	Not relevant	Not relevant	2.83 mg/kg	Not relevant
	Dermal	Not relevant	Not relevant	2.83 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	0.98 mg/m ³	Not relevant
2-methoxy-1-methylethyl acetate CAS: 108-65-6 EC: 203-603-9	Oral	Not relevant	Not relevant	36 mg/kg	Not relevant
	Dermal	Not relevant	Not relevant	320 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	33 mg/m ³	33 mg/m ³
butan-1-ol CAS: 71-36-3 EC: 200-751-6	Oral	Not relevant	Not relevant	1.562 mg/kg	Not relevant
	Dermal	Not relevant	Not relevant	3.125 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	55.357 mg/m ³	155 mg/m ³
Propyl acetate CAS: 109-60-4 EC: 203-686-1	Oral	Not relevant	Not relevant	Not relevant	Not relevant
	Dermal	Not relevant	Not relevant	Not relevant	Not relevant
	Inhalation	298 mg/m ³	420 mg/m ³	149 mg/m ³	210 mg/m ³
propan-2-ol CAS: 67-63-0 EC: 200-661-7	Oral	Not relevant	Not relevant	26 mg/kg	Not relevant
	Dermal	Not relevant	Not relevant	319 mg/kg	Not relevant
	Inhalation	Not relevant	Not relevant	89 mg/m ³	Not relevant

PNEC:

Identification				
Butanone CAS: 78-93-3 EC: 201-159-0	STP	709 mg/L	Fresh water	55.8 mg/L
	Soil	22.5 mg/kg	Marine water	55.8 mg/L
	Intermittent	55.8 mg/L	Sediment (Fresh water)	284.74 mg/kg
	Oral	1 g/kg	Sediment (Marine water)	284.7 mg/kg
ethanol CAS: 64-17-5 EC: 200-578-6	STP	580 mg/L	Fresh water	0.96 mg/L
	Soil	0.63 mg/kg	Marine water	0.79 mg/L
	Intermittent	2.75 mg/L	Sediment (Fresh water)	3.6 mg/kg
	Oral	0.38 g/kg	Sediment (Marine water)	2.9 mg/kg
Quaternary ammonium compounds CAS: Non-applicable EC: 939-607-9	STP	0.9 mg/L	Fresh water	0.001 mg/L
	Soil	7 mg/kg	Marine water	0 mg/L
	Intermittent	0 mg/L	Sediment (Fresh water)	9.27 mg/kg
	Oral	Not relevant	Sediment (Marine water)	0.927 mg/kg
2-methoxy-1-methylethyl acetate CAS: 108-65-6 EC: 203-603-9	STP	100 mg/L	Fresh water	0.635 mg/L
	Soil	0.29 mg/kg	Marine water	0.064 mg/L
	Intermittent	6.35 mg/L	Sediment (Fresh water)	3.29 mg/kg
	Oral	Not relevant	Sediment (Marine water)	0.329 mg/kg
butan-1-ol CAS: 71-36-3 EC: 200-751-6	STP	2476 mg/L	Fresh water	0.082 mg/L
	Soil	0.017 mg/kg	Marine water	0.008 mg/L
	Intermittent	2.25 mg/L	Sediment (Fresh water)	0.324 mg/kg
	Oral	Not relevant	Sediment (Marine water)	0.032 mg/kg
Propyl acetate CAS: 109-60-4 EC: 203-686-1	STP	1 mg/L	Fresh water	0.06 mg/L
	Soil	0.021 mg/kg	Marine water	0.006 mg/L
	Intermittent	0.6 mg/L	Sediment (Fresh water)	0.16 mg/kg
	Oral	Not relevant	Sediment (Marine water)	0.016 mg/kg
propan-2-ol CAS: 67-63-0 EC: 200-661-7	STP	2251 mg/L	Fresh water	140.9 mg/L
	Soil	28 mg/kg	Marine water	140.9 mg/L
	Intermittent	140.9 mg/L	Sediment (Fresh water)	552 mg/kg
	Oral	0.16 g/kg	Sediment (Marine water)	552 mg/kg

8.2 Exposure controls:

A.- Individual protection measures, such as personal protective equipment

As a preventative measure it is recommended to use basic Personal Protective Equipment, with the corresponding <<UKCA marking>> or <<CE marking>>. For more information on Personal Protective Equipment (storage, use, cleaning, maintenance, class of protection,...) consult the information leaflet provided by the manufacturer. For more information see subsection 7.1. All information contained herein is a recommendation which needs some specification from the labour risk prevention services as it is not known whether the company has additional measures at its disposal.

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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION (continued)

B.- Respiratory protection


Pictogram	PPE	Remarks
 Mandatory respiratory tract protection	Filter mask for gases and vapours	Replace when there is a taste or smell of the contaminant inside the face mask. If the contaminant comes with warnings it is recommended to use isolation equipment.

C.- Specific protection for the hands



Pictogram	PPE	Remarks
 Mandatory hand protection	Chemical protective gloves (Material: Linear low-density polyethylene (LLDPE), Breakthrough time: > 480 min, Thickness: 0.062 mm)	Replace the gloves at any sign of deterioration.

As the product is a mixture of several substances, the resistance of the glove material can not be calculated in advance with total reliability and has therefore to be checked prior to the application.



D.- Eye and face protection

Pictogram	PPE	Remarks
 Mandatory face protection	Face shield	Clean daily and disinfect periodically according to the manufacturer's instructions. Use if there is a risk of splashing.

E.- Body protection

Pictogram	PPE	Remarks
 Mandatory complete body protection	Disposable clothing for protection against chemical risks, with antistatic and fireproof properties	For professional use only. Clean periodically according to the manufacturer's instructions.
 Mandatory foot protection	Safety footwear for protection against chemical risk, with antistatic and heat resistant properties	Replace boots at any sign of deterioration.

F.- Additional emergency measures

Emergency measure	Standards	Emergency measure	Standards
 Emergency shower	ANSI Z358-1 ISO 3864-1:2011, ISO 3864-4:2011	 Eyewash stations	DIN 12 899 ISO 3864-1:2011, ISO 3864-4:2011

Environmental exposure controls:

In accordance with the community legislation for the protection of the environment it is recommended to avoid environmental spillage of both the product and its container. For additional information see subsection 7.1.D

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance:

Physical state at 20 °C: Liquid

Appearance: Fluid

Colour: Black

*Not relevant due to the nature of the product, not providing information property of its hazards.



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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES (continued)

Odour:	Characteristic
Odour threshold:	Not relevant *
Volatility:	
Boiling point at atmospheric pressure:	84 °C
Vapour pressure at 25 °C:	9874 Pa
Vapour pressure at 50 °C:	30881.11 Pa (30.88 kPa)
Evaporation rate at 25 °C:	>1
Product description:	
Density at 25 °C:	836.6 kg/m ³
Relative density at 25 °C:	0.77 - 0.91
Dynamic viscosity at 25 °C:	2 - 5 cP
Kinematic viscosity at 25 °C:	Not relevant *
Kinematic viscosity at 40 °C:	Not relevant *
Concentration:	Not relevant *
pH:	Not relevant *
Vapour density at 25 °C:	2.4 kg/m ³
Partition coefficient n-octanol/water 25 °C:	ca. 0.3
Solubility in water at 25 °C:	Not relevant *
Solubility properties:	Slightly soluble in cold water
Decomposition temperature:	Not relevant *
Melting point/freezing point:	-86 °C
Flammability:	
Flash Point:	5 °C
Flammability (solid, gas):	Not relevant *
Autoignition temperature:	315 °C
Lower flammability limit:	1.8 % Volume
Upper flammability limit:	11.5 % Volume
Particle characteristics:	
Median equivalent diameter:	Non-applicable

9.2 Other information:

Information with regard to physical hazard classes:

Explosive properties:	Not relevant *
Oxidising properties:	Not relevant *
Corrosive to metals:	Not relevant *
Heat of combustion:	Not relevant *
Aerosols-total percentage (by mass) of flammable components:	Not relevant *

Other safety characteristics:

Surface tension at 25 °C:	Not relevant *
Refraction index:	Not relevant *

*Not relevant due to the nature of the product, not providing information property of its hazards.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

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SECTION 10: STABILITY AND REACTIVITY (continued)

No hazardous reactions are expected because the product is stable under recommended storage conditions. See section 7 from Safety Data Sheet.

10.2 Chemical stability:

Chemically stable under the indicated conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

10.4 Conditions to avoid:

Applicable for handling and storage at room temperature:

Shock and friction	Contact with air	Increase in temperature	Sunlight	Humidity
Not applicable	Not applicable	Risk of combustion	Avoid direct impact	Not applicable

10.5 Incompatible materials:

Acids	Water	Oxidising materials	Combustible materials	Others
Avoid strong acids	Not applicable	Avoid direct impact	Not applicable	Avoid alkalis or strong bases

10.6 Hazardous decomposition products:

See subsection 10.3, 10.4 and 10.5 to find out the specific decomposition products. Depending on the decomposition conditions, complex mixtures of chemical substances can be released: carbon dioxide (CO₂), carbon monoxide and other organic compounds.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

The experimental information related to the toxicological properties of the product itself is not available

Dangerous health implications:

In case of exposure that is repetitive, prolonged or at concentrations higher than the recommended occupational exposure limits, adverse effects on health may result, depending on the means of exposure:

A- Ingestion (acute effect):

- Acute toxicity: Based on available data, the classification criteria are not met, however, it contains substances classified as dangerous for consumption. For more information see section 3.
- Corrosivity/Irritability: Corrosive product, if it is swallowed causes burns destroying the tissues. For more information about secondary effects from skin contact see section 2.

B- Inhalation (acute effect):

- Acute toxicity : Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for inhalation. For more information see section 3.
- Corrosivity/Irritability: Prolonged inhalation of the product is corrosive to mucous membranes and the upper respiratory tract

C- Contact with the skin and the eyes (acute effect):

- Contact with the skin: Above all, skin contact may occur as fabrics of all thicknesses can be destroyed, resulting in burns. For more information on the secondary effects see section 2.
- Contact with the eyes: Produces serious eye damage after contact.

D- CMR effects (carcinogenicity, mutagenicity and toxicity to reproduction):

- Carcinogenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for the effects mentioned. For more information see section 3.
IARC: ethanol (1); propan-2-ol (3)
- Mutagenicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.
- Reproductive toxicity: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.

E- Sensitizing effects:

- Respiratory: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous with sensitising effects. For more information see section 3.
- Skin: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.



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SECTION 11: TOXICOLOGICAL INFORMATION (continued)

F- Specific target organ toxicity (STOT) - single exposure:

Exposure in high concentration can interfere with the central nervous system causing headache, dizziness, vertigo, nausea, vomiting, confusion, and in serious cases, loss of consciousness.

G- Specific target organ toxicity (STOT)-repeated exposure:

- Specific target organ toxicity (STOT)-repeated exposure: Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.
- Skin: Repeated exposure may cause skin dryness or cracking

H- Aspiration hazard:

Based on available data, the classification criteria are not met, as it does not contain substances classified as hazardous for this effect. For more information see section 3.

Other information:

Not relevant

Specific toxicology information on the substances:

Identification	Acute toxicity		Genus
Butanone CAS: 78-93-3	LD50 oral	4000 mg/kg	Rat
	LD50 dermal	6400 mg/kg	Rabbit
	LC50 inhalation	23.5 mg/L (4 h)	Rat
ethanol CAS: 64-17-5	LD50 oral	6200 mg/kg	Rat
	LD50 dermal	20000 mg/kg	Rabbit
	LC50 inhalation	124.7 mg/L (4 h)	Rat
Quaternary ammonium compounds CAS: Non-applicable	LD50 oral	600 mg/kg (ATEi)	Rat
	LD50 dermal	429 mg/kg (ATEi)	Rabbit
	LC50 inhalation		
2-methoxy-1-methylethyl acetate CAS: 108-65-6	LD50 oral	8532 mg/kg	Rat
	LD50 dermal	>5000 mg/kg	Rat
	LC50 inhalation	30 mg/L (4 h)	Rat
butan-1-ol CAS: 71-36-3	LD50 oral	800 mg/kg (ATEi)	Rat
	LD50 dermal	3430 mg/kg	Rabbit
	LC50 inhalation	24.66 mg/L (4 h)	Rat
propan-2-ol CAS: 67-63-0	LD50 oral	5280 mg/kg	Rat
	LD50 dermal	12800 mg/kg	Rat
	LC50 inhalation	72.6 mg/L (4 h)	Rat

Acute Toxicity Estimate (ATE mix):

ATE mix		Ingredient(s) of unknown toxicity
Oral	3582.09 mg/kg (Calculation method)	10 %
Dermal	5816.78 mg/kg (Calculation method)	10 %
Inhalation	>20 mg/L (4 h) (Calculation method)	Non-applicable

SECTION 12: ECOLOGICAL INFORMATION

The experimental information related to the eco-toxicological properties of the product itself is not available

Very toxic to aquatic life.

12.1 Toxicity:

Acute toxicity:

Identification	Concentration		Species	Genus
Butanone CAS: 78-93-3	LC50	3220 mg/L (96 h)	Pimephales promelas	Fish
	EC50	5091 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	4300 mg/L (168 h)	Scenedesmus quadricauda	Algae



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SECTION 12: ECOLOGICAL INFORMATION (continued)

Identification	Concentration		Species	Genus
	LC50	EC50		
ethanol CAS: 64-17-5	LC50	11000 mg/L (96 h)	Alburnus alburnus	Fish
	EC50	9268 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	1450 mg/L (192 h)	Microcystis aeruginosa	Algae
Quaternary ammonium compounds CAS: Non-applicable	LC50	13.8 mg/L (96 h)	Danio rerio	Fish
	EC50	0.036 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	0.14 mg/L (72 h)	Pseudokirchneriella subcapitata	Algae
2-methoxy-1-methylethyl acetate CAS: 108-65-6	LC50	161 mg/L (96 h)	Pimephales promelas	Fish
	EC50	481 mg/L (48 h)	Daphnia sp.	Crustacean
	EC50	Not relevant		
butan-1-ol CAS: 71-36-3	LC50	1740 mg/L (96 h)	Pimephales promelas	Fish
	EC50	1983 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	500 mg/L (96 h)	Scenedesmus subspicatus	Algae
propan-2-ol CAS: 67-63-0	LC50	9640 mg/L (96 h)	Pimephales promelas	Fish
	EC50	13299 mg/L (48 h)	Daphnia magna	Crustacean
	EC50	1000 mg/L (72 h)	Scenedesmus subspicatus	Algae

Chronic toxicity:

Identification	Concentration		Species	Genus
	NOEC	EC50		
ethanol CAS: 64-17-5	NOEC	250 mg/L	Danio rerio	Fish
	NOEC	2 mg/L	Ceriodaphnia dubia	Crustacean
Quaternary ammonium compounds CAS: Non-applicable	NOEC	0.2737 mg/L	Pimephales promelas	Fish
	NOEC	0.0068 mg/L	Daphnia magna	Crustacean
2-methoxy-1-methylethyl acetate CAS: 108-65-6	NOEC	47.5 mg/L	Oryzias latipes	Fish
	NOEC	100 mg/L	Daphnia magna	Crustacean
butan-1-ol CAS: 71-36-3	NOEC	Not relevant		
	NOEC	4.1 mg/L	Daphnia magna	Crustacean

12.2 Persistence and degradability:

Substance-specific information:

Identification	Degradability		Biodegradability	
	Parameter	Value	Parameter	Value
Butanone CAS: 78-93-3	BOD5	2.03 g O2/g	Concentration	Not relevant
	COD	2.31 g O2/g	Period	20 days
	BOD5/COD	0.88	% Biodegradable	89 %
ethanol CAS: 64-17-5	BOD5	Not relevant	Concentration	100 mg/L
	COD	Not relevant	Period	14 days
	BOD5/COD	Not relevant	% Biodegradable	89 %
Quaternary ammonium compounds CAS: Non-applicable	BOD5	Not relevant	Concentration	20 mg/L
	COD	Not relevant	Period	28 days
	BOD5/COD	Not relevant	% Biodegradable	67 %
2-methoxy-1-methylethyl acetate CAS: 108-65-6	BOD5	Not relevant	Concentration	785 mg/L
	COD	Not relevant	Period	8 days
	BOD5/COD	Not relevant	% Biodegradable	100 %
butan-1-ol CAS: 71-36-3	BOD5	1.71 g O2/g	Concentration	Not relevant
	COD	2.46 g O2/g	Period	19 days
	BOD5/COD	0.7	% Biodegradable	98 %
propan-2-ol CAS: 67-63-0	BOD5	1.19 g O2/g	Concentration	100 mg/L
	COD	2.23 g O2/g	Period	14 days
	BOD5/COD	0.53	% Biodegradable	86 %

12.3 Bioaccumulative potential:

Substance-specific information:



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SECTION 12: ECOLOGICAL INFORMATION (continued)

Identification	Bioaccumulation potential	
Butanone CAS: 78-93-3	BCF	3
	Pow Log	0.29
	Potential	Low
ethanol CAS: 64-17-5	BCF	3
	Pow Log	-0.31
	Potential	Low
Quaternary ammonium compounds CAS: Non-applicable	BCF	160
	Pow Log	3.26
	Potential	High
2-methoxy-1-methylethyl acetate CAS: 108-65-6	BCF	1
	Pow Log	0.43
	Potential	Low
butan-1-ol CAS: 71-36-3	BCF	1
	Pow Log	0.88
	Potential	Low
propan-2-ol CAS: 67-63-0	BCF	3
	Pow Log	0.05
	Potential	Low

12.4 Mobility in soil:

Identification	Absorption/desorption		Volatility	
Butanone CAS: 78-93-3	Koc	30	Henry	5.77 Pa·m ³ /mol
	Conclusion	Very High	Dry soil	Yes
	Surface tension	2.396E-2 N/m (25 °C)	Moist soil	Yes
ethanol CAS: 64-17-5	Koc	1	Henry	4.61E-1 Pa·m ³ /mol
	Conclusion	Very High	Dry soil	Yes
	Surface tension	2.339E-2 N/m (25 °C)	Moist soil	Yes
butan-1-ol CAS: 71-36-3	Koc	2.44	Henry	5.39E-2 Pa·m ³ /mol
	Conclusion	Very High	Dry soil	Yes
	Surface tension	2.567E-2 N/m (25 °C)	Moist soil	Yes
Propyl acetate CAS: 109-60-4	Koc	Not relevant	Henry	Not relevant
	Conclusion	Not relevant	Dry soil	Not relevant
	Surface tension	2.386E-2 N/m (25 °C)	Moist soil	Not relevant
propan-2-ol CAS: 67-63-0	Koc	1.5	Henry	8.207E-1 Pa·m ³ /mol
	Conclusion	Very High	Dry soil	Yes
	Surface tension	2.24E-2 N/m (25 °C)	Moist soil	Yes

12.5 Results of PBT and vPvB assessment:

Product does not meet PBT/vPvB criteria

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods:

Code	Description	Waste class
08 03 12*	waste ink containing hazardous substances	Hazardous

Type of waste:

HP14 Ecotoxic, HP3 Flammable, HP5 Specific Target Organ Toxicity (STOT)/Aspiration Toxicity, HP8 Corrosive

Waste management (disposal and evaluation):

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SECTION 13: DISPOSAL CONSIDERATIONS (continued)

Consult the authorized waste service manager on the assessment and disposal operations in accordance The Waste (England & Wales) Regulations 2011, 2011 No. 988. As under 15 01 of the code and in case the container has been in direct contact with the product, it will be processed the same way as the actual product. Otherwise, it will be processed as non-hazardous residue. Waste should not be disposed of to drains. See paragraph 6.2.

Regulations related to waste management:

In accordance with Annex II of UK REACH the provisions related to waste management are stated:

UK legislation: The Waste (England & Wales) Regulations 2011.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land:

With regard to ADR 2023 and RID 2023:



14.1 UN number: UN2924
14.2 UN proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Butanone; Quaternary ammonium compounds)



14.3 Transport hazard class(es): 3
Labels: 3, 8

14.4 Packing group: II
14.5 Environmental hazards: Yes

14.6 Special precautions for user
Tunnel restriction code: D/E
Physico-Chemical properties: see section 9
Limited quantities: 1 L

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: Not relevant

Transport of dangerous goods by sea:

With regard to IMDG 41-22:



14.1 UN number: UN2924
14.2 UN proper shipping name: FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Butanone; Quaternary ammonium compounds)



14.3 Transport hazard class(es): 3
Labels: 3, 8

14.4 Packing group: II
14.5 Marine pollutant: Yes

14.6 Special precautions for user
Special regulations: 274
EmS Codes: F-E, S-C
Physico-Chemical properties: see section 9
Limited quantities: 1 L
Segregation group: Not relevant

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: Not relevant

Transport of dangerous goods by air:

With regard to IATA/ICAO 2024:

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SECTION 14: TRANSPORT INFORMATION (continued)



14.1 UN number:	UN2924
14.2 UN proper shipping name:	FLAMMABLE LIQUID, CORROSIVE, N.O.S. (Butanone; Quaternary ammonium compounds)
14.3 Transport hazard class(es):	3
Labels:	3, 8
14.4 Packing group:	II
14.5 Environmental hazards:	Yes
14.6 Special precautions for user	
Physico-Chemical properties:	see section 9
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code:	Not relevant

SECTION 15: REGULATORY INFORMATION

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

- Substances listed in UK candidate list of substances of very high concern (SVHCs): Not relevant
- Substances listed in UK REACH Authorisation List (Annex 14): Not relevant

Restrictions to commercialisation and the use of certain dangerous substances and mixtures (Annex XVII UK REACH, etc):

Shall not be used in:

- ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
- tricks and jokes,
- games for one or more participants, or any article intended to be used as such, even with ornamental aspects.

Specific provisions in terms of protecting people or the environment:

It is recommended to use the information included in this safety data sheet as a basis for conducting workplace-specific risk assessments in order to establish the necessary risk prevention measures for the handling, use, storage and disposal of this product.

Other legislation:

The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020.
The Chemicals (Health and Safety) and Genetically Modified Organisms (Contained Use) (Amendment etc.) (EU Exit) Regulations 2020.
Control of Substances Hazardous to Health Regulations 2002 (as amended)
EH40/2005 Workplace exposure limits.

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with ANNEX II-The REACH etc. (Amendment etc.) (EU Exit) Regulations 2020.

Texts of the legislative phrases mentioned in section 2:

- H318: Causes serious eye damage.
- H336: May cause drowsiness or dizziness.
- H400: Very toxic to aquatic life.
- H411: Toxic to aquatic life with long lasting effects.
- H225: Highly flammable liquid and vapour.
- H314: Causes severe skin burns and eye damage.

Texts of the legislative phrases mentioned in section 3:

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3

GB CLP Regulation (UK S.I. 2019/720 and UK S.I. 2020/1567):



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SECTION 16: OTHER INFORMATION (continued)

Acute Tox. 3: H311 - Toxic in contact with skin.
Acute Tox. 4: H302 - Harmful if swallowed.
Aquatic Acute 1: H400 - Very toxic to aquatic life.
Aquatic Chronic 1: H410 - Very toxic to aquatic life with long lasting effects.
Eye Dam. 1: H318 - Causes serious eye damage.
Eye Irrit. 2: H319 - Causes serious eye irritation.
Flam. Liq. 2: H225 - Highly flammable liquid and vapour.
Flam. Liq. 3: H226 - Flammable liquid and vapour.
Skin Corr. 1B: H314 - Causes severe skin burns and eye damage.
Skin Irrit. 2: H315 - Causes skin irritation.
STOT SE 3: H335 - May cause respiratory irritation.
STOT SE 3: H336 - May cause drowsiness or dizziness.

Classification procedure:

Eye Dam. 1: Calculation method
STOT SE 3: Calculation method
Aquatic Acute 1: Calculation method
Aquatic Chronic 2: Calculation method
Flam. Liq. 2: Calculation method (2.6.4.3)
Skin Corr. 1B: Calculation method

Advice related to training:

Training is recommended in order to prevent industrial risks for staff using this product and to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

<http://echa.europa.eu>
<http://eur-lex.europa.eu>

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road
IMDG: International maritime dangerous goods code
IATA: International Air Transport Association
ICAO: International Civil Aviation Organisation
COD: Chemical Oxygen Demand
BOD5: 5day biochemical oxygen demand
BCF: Bioconcentration factor
LD50: Lethal Dose 50
LC50: Lethal Concentration 50
EC50: Effective concentration 50
LogPOW: Octanolwater partition coefficient
Koc: Partition coefficient of organic carbon
UFI: unique formula identifier
IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation at UK, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product, it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within our awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

- END OF SAFETY DATA SHEET -