

SAFETY DATA SHEET

10% Formic Acid with Additives (New Inhibitor)

This is a translation of the country-specific safety data sheet into a language other than that required by law. This document does not replace the safety data sheet provided according to Regulation (EC) No 1907/2006.

Revision Date: 24-Jan-2023
Preparation Date 24-Jan-2023

Revision Number: 4
Internal ID Code HM009046

SECTION 1: Identification of the substance/mixture and of the company/undertaking
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1.1. Product Identifier

Product Name 10% Formic Acid with Additives (New Inhibitor)
Internal ID Code HM009046

Other means of identification

Pure substance/mixture Mixture

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

Recommended Use Acid

Sector of uses Refer to the Annex for a listing of uses.
Product category(ies) Not applicable
Process categories PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

PROC15 - Use as a laboratory reagent
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Article categories Not applicable
Environmental release category(ies) ERC1 - Manufacture of substances
ERC2 - Formulation of preparations (mixtures)
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Sector of uses SU2a - Mining, (without offshore industries)
SU2b - Offshore industries
SU3 - Industrial uses

Process categories PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

Uses advised against Consumer use

1.3. Details of the supplier of the safety data sheet

Halliburton BV
Columbusstraat 19
7825VP
Emmen
Netherlands
www.halliburton.com

For further information, please contact:

E-mail Address: fdunexchem@halliburton.com

1.4. Emergency telephone number

+44 8 08 189 0979 / 1-760-476-3961
Global Incident Response Access Code: 334305
Contract Number: 14012

Emergency telephone - Article 45 - (EC)1272/2008	
Austria	Poison Information Centre (AT): +43-(0)1-406 43 43
Belgium	Poison center (BE): +32 70 245 245

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Bulgaria	Bulgarian poison centre: +359 2 915-44-09 or +359 2 915-43-46
Croatia	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
Cyprus	1401
Czech Republic	+420 224 919 293; +420 224 915 402
Denmark	Poison Control Hotline (DK): +45 82 12 12 12
Estonia	16662 (Local Poison Information Centre); (+372) 626 93 90 (International Poison Information Centre)
Europe	112
Finland	Poison Information Centre (FI):+358 9 471 977
France	ORFILA (FR): + 01 45 42 59 59
Germany	Poison Center Berlin (DE): +49 030 30686 790
Greece	+30 210 779 3777
Hungary	+36 (06) 80 201-199
Iceland	543 2222 / 543 1000
Ireland	National Poisons Information Centre (IE): +353 1 8379964
Italy	Poison Center, Milan (IT): +39 02 6610 1029
Latvia	(+371) 67042473 (International number for the National Toxicology Centre)
Lithuania	+370 (85) 2362052
Luxembourg	(+352) 8002 5500
Malta	2122 4071
Netherlands	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
Norway	Poisons Information (NO):+ 47 22 591300
Poland	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
Portugal	CIAV - Centro de Informação Antivenenos (Portuguese Poison Centre): + 351 213 303 271
Romania	+40 21 318 36 06
Slovakia	+421 2 4854 4511
Slovenia	112
Spain	Poison Information Service (ES): +34 91 562 04 20
Sweden	Poisons Information Center (SV):+46 8 33 12 31
Switzerland	Poison Center: Tel 145; +41 44 251 51 51
Turkey	Ulusal Zehir Danisma Merkezi (UZEM) :114 Acil Saglik Hizmetleri : 112
United Kingdom	NHS Direct (UK): +44 0845 46 47

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Substances/mixtures corrosive to metal	Category 1 - H290
Skin Corrosion/Irritation	Category 1 B - H314
Serious Eye Damage/Irritation	Category 1 - H318
Skin Sensitization	Category 1 - H317

Additional information: No information available

For full text of Hazard- and EU Hazard-statements: see SECTION 16.

2.2. Label Elements

Hazard Pictograms

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Signal Word: Danger

Hazard Statements:

H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction

Precautionary Statements:

P280 - Wear protective gloves/eye protection/face protection
P301+ P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 - Immediately call a POISON CENTER or doctor/physician
P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Contains

Substances

	CAS Number
Ethylene glycol monobutyl ether	111-76-2
Formic acid	64-18-6
Aldol	107-89-1
Ethoxylated hexanol	68439-45-2
Fatty acids, tall-oil, ethoxylated	61791-00-2

Additional information: No information available

2.3. Other Hazards

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).
This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Endocrine Disruptor Information This product contains one or more known or suspected endocrine disruptors

Substances	CAS Number	EU - REACH (1907/2006) - Article 59(1) - Candidate List of Substances of Very High Concern (SVHC) for Authorisation	EU - REACH (1907/2006) - Endocrine Disruptor Assessment List of Substances	Endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100(3) or Commission Regulation (EU) 2018/605(4)
Ethylene glycol monobutyl ether	111-76-2	-	-	-
Formic acid	64-18-6	-	endocrine disruptor assessment under development	-
Aldol	107-89-1	-	-	-
Ethoxylated hexanol	68439-45-2	-	-	-
Fatty acids, tall-oil, ethoxylated	61791-00-2	-	-	-

SECTION 3: Composition/information on ingredients

3.2. Mixtures

Mixture

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Substances	EINECS	CAS Number	REACH Reg. No	PERCENT (w/w)	EU - CLP Substance Classification
Ethylene glycol monobutyl ether	203-905-0	111-76-2	01-2119475108-36	5 - 10%	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) Acute Tox. 4 (H332)
Formic acid	200-579-1	64-18-6	01-2119491174-37	5 - 10%	Flam. Liq. 3 (H226) Met. Corr. 1 (H290) Acute Tox. 4 (H302) Skin Corr. 1A (H314) Acute Tox. 3 (H331) STOT SE 3 (H335)
Aldol	203-530-2	107-89-1	-	1 - 5%	Acute Tox. 2 (H310) Eye Irrit. 2A (H319)
Ethoxylated hexanol	614-481-5	68439-45-2	-	1 - 5%	Acute Tox. 4 (H302) Skin Irrit. 2 (H315) Eye Dam. 1 (H318) Aquatic Acute 1 (H400) Aquatic Chronic 3 (H412)
Fatty acids, tall-oil, ethoxylated	500-150-1	61791-00-2	-	0.1 - 1%	Skin Sens. 1B (H317)

Substances	EINECS	PERCENT (w/w)	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)
Ethylene glycol monobutyl ether	203-905-0	5 - 10%	-	-	-
Formic acid	200-579-1	5 - 10%	Eye Irrit. 2 :: 2%≤C<10% Skin Corr. 1A :: C≥90% Skin Corr. 1B :: 10%≤C<90% Skin Irrit. 2 :: 2%≤C<10%	-	-
Aldol	203-530-2	1 - 5%	-	-	-
Ethoxylated hexanol	614-481-5	1 - 5%	-	-	-
Fatty acids, tall-oil, ethoxylated	500-150-1	0.1 - 1%	-	-	-

Classification according to Regulation (EC) No. 1272/2008 [CLP]

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

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethylene glycol monobutyl ether	111-76-2	530 mg/kg-bw (guinea pig)	400 mg/kg (Rabbit)	No data available
Formic acid	64-18-6	730 mg/kg (rat)	>2000 mg/kg (similar substance)	7.4 mg/L (rat, 4 hr, vapour)
Aldol	107-89-1	2180 mg/kg (Rat)	140 mg/kg (Rabbit)	No data available
Ethoxylated hexanol	68439-45-2	1400 mg/kg (Rat) (similar substance)	> 2000 mg/kg (Rabbit) (similar substance)	No data available
Fatty acids, tall-oil, ethoxylated	61791-00-2	> 6400 mg/kg (Rat)	No data available	No data available

Rat = Rat, Rabbit = Rabbit, dust = dust

This product does not contain candidate substances of very high concern at a concentration ≥0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

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Additional information: No information available

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	If inhaled, move victim to fresh air and seek medical attention.
Eyes	Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
Skin	In case of contact, immediately flush skin with plenty of soap and water for at least 30 minutes and remove contaminated clothing, shoes and leather goods immediately. Get medical attention immediately.
Ingestion	Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical attention.
Protection of First-aiders	No information available.

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

Causes severe eye irritation which may damage tissue. Causes severe skin irritation with tissue destruction.

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

Notes to Physician Treat symptomatically

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media

Water fog, carbon dioxide, foam, dry chemical.

Extinguishing media which must not be used for safety reasons

None known.

5.2. Special hazards arising from the substance or mixture

Special exposure hazards in a fire

Decomposition in fire may produce harmful gases. Do not allow runoff to enter waterways.

5.3. Advice for firefighters

Special protective equipment for firefighters

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Remove sources of ignition. Use appropriate protective equipment. Avoid breathing vapors. Avoid creating and breathing dust. Ensure adequate ventilation. Evacuate all persons from the area. See Section 8 for additional information.

6.2. Environmental precautions

Prevent from entering sewers, waterways, or low areas.

6.3. Methods and material for containment and cleaning up

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Neutralize to pH of 6-8. Scoop up and remove.

6.4. Reference to other sections

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See Section 8 and 13 for additional information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Avoid breathing vapors. Ensure adequate ventilation. Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse. Use appropriate protective equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities

Store away from alkalis. Store away from oxidizers. Keep container closed when not in use. Product has a shelf life of 12 months.

7.3. Specific end use(s)

Exposure scenario

Please refer to the attached Annex for a listing of exposure scenarios.

Other Guidelines

No information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Substances	CAS Number	EU	UK	Netherlands	France
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 25 ppm TWA: 123 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 100 mg/m ³ STEL: 246 mg/m ³	TWA: 10 ppm TWA: 49 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9.6 mg/m ³ STEL: 15 ppm STEL: 28.8 mg/m ³	STEL: 5 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³
Aldol	107-89-1	Not applicable	Not applicable	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Germany	Spain	Portugal	Finland
Ethylene glycol monobutyl ether	111-76-2	TWA: 10 ppm TWA: 49 mg/m ³ Peak: 20 ppm Peak: 98 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ 50 ppm STEL [VLA-EC]; 245 mg/m ³ STEL [VLA-EC]	TWA: 20 ppm TWA: 98 mg/m ³ 50 ppm STEL STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 250 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9.5 mg/m ³ Peak: 10 ppm Peak: 19 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³ STEL: 10 ppm	TWA: 3 ppm TWA: 5 mg/m ³ STEL: 10 ppm STEL: 19 mg/m ³
Aldol	107-89-1	Not applicable	Not applicable	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL" 40 ppm STEL" 200 mg/m ³	20 ppm TWA; 98 mg/m ³ TWA 50 ppm STEL; 246 mg/m ³ STEL	TWA: 10 ppm TWA: 49 mg/m ³ STEL: 20 ppm STEL: 98 mg/m ³	TWA: 10 ppm TWA: 50 mg/m ³ STEL: 15 ppm STEL: 75 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	5 ppm TWA; 9 mg/m ³ TWA	TWA: 5 ppm TWA: 9.5 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³

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		STEL" 5 ppm STEL" 9 mg/m ³ Ceiling: 5 ppm Ceiling: 9 mg/m ³	15 ppm STEL (calculated); 27 mg/m ³ STEL (calculated)	STEL: 10 ppm STEL: 19 mg/m ³	STEL: 10 ppm STEL: 18 mg/m ³
Aldol	107-89-1	Not applicable	Not applicable	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 98 mg/m ³ STEL: 200 mg/m ³	TWA: 98 mg/m ³ STEL: 246 mg/m ³	TWA: 100 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 mg/m ³ STEL: 15 mg/m ³	TWA: 9 mg/m ³	TWA: 9 mg/m ³
Aldol	107-89-1	Not applicable	Not applicable	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³
Aldol	107-89-1	Not applicable	Not applicable	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable	Not applicable	Not applicable

Substances	CAS Number	Bulgaria	Turkey
Ethylene glycol monobutyl ether	111-76-2	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³	TWA: 20 ppm TWA: 98 mg/m ³ STEL: 50 ppm STEL: 246 mg/m ³
Formic acid	64-18-6	TWA: 5 ppm TWA: 9.0 mg/m ³	TWA: 5 ppm TWA: 9 mg/m ³

Component	European Union	United Kingdom	France	Spain	Germany
Ethylene glycol monobutyl ether 111-76-2 (5 - 10%)		240 mmol/mol creatinine		200 mg/g Creatinine	150 mg/g Creatinine urine
Substances	Austria	Switzerland	Poland	Norway	Ireland
Ethylene glycol monobutyl ether 111-76-2 (5 - 10%)		150 mg/g creatinine			200 mg/g Creatinine

Derived No Effect Level (DNEL)

Worker

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Hazards for the eyes - local effects
Ethylene glycol monobutyl ether	98 mg/m ³	663 mg/m ³	Not available	246 mg/m ³	75 mg/kg bw/day	89 mg/kg bw/day	Not available	Not available	Not available
Formic acid	Not available	Not available	9.5 mg/m ³	19 mg/m ³	Not available	Not available	Not available	Not available	Not available

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General Population

Substances	Long-term exposure - systemic effects, Inhalation	Acute / short term exposure - systemic effects, Inhalation	Long-term exposure - local effects, Inhalation	Acute / short term exposure - local effects, Inhalation	Long-term exposure - systemic effects, Dermal	Acute / short term exposure - systemic effects, Dermal	Long-term exposure - local effects, Dermal	Acute / short term exposure - local effects, Dermal	Long-term exposure - systemic effects, Oral	Acute / short term exposure - local effects, Oral	Hazards for the eyes - local effects
Ethylene glycol monobutyl ether	49 mg/m ³	426 mg/m ³	Not available	123 mg/m ³	38 mg/kg bw/day	44.5 mg/kg bw/day	Not available	Not available	3.2 mg/kg bw/day	13.4 mg/kg bw/day	Not available
Formic acid	Not available	Not available	3 mg/m ³	9.5 mg/m ³	Not available	Not available	Not available	Not available	Not available	Not available	Not available

Predicted No Effect Concentration (PNEC)

Substances	Freshwater	Marine water	Intermittent release	Sewage treatment plant	Sediment (freshwater)	Sediment (marine water)	Air	Soil	Secondary poisoning
Ethylene glycol monobutyl ether	8.8 mg/L	0.88 kg/L	9.1 mg/L	463 mg/L	34.6 mg/kg	3.46 mg/kg	Not available	3.13 mg/kg soil dw	0.02 g/kg food
Formic acid	2 mg/L	0.2 mg/L	1 mg/L	7.2 mg/L	13.4 mg/kg sediment dw	1.34 mg/kg sediment dw	Not available	1.5 mg/kg soil dw	Not available

8.2. Exposure controls

Engineering Controls

Use in a well ventilated area. Local exhaust ventilation should be used in areas without good cross ventilation.

Personal protective equipment

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

Respiratory Protection

If engineering controls and work practices cannot keep exposure below occupational exposure limits or if exposure is unknown, wear a NIOSH certified, European Standard EN 149, AS/NZS 1715:2009, or equivalent respirator when using this product. Selection of and instruction on using all personal protective equipment, including respirators, should be performed by an Industrial Hygienist or other qualified professional. Organic vapor/acid gas respirator.

Hand Protection

Chemical-resistant protective gloves (EN 374) Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374): Neoprene gloves. (>= 8 mm thickness)

This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced. Manufacturer's directions for use should be observed because of great diversity of types.

Skin Protection

Full protective chemical resistant clothing.

Eye Protection

Chemical goggles; also wear a face shield if splashing hazard exists.

Other Precautions

Eyewash fountains and safety showers must be easily accessible.

Environmental Exposure Controls Do not allow material to contaminate ground water system.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State: Liquid
Odor: Sharp

Color
Odor

Clear to Slightly Hazy
No information available

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<u>Property</u> <u>Remarks/ - Method</u>	<u>Threshold:</u> <u>Values</u>
pH:	No data available
Freezing Point / Range	No data available
Melting Point / Range	No data available
Boiling Point / Range	No data available
Flash Point	70 °C (Closed cup)
Flammability (solid, gas)	No data available
Upper flammability limit	No data available
Lower flammability limit	No data available
Evaporation rate	No data available
Vapor Pressure	No data available
Relative Vapor Density	No data available
Relative Density	1.065
Water Solubility	Miscible with water
Solubility in other solvents	No data available
Partition coefficient: n-octanol/water	No data available
Autoignition Temperature	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Explosive Properties	No information available
Oxidizing Properties	No information available

9.2. Other information

Pour Point / Range	No data available
VOC Content (%)	No data available

9.2.1 Information with regard to physical hazard classes No information available

9.2.2. Other safety characteristics No information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Not expected to be reactive.

10.2. Chemical stability

Stable

10.3. Possibility of hazardous reactions

Will Not Occur

10.4. Conditions to avoid

None anticipated

10.5. Incompatible materials

Strong alkalis. Strong oxidizers.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute Toxicity

Inhalation	Causes severe respiratory burns.
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Eye Contact	Causes severe eye burns.
Skin Contact	Causes severe burns. May cause an allergic skin reaction.
Ingestion	Causes burns of the mouth, throat and stomach.

Chronic Effects/Carcinogenicity Prolonged, excessive exposure may cause erosion of the teeth.

Toxicology data for the components

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Ethylene glycol monobutyl ether	111-76-2	530 mg/kg-bw (guinea pig)	400 mg/kg (Rabbit)	No data available
Formic acid	64-18-6	730 mg/kg (rat)	>2000 mg/kg (similar substance)	7.4 mg/L (rat, 4 hr, vapour)
Aldol	107-89-1	2180 mg/kg (Rat)	140 mg/kg (Rabbit)	No data available
Ethoxylated hexanol	68439-45-2	1400 mg/kg (Rat) (similar substance)	> 2000 mg/kg (Rabbit) (similar substance)	No data available
Fatty acids, tall-oil, ethoxylated	61791-00-2	> 6400 mg/kg (Rat)	No data available	No data available

Rat = Rat, Rabbit = Rabbit, dust = dust

Substances	CAS Number	Skin corrosion/irritation
Ethylene glycol monobutyl ether	111-76-2	Skin, rabbit: Causes moderate skin irritation. Causes skin irritation. (Rabbit)
Formic acid	64-18-6	Corrosive to skin (Rabbit)
Aldol	107-89-1	May cause mild skin irritation. (Rabbit)
Ethoxylated hexanol	68439-45-2	Causes moderate skin irritation. (Rabbit) (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	Irritating to skin. Not expected to be a skin irritant.

Substances	CAS Number	Serious eye damage/irritation
Ethylene glycol monobutyl ether	111-76-2	Eye, rabbit: Causes moderate eye irritation Causes eye irritation. (Rabbit)
Formic acid	64-18-6	Corrosive to eyes (Rabbit)
Aldol	107-89-1	Causes moderate eye irritation (Rabbit)
Ethoxylated hexanol	68439-45-2	Causes severe eye irritation which may damage tissue. (Rabbit) (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	Irritating to eyes Non-irritating to rabbit's eye

Substances	CAS Number	Skin Sensitization
Ethylene glycol monobutyl ether	111-76-2	Did not cause sensitization on laboratory animals (guinea pig)
Formic acid	64-18-6	Did not cause sensitization on laboratory animals (guinea pig)
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	Did not cause sensitization on laboratory animals (guinea pig) (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	May cause sensitization by skin contact

Substances	CAS Number	Respiratory Sensitization
Ethylene glycol monobutyl ether	111-76-2	No information available
Formic acid	64-18-6	No information available
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	No information available
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

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Substances	CAS Number	Mutagenic Effects
Ethylene glycol monobutyl ether	111-76-2	In vitro tests did not show mutagenic effects. In vivo tests did not show mutagenic effects.
Formic acid	64-18-6	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects.
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects. (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

Substances	CAS Number	Carcinogenic Effects
Ethylene glycol monobutyl ether	111-76-2	Not regarded as carcinogenic.
Formic acid	64-18-6	Did not show carcinogenic effects in animal experiments (similar substances)
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	Did not show carcinogenic effects in animal experiments (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

Substances	CAS Number	Reproductive toxicity
Ethylene glycol monobutyl ether	111-76-2	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments.
Formic acid	64-18-6	Animal testing did not show any effects on fertility. Did not show teratogenic effects in animal experiments. (similar substances)
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	Animal testing did not show any effects on fertility. (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

Substances	CAS Number	STOT - single exposure
Ethylene glycol monobutyl ether	111-76-2	No significant toxicity observed in animal studies at concentration requiring classification.
Formic acid	64-18-6	May cause respiratory irritation.
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	No data of sufficient quality are available.
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

Substances	CAS Number	STOT - repeated exposure
Ethylene glycol monobutyl ether	111-76-2	No significant toxicity observed in animal studies at concentration requiring classification.
Formic acid	64-18-6	No significant toxicity observed in animal studies at concentration requiring classification.
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

Substances	CAS Number	Aspiration hazard
Ethylene glycol monobutyl ether	111-76-2	Not applicable
Formic acid	64-18-6	Not applicable
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	Not applicable
Fatty acids, tall-oil,	61791-00-2	Not applicable

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ethoxylated		
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11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

Endocrine Disruptor Information This product contains one or more known or suspected endocrine disruptors

11.2.2 Other Information

Other Adverse Effects No information available

SECTION 12: Ecological information

12.1. Toxicity

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Ethylene glycol monobutyl ether	111-76-2	EC50(72 h)=1840 mg/L (Pseudokirchneriella subcapitata)	LC50(96 h)=1474 mg/L (Oncorhynchus mykiss) NOAEC(21 d)>100 mg/L (Danio rerio)	No information available	EC50(48 h)=1800 mg/L (Daphnia magna) EC50(21 d)=297 mg/L (Daphnia magna)
Formic acid	64-18-6	EC50(72 h)=1240 mg/L (Pseudokirchneriella subcapitata)	LC50(96 h)=130 mg/L (Danio rerio)	NOEC (13 d) 72 mg/L (Activated sludge, domestic)	EC50(48 h)=365 mg/L (Daphnia magna) NOEC(21 d)=100 mg/L (Daphnia magna)
Aldol	107-89-1	EC50 (5d) >237 mg/L (Nitzscheria linearis)	No information available	No information available	No information available
Ethoxylated hexanol	68439-45-2	EC50 (96h) 0.26 mg/L (Selenastrum Capricornutum) (similar substance) EC50 (72h) 475.51 mg/L (Skeletonema costatum)	LC50 (96h) 1.4 mg/L (Pimephales promelas) (similar substance) LC50 (96h) > 215 mg/L (Scophthalmus maximus) NOEC (30d) 0.28 mg/L (Pimephales promelas) (similar substance)	No information available	EC50 (48h) 0.39 mg/L (Ceriodaphnia dubia) (similar substance) EC50 (48h) 213.24 mg/L (Acartia tonsa) NOEC (21d) 1.75 mg/L (Daphnia magna) (similar substance)
Fatty acids, tall-oil, ethoxylated	61791-00-2	EC50 (72h) > 44 mg/L EC50 (72h) 2.5 mg/L (Skeletonema costatum)	LC50 (95h) 7.8 mg/L (Brachydanio rerio) LC50 (96h) 45 mg/L (Cyprinodon variegatus)	EC20 (180m) >1000 mg/L	EC50 (48h) 16 mg/L (Daphnia magna) EC50 (48h) 26.8 mg/L (Acartia tonsa)

growth rate = growth rate, similar substance = similar substance, activated sludge = activated sludge, reproduction = reproduction

12.2. Persistence and degradability

Substances	CAS Number	Persistence and Degradability
Ethylene glycol monobutyl ether	111-76-2	Readily biodegradable (90.4% @ 28d)
Formic acid	64-18-6	Readily biodegradable (100% @ 14d)
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	(89% @ 28d)
Fatty acids, tall-oil, ethoxylated	61791-00-2	Readily biodegradable (74% @ 28d)

12.3. Bioaccumulative potential

Bioaccumulative Potential

Substances	CAS Number	Bioaccumulation
Ethylene glycol monobutyl ether	111-76-2	Log Pow=0.9
Formic acid	64-18-6	LogKow-2.1
Aldol	107-89-1	-0.72
Ethoxylated hexanol	68439-45-2	0.45 (calculated)
Fatty acids, tall-oil, ethoxylated	61791-00-2	MW > 700

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12.4. Mobility in soil

Substances	CAS Number	Mobility
Ethylene glycol monobutyl ether	111-76-2	No information available
Formic acid	64-18-6	KOC = 31
Aldol	107-89-1	No information available
Ethoxylated hexanol	68439-45-2	No information available
Fatty acids, tall-oil, ethoxylated	61791-00-2	No information available

12.5. Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).

Substances	PBT and vPvB assessment
Ethylene glycol monobutyl ether	Not PBT/vPvB
Formic acid	Not PBT/vPvB
Aldol	Not PBT/vPvB
Ethoxylated hexanol	Not PBT/vPvB
Fatty acids, tall-oil, ethoxylated	Not PBT/vPvB

12.6 Endocrine disrupting properties

Endocrine Disruptor Information This product contains one or more known or suspected endocrine disruptors

12.7 Other adverse effects

No information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods Disposal should be made in accordance with federal, state, and local regulations.
Contaminated Packaging Follow all applicable national or local regulations.

SECTION 14: Transport information

IMDG/IMO

UN Number UN3412
UN proper shipping name: Formic Acid Solution
Transport Hazard Class(es): 8
Packing Group: II
Environmental Hazards: Not applicable
EMS: EmS F-A, S-B

ADN

UN Number UN3412
UN proper shipping name: Formic Acid Solution
Transport Hazard Class(es): 8
Packing Group II
Environmental Hazards: Not applicable

ADR/RID

UN Number UN3412
UN proper shipping name: Formic Acid Solution
Transport Hazard Class(es): 8
Packing Group II
Environmental Hazards: Not applicable

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IATA/ICAO

UN Number UN3412
UN proper shipping name: Formic Acid Solution
Transport Hazard Class(es): 8
Packing Group: II
Environmental Hazards: Not applicable

14.1. UN Number UN3412

14.2. UN proper shipping name: Formic Acid Solution

14.3. Transport Hazard Class(es): 8

14.4. Packing Group II

14.5. Environmental Hazards: Not applicable

14.6. Special Precautions for User None

14.7. Maritime transport in bulk according to IMO instruments No information available

SECTION 15: Regulatory information

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

International Inventories

US TSCA Inventory All components listed on inventory or are exempt.
Canadian Domestic Substances List (DSL) All components listed on inventory or are exempt.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

Germany, Water Endangering WGK 1: Low hazard to waters.

Classes (WGK)

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

Substances	CAS Number	Seveso III	TA LUFT
Ethylene glycol monobutyl ether	111-76-2	Not applicable	Not applicable
Formic acid	64-18-6	Not applicable	5.2.5 Class I
Aldol	107-89-1	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable

Substances	CAS Number	REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances	REACH (1907/2006) - Annex XIV - Substances Subject to Authorization
Ethylene glycol monobutyl ether	111-76-2	Not applicable	Not applicable
Formic acid	64-18-6	Not applicable	Not applicable

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Aldol	107-89-1	Not applicable	Not applicable
Ethoxylated hexanol	68439-45-2	Not applicable	Not applicable
Fatty acids, tall-oil, ethoxylated	61791-00-2	Not applicable	Not applicable

15.2. Chemical safety assessment

Yes

SECTION 16: Other information

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

H226 - Flammable liquid and vapor
H290 - May be corrosive to metals
H302 - Harmful if swallowed
H312 - Harmful in contact with skin
H310 - Fatal in contact with skin
H311 - Toxic in contact with skin
H314 - Causes severe skin burns and eye damage
H315 - Causes skin irritation
H317 - May cause an allergic skin reaction
H318 - Causes serious eye damage
H319 - Causes serious eye irritation
H331 - Toxic if inhaled
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H400 - Very toxic to aquatic life
H412 - Harmful to aquatic life with long lasting effects

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

bw – body weight
CAS – Chemical Abstracts Service
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures
EC – European Commission
EC10 – Effective Concentration 10%
EC50 – Effective Concentration 50%
EEC – European Economic Community
ErC50 – Effective Concentration growth rate 50%
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk
LC50 – Lethal Concentration 50%
LD50 – Lethal Dose 50%
LL0 – Lethal Loading 0%
LL50 – Lethal Loading 50%
MARPOL – International Convention for the Prevention of Pollution from Ships
mg/kg – milligram/kilogram
mg/L – milligram/liter
NIOSH – National Institute for Occupational Safety and Health
NOEC – No Observed Effect Concentration
NTP – National Toxicology Program
OEL – Occupational Exposure Limit
PBT – Persistent Bioaccumulative and Toxic
PC – Chemical Product category
PEL – Permissible Exposure Limit
ppm – parts per million
PROC – Process category
REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals
STEL – Short Term Exposure Limit

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SU – Sector of Use category

Key literature references and sources for data

www.ChemADVISOR.com/

Revision Date: 24-Jan-2023
Reason for Revision Update to Format

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End of Safety Data Sheet