

Safety Data Sheet

according to Regulation (EC) No 1907/2006 (REACH)
Classifications according to Regulation (EC) No 1272/2008.
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1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product name:

Formic-d acid, 95 wt% in Water

1.1. Catalog No.:

1103

1.2. Relevant identified uses of the substance or mixture

Identified: Laboratory chemical
uses: R&D

1.3. Uses advised against:

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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008 Flammable liquids (Category 3), H226 Acute toxicity, Oral (Category 4), H302 Acute toxicity, Inhalation (Category 3), H331 Skin corrosion (Sub-category 1A), H314 Serious eye damage (Category 1), H318

2.2. Label elements

2.2.1. Pictogram



2.2.2.

2.2 Label elements Labelling according Regulation (EC) No 1272/2008

Signal word Danger

Hazard statement(s) H226 Flammable liquid and vapor. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H331 Toxic if inhaled.

Precautionary statement(s) P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection. P301 + P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor. P305 + P351 + P338 IF IN

EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard information (EU) EUH071 Corrosive to the respiratory tract. 2.3 Other hazards This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component: Formic-d acid

Classification: Flam. Liq. 3; Acute Tox. 4; Acute Tox. 3; Skin Corr. 1A; Eye Dam. 1; H226, H302, H331, H314, H318

Concentration limits: ≥ 90 %: Skin Corr. 1A, H314; $10 - < 90$ %: Skin Corr. 1B, H314; $2 - < 10$ %: Skin Irrit. 2, H315; $2 - < 10$ %: Eye Irrit. 2, H319; $> 78,5$ %: Acute Tox. 3, H331; $75 - 78,5$ %: Acute Tox. 4, H332; > 75 %: , EUH071;

Concentration: ≤ 100 %

3.1.1. Formula

CHDO2

3.1.2. Molecular Weight (g/mol)

47.03

3.1.3. CAS-No.

917-71-5

4. FIRST AID MEASURES

4.1 Description of first-aid measures General advice First aider needs to protect himself. Show this material safety data sheet to the doctor in attendance. If inhaled After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen. In case of skin contact In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately. In case of eye contact After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses. If swallowed After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Pulmonary failure possible after aspiration of vomit. Call a physician immediately. Do not attempt to neutralise. 4.2 Most important symptoms and effects, both acute and delayed The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11 4.3 Indication of any immediate medical attention and special treatment needed No data available

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media Suitable extinguishing media Water Foam Carbon dioxide (CO2) Dry powder Unsuitable extinguishing media For this substance/mixture no limitations of extinguishing agents are given. 5.2 Special hazards arising from the substance or mixture Nature of decomposition products not known. 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 vapours possible in the event of fire. 5.3 Advice 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. 5.4 Further information Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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. For personal protection see section 8. 6.2 Environmental precautions Do not let product enter 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 carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area. 6.4 Reference to other sections For disposal see section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge. For precautions see section 2.2. 7.2 Conditions for safe storage, including any incompatibilities Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons. Vent periodically. Handle and open container with care. Hygroscopic. 7.3 Specific end use(s) Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters Ingredients with workplace control parameters 8.2 Exposure controls Appropriate engineering controls Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system. Personal protective equipment

Eye/face protection Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles Skin protection Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching gloves outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Body Protection Flame retardant antistatic protective clothing. Respiratory protection required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system. Control of environmental exposure Do not let product enter drains. Risk of explosion.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties a) Appearance Form: liquid Color: colorless b) Odor stinging c) Odor Threshold 0,02 ppm d) pH 2,2 at 10 g/l at 20 °C

e) Melting point/freezing point

Melting point/range: 8,2 - 8,4 °C - lit.

f) Initial boiling point and boiling range

100 - 101 °C - lit.

g) Flash point 49,5 °C - closed cup - Regulation (EC) No. 440/2008, Annex, A.9 h) Evaporation rate No data available i)

Flammability (solid, gas) No data available j) Upper/lower flammability or explosive limits Upper explosion limit: 38 % (V)

Lower explosion limit: 18 % (V) k) Vapor pressure 171 hPa at 50 °C - OECD Test Guideline 104 l) Vapor density 1,59 - (Air = 1.0) m) Relative density 1,22 g/cm³ at 25 °C - lit. n) Water solubility miscible in all proportions, (experimental) o) Partition coefficient: n-octanol/water log Pow: -2,1 at 23 °C - OECD Test Guideline 107 - Bioaccumulation is not expected. p)

Autoignition temperature 528 °C at 1.008 hPa - Tested according to Directive 92/69/EEC. q) Decomposition temperature

350 °C - r) Viscosity 1,47 mm²/s at 20 °C - OECD Test Guideline 114 - 1,02 mm²/s at 40 °C - OECD Test Guideline 114 -

s) Explosive properties No data available t) Oxidizing properties No data available 9.2 Other safety information Surface tension 71,5 mN/m at 1g/l at 20 °C - OECD Test Guideline 115 Dissociation constant 3,7 at 20 °C - OECD Test Guideline 112 Relative vapor density 1,59 - (Air = 1.0)

10. STABILITY AND REACTIVITY

10.1 Reactivity Vapor/air-mixtures are explosive at intense warming. 10.2 Chemical stability The product is chemically stable under standard ambient conditions (room temperature) . 10.3 Possibility of hazardous reactions No data available

10.4 Conditions to avoid Heating. 10.5 Incompatible materials Strong oxidizing agents, Strong bases, Powdered metals

10.6 Hazardous decomposition products Other decomposition products - No data available Hazardous decomposition products formed under fire conditions. - Nature of decomposition products not known. In the event of fire: see section 5

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects Acute toxicity LD50 Oral - Rat - male and female - 730 mg/kg (OECD Test

Guideline 401) LC50 Inhalation - Rat - male and female - 4 h - 7,85 mg/l (OECD Test Guideline 403) Skin

corrosion/irritation Skin - Rabbit Result: Severe skin irritation (Draize Test) Serious eye damage/eye irritation Causes

serious eye damage. conjunctivitis Lacrimal irritation due to vapours. Respiratory or skin sensitization Buehler Test -

Guinea pig Result: negative (OECD Test Guideline 406) Prolonged or repeated exposure may cause allergic reactions in

certain sensitive individuals. Germ cell mutagenicity Ames test Salmonella typhimurium Result: negative sister chromatid

exchange assay Chinese hamster lung cells Result: negative sister chromatid exchange assay Human lymphocytes

Result: negative In vitro mammalian cell gene mutation test Chinese hamster ovary cells Result: negative Chromosome

aberration test in vitro Chinese hamster ovary cells Result: negative OECD Test Guideline 477

Drosophila melanogaster - male Result: negative Carcinogenicity IARC: No ingredient of this product present at levels

greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. Reproductive

toxicity No data available Specific target organ toxicity - single exposure No data available Specific target organ toxicity -

repeated exposure No data available Aspiration hazard No data available Additional Information Repeated dose toxicity -

Rat - male and female - Oral - 52 Weeks - NOAEL (No observed adverse effect level) - 400 mg/kg - LOAEL (Lowest

observed adverse effect level) - 2.000 mg/kg (in analogy to similar products) RTECS: LQ4900000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting To the best of our

knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Kidney - Irregularities - Based on Human Evidence

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity to fish static test LC50 - Danio rerio (zebra fish) - 130 mg/l - 96 h (OECD Test Guideline 203) Remarks: (in analogy to similar products)

Toxicity to daphnia and other aquatic invertebrates static test EC50 - Daphnia magna (Water flea) - 365 mg/l - 48 h (OECD Test Guideline 202) Remarks: (in analogy to similar products)

Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata - 1.240 mg/l - 72 h (OECD Test Guideline 201) Remarks: (in analogy to similar products)

Toxicity to bacteria static test NOEC - activated sludge - 72 mg/l - 13 d Remarks: (ECHA) 12.2 Persistence and degradability Biodegradability aerobic - Exposure time 14 d Result: 100 % - Readily biodegradable. (OECD Test Guideline 301C)

Biochemical Oxygen Demand (BOD)

86 mg/g Remarks: (External MSDS)

Ratio BOD/ThBOD 8,60 % 12.3 Bioaccumulative potential Bioaccumulation is unlikely. Does not significantly accumulate in organisms. 12.4 Mobility in soil No data available 12.5 Results of PBT and vPvB assessment This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher. 12.6 Other adverse effects

Additional ecological information No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods Product See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

14. TRANSPORT INFORMATION

14.1 UN number ADR/RID: 1779 IMDG: 1779 IATA: 1779 14.2 UN proper shipping name ADR/RID: FORMIC ACID IMDG: FORMIC ACID IATA: Formic acid 14.3 Transport hazard class(es) ADR/RID: 8 (3) IMDG: 8 (3) IATA: 8 (3) 14.4 Packaging group ADR/RID: II IMDG: II IATA: II 14.5 Environmental hazards ADR/RID: no IMDG Marine pollutant: no IATA: no 14.6 Special precautions for user No data available

15. REGULATORY INFORMATION

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006. REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) :

Other regulations Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

15.2 Chemical Safety Assessment A Chemical Safety Assessment has been carried out for this substance.

16. OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. For lab use only!