# Safety data sheet



Safety data sheet according to UN GHS 4th rev.
Date / Revised: 02.12.2022 Version: 1.0
Product: **Amasil® 99**

(ID no. 30041107/SDS_GEN_ZA/EN)
Date of print 22.10.2025

## 1. Identification

### Product identifier

## Amasil® 99

Chemical name: formic acid...%
CAS Number: 64-18-6

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

Relevant identified uses: feed additive(s)

### Details of the supplier of the safety data sheet

Company:

### Emergency telephone number

National emergency number:
+27 11 203 2420
International emergency number:
Telephone: +49 180 2273-112

## 2. Hazards Identification

### Classification of the substance or mixture

According to UN GHS criteria

Flam. Liq. 3
Acute Tox. 3 (Inhalation - vapour)
Acute Tox. 4 (oral)
Skin Corr./Irrit. 1A
Eye Dam./Irrit. 1

Specific Concentration Limits According to UN GHS Criteria

Skin Corr./Irrit. 1A: >= 90 %
Skin Corr./Irrit. 1B: 10 - < 90 %
Eye Dam./Irrit. 2: 2 - < 10 %
Skin Corr./Irrit. 2: 2 - < 10 %

For the classifications not written out in full in this section the full text can be found in section 16.

## Label elements

Globally Harmonized System (GHS)

Pictogram:

Signal Word:
Danger

Hazard Statement:

| | |
|---|---|
| H226 | Flammable liquid and vapour. |
| H331 | Toxic if inhaled. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |

Precautionary Statements (Prevention):

| | |
|---|---|
| P271 | Use only outdoors or in a well-ventilated area. |
| P280 | Wear protective gloves, protective clothing and eye protection or face protection. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P260 | Do not breathe mist or vapour. |
| P243 | Take action to prevent static discharges. |
| P241 | Use explosion-proof electrical, ventilating and lighting equipment. |
| P264 | Wash contaminated body parts thoroughly after handling. |
| P270 | Do not eat, drink or smoke when using this product. |
| P242 | Use only non-sparking tools. |
| P240 | Ground and bond container and receiving equipment. |

Precautionary Statements (Response):

| | |
|---|---|
| P310 | Immediately call a POISON CENTER or 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. |
| P304 + P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P303 + P361 + P352 | IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. |
| P301 + P330 + P331 | IF SWALLOWED: rinse mouth. Do NOT induce vomiting. |
| P370 + P378 | In case of fire: Use alcohol-resistant foam, carbon dioxide, dry powder or water spray for extinction. |

Precautionary Statements (Storage):

| | |
|---|---|
| P403 + P235 | Store in a well-ventilated place. Keep cool. |
| P233 | Keep container tightly closed. |
| P405 | Store locked up. |

Precautionary Statements (Disposal):

| | |
|---|---|
| P501 | Dispose of contents and container to hazardous or special waste collection point. |

Labeling of special preparations (GHS):
Corrosive to the respiratory tract.

According to UN GHS criteria

Hazard determining component(s) for labelling: Formic acid

### Other hazards

According to UN GHS criteria

If applicable information is provided in this section on other hazards which do not result in classification but which may contribute to the overall hazards of the substance or mixture.

## 3. Composition/Information on Ingredients

### Substances

Chemical nature

carboxylic acid

Hazardous ingredients (GHS)
According to UN GHS criteria

Formic acid

| | |
|---|---|
| Content (W/W): >= 99 % - <= 100 % | Flam. Liq. 3 |
| CAS Number: 64-18-6 | Acute Tox. 3 (Inhalation - vapour) |
| EC-Number: 200-579-1 | Acute Tox. 4 (oral) |
| INDEX-Number: 607-001-00-0 | Skin Corr./Irrit. 1A |
| | Eye Dam./Irrit. 1 |
| | H226, H331, H302, H314 |
| | EUH071 |
| | Specific concentration limit: |
| | Skin Corr./Irrit. 1A: >= 90 % |
| | Skin Corr./Irrit. 1B: 10 - < 90 % |
| | Eye Dam./Irrit. 2: 2 - < 10 % |
| | Skin Corr./Irrit. 2: 2 - < 10 % |

For the classifications not written out in full in this section the full text can be found in section 16.

### Mixtures

Not applicable

## 4. First-Aid Measures

### Description of first aid measures

First aid personnel should pay attention to their own safety. If the patient is likely to become unconscious, place and transport in stable sideways position (recovery position). Immediately remove contaminated clothing.

If inhaled:
Keep patient calm, remove to fresh air, seek medical attention. Immediately administer a corticosteroid from a controlled/metered dose inhaler.

On skin contact:
Immediately wash thoroughly with plenty of water, apply sterile dressings, consult a skin specialist.

On contact with eyes:
Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

On ingestion:
Do not induce vomiting. Immediately rinse mouth and then drink 200-300 ml of water, seek medical attention.

### Most important symptoms and effects, both acute and delayed

Symptoms: Information, i.e. additional information on symptoms and effects may be included in the GHS labeling phrases available in Section 2 and in the Toxicological assessments available in Section 11.

### Indication of any immediate medical attention and special treatment needed

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote.

## 5. Fire-Fighting Measures

### Extinguishing media

Suitable extinguishing media:
water spray, dry powder, alcohol-resistant foam, carbon dioxide

### Special hazards arising from the substance or mixture

Carbon monoxide
The substances/groups of substances mentioned can be released in case of fire.

### Advice for fire-fighters

Special protective equipment:
Wear self-contained breathing apparatus and chemical-protective clothing.

Further information:

Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

## 6. Accidental Release Measures

### Personal precautions, protective equipment and emergency procedures
Breathing protection required. Avoid contact with the skin, eyes and clothing.

### Environmental precautions
Do not empty into drains.

### Methods and material for containment and cleaning up
For large amounts: Pump off product.
For residues: Pick up with suitable absorbent material (e.g. acid binder).

## 7. Handling and Storage

### Precautions for safe handling
Ensure thorough ventilation of stores and work areas. Sealed containers should be protected against heat as this results in pressure build-up.

Protection against fire and explosion:
Sources of ignition should be kept well clear.

### Conditions for safe storage, including any incompatibilities
Segregate from alkalies and alkalizing substances.

Suitable materials for containers: Stainless steel 1.4571, Stainless steel 1.4404, High density polyethylene (HDPE), Low density polyethylene (LDPE), glass, HDPE fluorinated

Storage stability:
Storage temperature: < 30 °C
Storage duration: <= 36 Months
From the data on storage duration in this safety data sheet no agreed statement regarding the warrantee of application properties can be deduced.

### Specific end use(s)
See exposure scenario(s) in the attachment to this safety data sheet.

## 8. Exposure Controls/Personal Protection

### Control parameters

Components with occupational exposure limits

64-18-6: Formic acid
STEL value 20 ppm
TWA value 10 ppm

### Exposure controls

Personal protective equipment

Respiratory protection:
Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for acid inorganic gases/vapours such as SO2, HCl (e.g. EN 14387 Type E). Gas filter for gases/vapours of inorganic compounds (e.g. EN 14387 Type B) Combination filter for gases/vapours of organic, inorganic, acid inorganic and alkaline compounds (e.g. EN 14387 Type ABEK). Suitable respiratory protection for higher concentrations or long-term effect: Self-contained breathing apparatus.

Hand protection:
Chemical resistant protective gloves (EN ISO 374-1)
Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN ISO 374-1):
chloroprene rubber (CR) - 0.5 mm coating thickness
butyl rubber (butyl) - 0.7 mm coating thickness
fluoroelastomer (FKM) - 0.7 mm coating thickness
Polyethylene-Laminate (PE laminate) - ca. 0.1 mm coating thickness
Suitable materials for short-term contact (recommended: At least protective index 2, corresponding > 30 minutes of permeation time according to EN ISO 374-1)
polyvinylchloride (PVC) - 0.7 mm coating thickness
natural rubber/natural latex (NR) - 0.5 mm coating thickness
Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in practice may be much shorter than the permeation time determined through testing. Manufacturer's directions for use should be observed because of great diversity of types.

Eye protection:
Tightly fitting safety goggles (cage goggles) (e.g. EN 166) and face shield.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

General safety and hygiene measures
Avoid contact with the skin, eyes and clothing. Avoid inhalation of vapour. Avoid contact with skin and eyes. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Wash contaminated clothing before reuse. Hands and/or face should be washed before breaks and at the end of the shift. When using, do not eat, drink or smoke.

## 9. Physical and Chemical Properties

### Information on basic physical and chemical properties

| | |
|---|---|
| Form: | liquid |
| Colour: | colourless to yellow |
| Odour: | of formic acid, pungent odour |
| Odour threshold: | not determined |
| pH value: | 2.2<br>(10 g/l, 20 °C) |

| | | |
|---|---|---|
| Melting point: | 8 °C<br>(1,013.25 hPa) | (OECD Guideline 102) |
| Boiling point: | 100.23 °C | (OECD Guideline 103) |
| Flash point: | 49.5 °C | (ISO 13736) |
| Evaporation rate: | Value can be approximated from Henry's Law Constant or vapor pressure. | |
| Flammability: | Flammable liquid and vapour. | (derived from flash point) |
| Lower explosion limit: | For liquids not relevant for classification and labelling., The lower explosion point may be 5 - 15 °C below the flash point. | |
| Upper explosion limit: | For liquids not relevant for classification and labelling. | |
| Ignition temperature: | 528 °C | (DIN EN 14522) |
| Vapour pressure: | 42.71 mbar<br>(20 °C) | (OECD Guideline 104) |
| | 54.96 mbar<br>(25 °C) | (OECD Guideline 104) |
| | 170.7 mbar<br>(50 °C) | (OECD Guideline 104) |
| Density: | 1.2196 g/cm3<br>(20 °C) | (ISO 2811-3) |
| | 1.1691 g/cm3<br>(55 °C) | (ISO 2811-3) |
| | 1.2200 g/cm3<br>(15 °C) | |
| | 1.1800 g/cm3<br>(50 °C) | |
| Relative density: | 1.2195<br>(20 °C) | (OECD Guideline 109) |
| Relative vapour density (air): | > 1<br>(20 °C)<br>Heavier than air. | (estimated) |
| Solubility in water: | miscible<br>(20 °C, 1,013.25 hPa) | (internal method) |
| Solubility (qualitative) solvent(s): | N,N-Dimethylformamide, 1,4-Dioxane, Dichloromethane<br>miscible in all proportions | |
| Partitioning coefficient n-octanol/water (log Kow): | -2.1<br>(23 °C; pH value: 7.0) | (Directive 92/69/EEC, A.8) |
| | -1.9<br>(23 °C; pH value: 5.0) | (Directive 92/69/EEC, A.8) |
| | -2.3<br>(23 °C; pH value: 9.0) | (Directive 92/69/EEC, A.8) |
| Self ignition: | Based on its structural properties the product is not classified as self-igniting. | Test type: Spontaneous self-ignition at room-temperature. |
| Thermal decomposition: | 350 °C, 0.15 kJ/g (DSC (DIN 51007))<br>Thermal decomposition above the indicated temperature is possible. It is not a self-decompositionable substance. | |

| | | |
|---|---|---|
| Viscosity, dynamic: | 1.72 mPa.s<br>(20 °C) | (calculated (from kinematic viscosity)) |
| | 1.17 mPa.s<br>(40 °C) | (calculated (from kinematic viscosity)) |
| | 0.92 mPa.s<br>(55 °C) | (calculated (from kinematic viscosity)) |
| Viscosity, kinematic: | 1.41 mm2/s<br>(20 °C) | (DIN 51562) |
| | 0.98 mm2/s<br>(40 °C) | (DIN 51562) |
| | 0.78 mm2/s<br>(55 °C) | (DIN 51562) |

### Other information

| | |
|---|---|
| Self heating ability: | not applicable, the product is a liquid |
| SADT: | Study scientifically not justified. |
| Miscibility with water: | miscible in all proportions |
| pKA: | 3.70<br>(20 °C) (OECD Guideline 112) |
| Adsorption/water - soil: | KOC: < 17.8; log KOC: 1.25 (OECD Guideline 121) |
| Surface tension: | 71.5 mN/m<br>(20 °C; 1 g/l) (OECD-Guideline 115) |
| Grain size distribution: | The substance / product is marketed or used in a non solid or granular form. |
| Molar mass: | 46.03 g/mol |

## 10. Stability and Reactivity

### Reactivity

| | | |
|---|---|---|
| Corrosion to metals: | No corrosive effect on metal. | |
| | No corrosive effect on metal. | |
| Formation of flammable gases: | Remarks: | Forms no flammable gases in the presence of water. |

### Chemical stability
Slow decomposition possible.

### Possibility of hazardous reactions
Exothermic reaction. Reacts with alkalies. Reacts with amines. The formation of gaseous decomposition products builds up pressure in tightly closed containers.

### Conditions to avoid
Temperature: > 30 °C

### Incompatible materials

Substances to avoid:
bases, non-coated metals, base metals

### Hazardous decomposition products

Hazardous decomposition products:
Carbon monoxide

## 11. Toxicological Information

### Information on toxicological effects

Acute toxicity

Assessment of acute toxicity:
Of moderate toxicity after single ingestion. Of pronounced toxicity after short-term inhalation.

Experimental/calculated data:
LD50 rat (oral): 730 mg/kg (OECD Guideline 401)

LC50 rat (by inhalation): 7.85 mg/l 4 h (BASF-Test)
The vapour was tested.

(dermal):No data available. Study scientifically not justified.

Irritation

Assessment of irritating effects:
Highly corrosive! Damages skin and eyes.

Experimental/calculated data:
Skin corrosion/irritation rabbit: Corrosive. (OECD Guideline 404)
Literature data.

Serious eye damage/irritation: Study scientifically not justified. As the product corrodes the skin, it can be expected to have a similar effect on the eyes also.

Respiratory/Skin sensitization

Assessment of sensitization:
Skin sensitizing effects were not observed in animal studies.

Experimental/calculated data:
Buehler test guinea pig: Non-sensitizing. (OECD Guideline 406)

Germ cell mutagenicity

Assessment of mutagenicity:
No mutagenic effect was found in various tests with bacteria and mammalian cell culture. The substance was not mutagenic in an insect test.

Carcinogenicity

Assessment of carcinogenicity:

In long-term studies in rats and mice in which the substance was given by feed, a carcinogenic effect was not observed. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Reproductive toxicity

Assessment of reproduction toxicity:
The results of animal studies gave no indication of a fertility impairing effect. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Developmental toxicity

Assessment of teratogenicity:
No indications of a developmental toxic / teratogenic effect were seen in animal studies. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Specific target organ toxicity (single exposure)

Assessment of STOT single:
Corrosive to the respiratory tract.

Repeated dose toxicity and Specific target organ toxicity (repeated exposure)

Assessment of repeated dose toxicity:
No substance-specific organtoxicity was observed after repeated administration to animals. The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aspiration hazard

No aspiration hazard expected.

## 12. Ecological Information

### Toxicity

Assessment of aquatic toxicity:
There is a high probability that the product is not acutely harmful to aquatic organisms. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.
The product gives rise to pH shifts.

Toxicity to fish:
LC50 (96 h) 130 mg/l, Brachydanio rerio (OECD 203; ISO 7346; 92/69/EEC, C.1, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

Aquatic invertebrates:
EC50 (48 h) 365 mg/l, Daphnia magna (OECD Guideline 202, part 1, static)

The product has not been tested. The statement has been derived from substances/products of a similar structure or composition. The statement of the toxic effect relates to the analytically determined concentration.

Aquatic plants:
EC50 (72 h) 1,240 mg/l (growth rate), Selenastrum capricornutum (OECD Guideline 201, static)
The product has not been tested. The statement has been derived from substances/products of a similar structure or composition.

EC50 (72 h) 32.64 mg/l (growth rate), Scenedesmus subspicatus (DIN 38412 Part 9, static)
The details of the toxic effect relate to the nominal concentration. The product will cause changes in the pH value of the test system. The result refers to an unneutralized sample.

Microorganisms/Effect on activated sludge:
EC10 (13 d) 72 mg/l, activated sludge, domestic, non-adapted (other, aerobic)

Chronic toxicity to fish:
Study scientifically not justified.

Chronic toxicity to aquatic invertebrates:
No observed effect concentration (21 d) >= 100 mg/l, Daphnia magna (OECD Guideline 211, semistatic)
The statement of the toxic effect relates to the analytically determined concentration. The product will cause changes in the pH value of the test system. The result refers to a neutralized sample. No effects at the highest test concentration.

Assessment of terrestrial toxicity:
No data available.
Study scientifically not justified.

Soil living organisms:
Literature data.

Terrestrial plants:
Literature data.

Other terrestrial non-mammals:
LD50 (18 h) >= 111 mg/kg, Agelaius phoeniceus
Literature data.

## Persistence and degradability

Assessment biodegradation and elimination (H2O):
Readily biodegradable (according to OECD criteria).

Elimination information:
100 % DOC reduction (9 d) (OECD 301E/92/69/EEC, C.4-B) (aerobic, municipal sewage treatment plant effluent)

Assessment of stability in water:
According to structural properties, hydrolysis is not expected/probable.
Information on Stability in Water (Hydrolysis):
$t_{1/2}$ > 5 d (50 °C, pH value 4), (Directive 92/69/EEC, C.7, pH 4)

$t_{1/2}$ > 5 d (50 °C, pH value 7), (Directive 92/69/EEC, C.7, pH 7)

$t_{1/2}$ > 5 d (50 °C, pH value 9), (Directive 92/69/EEC, C.7, pH 9)

### Bioaccumulative potential

Assessment bioaccumulation potential:
Significant accumulation in organisms is not to be expected.

Bioaccumulation potential:
Significant accumulation in organisms is not to be expected.

### Mobility in soil

Assessment transport between environmental compartments:
Volatility: The substance will not evaporate into the atmosphere from the water surface.
Adsorption in soil: Adsorption to solid soil phase is not expected.

### Results of PBT and vPvB assessment

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): The product does not fulfill the criteria for PBT (Persistent/bioaccumulative/toxic) and vPvB (very persistent/very bioaccumulative). Self classification

### Other adverse effects

The substance is not listed in Regulation (EC) 1005/2009 on substances that deplete the ozone layer.

### Additional information

Sum parameter

Chemical oxygen demand (COD): 348 mg/g

Biochemical oxygen demand (BOD) Incubation period 5 d: 86 mg/g

## 13. Disposal Considerations

### Waste treatment methods

A waste code in accordance with the European waste catalog (EWC) cannot be specified, due to dependence on the usage.
The waste code in accordance with the European waste catalog (EWC) must be specified in cooperation with disposal agency/manufacturer/authorities.

Incinerate in suitable incineration plant, observing local authority regulations.

Contaminated packaging:
Contaminated packaging should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.

## 14. Transport Information

**Land transport**

ADR

| | |
|---|---|
| UN number or ID number: | UN1779 |
| UN proper shipping name: | FORMIC ACID |
| Transport hazard class(es): | 8, 3 |
| Packing group: | II |
| Environmental hazards: | no |
| Special precautions for user: | Tunnel code: D/E |

RID

| | |
|---|---|
| UN number or ID number: | UN1779 |
| UN proper shipping name: | FORMIC ACID |
| Transport hazard class(es): | 8, 3 |
| Packing group: | II |
| Environmental hazards: | no |
| Special precautions for user: | None known |

**Inland waterway transport**

ADN

| | |
|---|---|
| UN number or ID number: | UN1779 |
| UN proper shipping name: | FORMIC ACID |
| Transport hazard class(es): | 8, 3 |
| Packing group: | II |
| Environmental hazards: | no |
| Special precautions for user: | None known |

Transport in inland waterway vessel

| | |
|---|---|
| UN number or ID number: | UN1779 |
| UN proper shipping name: | FORMIC ACID |
| Transport hazard class(es): | 8, 3, N3 |
| Packing group: | II |
| Environmental hazards: | yes |
| Type of inland waterway vessel: | N |
| Cargo tank design: | 2 |
| Cargo tank type: | 3 |

**Sea transport**

IMDG

| | |
|---|---|
| UN number or ID number: | UN 1779 |
| UN proper shipping name: | FORMIC ACID |
| Transport hazard class(es): | 8, 3 |
| Packing group: | II |
| Environmental hazards: | no<br>Marine pollutant: NO |
| Special precautions for user: | EmS: F-E; S-C |

**Air transport**

IATA/ICAO

| | |
|---|---|
| UN number or ID number: | UN 1779 |
| UN proper shipping name: | FORMIC ACID |
| Transport hazard class(es): | 8, 3 |
| Packing group: | II |
| Environmental hazards: | No Mark as dangerous for the environment is needed |
| Special precautions for user: | None known |

### Maritime transport in bulk according to IMO instruments

| | |
|---|---|
| Regulation: | IBC-Code |
| Product name: | Formic acid (over 85%) |
| Pollution category: | Y |
| Ship Type: | 3 |

## 15. Regulatory Information

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

Not applicable

## 16. Other Information

Full text of classifications, hazard symbols and hazard statements, if mentioned in section 2 or 3:

| | |
|---|---|
| Flam. Liq. | Flammable liquids |
| Acute Tox. | Acute toxicity |
| Skin Corr./Irrit. | Skin corrosion/irritation |
| Eye Dam./Irrit. | Serious eye damage/eye irritation |

| | |
|---|---|
| H226 | Flammable liquid and vapour. |
| H331 | Toxic if inhaled. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| EUH071 | Corrosive to the respiratory tract. |

The data contained in this safety data sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. This safety data sheet is neither a Certificate of Analysis (CoA) nor technical data sheet and shall not be mistaken for a specification agreement. Identified uses in this safety data sheet do neither represent an agreement on the corresponding contractual quality of the substance/mixture nor a contractually designated use. It is the responsibility of the recipient of the product to ensure any proprietary rights and existing laws and legislation are observed.

Vertical lines in the left hand margin indicate an amendment from the previous version.