

## SAFETY DATA SHEET

Creation Date 03-November-2009

Revision Date 18-January-2018

Revision Number 4

### 1. Identification

**Product Name** Formic acid (88%)

**Cat No. :** A118P-4; A118P-100; A118P-500; A119P-1; A119P-4; A119P-4LC; A119P-20; A119P-500;

**CAS-No** 64-18-6  
**Synonyms** No information available

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Not for food, drug, pesticide or biocidal product use

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

##### Company

**Importer/Distributor**  
Fisher Scientific  
112 Colonnade Road,  
Ottawa, ON K2E 7L6,  
Canada  
Tel: 1-800-234-7437

##### **Manufacturer**

Fisher Scientific  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

##### **Emergency Telephone Number**

Chemtrec US: (800) 424-9300  
Chemtrec EU: 001 (202) 483-7616

### 2. Hazard(s) identification

#### Classification

**WHMIS 2015 Classification** Classified as hazardous under the Hazardous Products Regulations (SOR/2015-17)

|  |              |
|--|--------------|
| <b>Flammable liquids</b>                       | Category 3   |
| <b>Acute oral toxicity</b>                     | Category 4   |
| <b>Acute Inhalation Toxicity</b>               | Category 3   |
| <b>Skin Corrosion/Irritation</b>               | Category 1 B |
| <b>Serious Eye Damage/Eye Irritation</b>       | Category 1   |
| <b>Health Hazards Not Otherwise Classified</b> | Category 1   |
| Corrosive to the respiratory tract             |              |
| Lachrymator                                    |              |

#### Label Elements

##### **Signal Word**

Danger

##### **Hazard Statements**

Flammable liquid and vapor  
Harmful if swallowed  
Toxic if inhaled

Causes severe skin burns and eye damage  
Corrosive to the respiratory tract  
Lachrymator



### Precautionary Statements

#### Prevention

Do not breathe dust/fumes/gas/mist/vapours/spray  
Avoid breathing dust/fume/gas/mist/vapors/spray  
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking  
Keep container tightly closed  
Ground/bond container and receiving equipment  
Use explosion-proof electrical/ventilating/lighting/equipment  
Use only non-sparking tools  
Take precautionary measures against static discharges  
Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product  
Use only outdoors or in a well-ventilated area  
Wear protective gloves/protective clothing/eye protection/face protection

#### Response

IF INHALED: Remove person to fresh air and keep comfortable for breathing  
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
Immediately call a POISON CENTER/doctor  
Rinse mouth  
Do NOT induce vomiting  
Wash contaminated clothing before reuse  
Explosion risk in case of fire  
Fight fire with normal precautions from a reasonable distance  
Evacuate area

#### Storage

Store locked up  
Store in a closed container  
Store in a well-ventilated place. Keep cool

#### Disposal

Dispose of contents/container to an approved waste disposal plant

## 3. Composition/Information on Ingredients

| Component   | CAS-No    | Weight % |
|-------------|-----------|----------|
| Formic acid | 64-18-6   | 85-90    |
| Water       | 7732-18-5 | 10 - 15  |

## 4. First-aid measures

### General Advice

Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.

|  |  |
|--|--|
| <b>Eye Contact</b>                     | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.  |
| <b>Skin Contact</b>                    | Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.  |
| <b>Inhalation</b>                      | Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.  |
| <b>Ingestion</b>                       | Do not induce vomiting. Call a physician or Poison Control Center immediately.   |
| <b>Most important symptoms/effects</b> | Breathing difficulties. Causes burns by all exposure routes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting; Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation |
| <b>Notes to Physician</b>              | Treat symptomatically  |

## 5. Fire-fighting measures

|   |   |
|---|---|
| <b>Suitable Extinguishing Media</b>     | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray. |
| <b>Unsuitable Extinguishing Media</b>   | No information available  |
| <b>Flash Point</b>                      | 60 °C / 140 °F  |
| <b>Method -</b>                         | No information available  |
| <b>Autoignition Temperature</b>         | 520 °C / 968 °F   |
| <b>Explosion Limits</b>                 |   |
| <b>Upper</b>                            | No data available   |
| <b>Lower</b>                            | No data available   |
| <b>Sensitivity to Mechanical Impact</b> | No information available  |
| <b>Sensitivity to Static Discharge</b>  | No information available  |

### Specific Hazards Arising from the Chemical

Flammable. Corrosive Material. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Containers may explode when heated. Thermal decomposition can lead to release of irritating gases and vapors. Keep product and empty container away from heat and sources of ignition.

### Hazardous Combustion Products

Carbon monoxide (CO) Carbon dioxide (CO<sub>2</sub>) Hydrogen Thermal decomposition can lead to release of irritating gases and vapors

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### NFPA

|               |                     |                    |                         |
|---------------|---------------------|--------------------|-------------------------|
| <b>Health</b> | <b>Flammability</b> | <b>Instability</b> | <b>Physical hazards</b> |
| 3             | 2                   | 1                  | N/A                     |

## 6. Accidental release measures

|  |   |
|--|---|
| <b>Personal Precautions</b>              | Use personal protective equipment. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. |
| <b>Environmental Precautions</b>         | Avoid release to the environment. See Section 12 for additional ecological information.   |
| <b>Methods for Containment and Clean</b> | Remove all sources of ignition. Soak up with inert absorbent material. Keep in suitable,  |

**Up** closed containers for disposal. Use spark-proof tools and explosion-proof equipment.

## 7. Handling and storage

**Handling** Use only under a chemical fume hood. Wear personal protective equipment. Use spark-proof tools and explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not ingest.

**Storage** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Flammables area.

## 8. Exposure controls / personal protection

### Exposure Guidelines

| Component   | Alberta  | British Columbia           | Ontario TWAEV              | Quebec   | ACGIH TLV                  | OSHA PEL   | NIOSH IDLH   |
|-------------|--|----------------------------|----------------------------|--|----------------------------|--|--|
| Formic acid | TWA: 5 ppm<br>TWA: 9.4 mg/m <sup>3</sup><br>STEL: 10 ppm<br>STEL: 19 mg/m <sup>3</sup> | TWA: 5 ppm<br>STEL: 10 ppm | TWA: 5 ppm<br>STEL: 10 ppm | TWA: 5 ppm<br>TWA: 9.4 mg/m <sup>3</sup><br>STEL: 10 ppm<br>STEL: 19 mg/m <sup>3</sup> | TWA: 5 ppm<br>STEL: 10 ppm | (Vacated) TWA:<br>5 ppm<br>(Vacated) TWA:<br>9 mg/m <sup>3</sup><br>TWA: 5 ppm<br>TWA: 9 mg/m <sup>3</sup> | IDLH: 30 ppm<br>TWA: 5 ppm<br>TWA: 9 mg/m <sup>3</sup> |

#### Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

### Engineering Measures

Use only under a chemical fume hood. Use explosion-proof electrical/ventilating/lighting/equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles

#### Hand Protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

| Glove material | Breakthrough time                 | Glove thickness | Glove comments         |
|----------------|-----------------------------------|-----------------|------------------------|
| Natural rubber | See manufacturers recommendations | -               | Splash protection only |
| Butyl rubber   |                                   |                 |                        |
| Nitrile rubber |                                   |                 |                        |
| Neoprene       |                                   |                 |                        |
| PVC            |                                   |                 |                        |

Inspect gloves before use. observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information) gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion. gloves with care avoiding skin contamination.

### Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

**Recommended Filter type:** Particulates filter conforming to EN 143 or Acid gases filter Type E Yellow conforming to EN14387

When RPE is used a face piece Fit Test should be conducted

### **Environmental exposure controls**

Prevent product from entering drains.

### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

|   |                              |
|---|------------------------------|
| <b>Physical State</b>                         | Liquid                       |
| <b>Appearance</b>                             | Colorless                    |
| <b>Odor</b>                                   | pungent                      |
| <b>Odor Threshold</b>                         | No information available     |
| <b>pH</b>                                     | 2.1 10 g/L aq.sol            |
| <b>Melting Point/Range</b>                    | 8 °C / 46.4 °F               |
| <b>Boiling Point/Range</b>                    | 101 °C / 213.8 °F @ 760 mmHg |
| <b>Flash Point</b>                            | 60 °C / 140 °F               |
| <b>Evaporation Rate</b>                       | No information available     |
| <b>Flammability (solid,gas)</b>               | Not applicable               |
| <b>Flammability or explosive limits</b>       |                              |
| <b>Upper</b>                                  | No data available            |
| <b>Lower</b>                                  | No data available            |
| <b>Vapor Pressure</b>                         | 44 mbar @ 20 °C              |
| <b>Vapor Density</b>                          | No information available     |
| <b>Specific Gravity</b>                       | 1.220                        |
| <b>Solubility</b>                             | Miscible with water          |
| <b>Partition coefficient; n-octanol/water</b> | No data available            |
| <b>Autoignition Temperature</b>               | 520 °C / 968 °F              |
| <b>Decomposition Temperature</b>              | No information available     |
| <b>Viscosity</b>                              | 1.47 mPa.s @ 20 °C           |
| <b>Molecular Formula</b>                      | C H2 O2                      |
| <b>Molecular Weight</b>                       | 46.02                        |

## 10. Stability and reactivity

|   |   |
|---|---|
| <b>Reactive Hazard</b>                  | None known, based on information available  |
| <b>Stability</b>                        | Hygroscopic. heat sensitive. Decomposes to water and carbon dioxide.  |
| <b>Conditions to Avoid</b>              | Incompatible products. Excess heat. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water.       |
| <b>Incompatible Materials</b>           | Strong oxidizing agents, Metals, Powdered metals, Strong bases  |
| <b>Hazardous Decomposition Products</b> | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Hydrogen, Thermal decomposition can lead to release of irritating gases and vapors |
| <b>Hazardous Polymerization</b>         | Hazardous polymerization does not occur.  |
| <b>Hazardous Reactions</b>              | None under normal processing.   |

## 11. Toxicological information

### **Acute Toxicity**

#### **Product Information**

**Oral LD50**

Category 4.

**Dermal LD50**

Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.

Vapor LC50 Category 3.

**Component Information**

| Component   | LD50 Oral         | LD50 Dermal | LC50 Inhalation                    |
|-------------|-------------------|-------------|------------------------------------|
| Formic acid | 730 mg/kg ( Rat ) | Not listed  | 15 g/m <sup>3</sup> ( Rat ) 15 min |
| Water       | -                 | Not listed  | Not listed                         |

**Toxicologically Synergistic Products** No information available**Delayed and immediate effects as well as chronic effects from short and long-term exposure****Irritation** Causes severe burns by all exposure routes May cause irritation to mucous membranes and respiratory tract**Sensitization** No information available**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Component   | CAS-No    | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|-------------|-----------|------------|------------|------------|------------|------------|
| Formic acid | 64-18-6   | Not listed | Not listed | Not listed | Not listed | Not listed |
| Water       | 7732-18-5 | Not listed | Not listed | Not listed | Not listed | Not listed |

**Mutagenic Effects** No information available**Reproductive Effects** No information available.**Developmental Effects** No information available.**Teratogenicity** No information available.**STOT - single exposure** None known**STOT - repeated exposure** None known**Aspiration hazard** No information available**Symptoms / effects, both acute and delayed** Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation**Endocrine Disruptor Information** No information available**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

**Ecotoxicity**

Do not empty into drains.

| Component   | Freshwater Algae   | Freshwater Fish                        | Microtox             | Water Flea         |
|-------------|--------------------|--|----------------------|--------------------|
| Formic acid | EC50 = 25 mg/L/96h | Leuciscus idus: LC50 = 46-100 mg/L/96h | EC50 = 46.7 mg/L/17h | EC50 = 34 mg/L/48h |

**Persistence and Degradability** Miscible with water Persistence is unlikely based on information available.**Bioaccumulation/ Accumulation** No information available.**Mobility** . Will likely be mobile in the environment due to its water solubility.

| Component   | log Pow |
|-------------|---------|
| Formic acid | -0.54   |

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and

national hazardous waste regulations to ensure complete and accurate classification.

| Component             | RCRA - U Series Wastes | RCRA - P Series Wastes |
|-----------------------|------------------------|------------------------|
| Formic acid - 64-18-6 | U123                   | -                      |

## 14. Transport information

### DOT

|                         |             |
|-------------------------|-------------|
| UN-No                   | UN1779      |
| Proper Shipping Name    | FORMIC ACID |
| Hazard Class            | 8           |
| Subsidiary Hazard Class | 3           |
| Packing Group           | II          |

### TDG

|                         |             |
|-------------------------|-------------|
| UN-No                   | UN1779      |
| Proper Shipping Name    | FORMIC ACID |
| Hazard Class            | 8           |
| Subsidiary Hazard Class | 3           |
| Packing Group           | II          |

### IATA

|                         |             |
|-------------------------|-------------|
| UN-No                   | UN1779      |
| Proper Shipping Name    | Formic acid |
| Hazard Class            | 8           |
| Subsidiary Hazard Class | 3           |
| Packing Group           | II          |

### IMDG/IMO

|                         |             |
|-------------------------|-------------|
| UN-No                   | UN1779      |
| Proper Shipping Name    | Formic acid |
| Hazard Class            | 8           |
| Subsidiary Hazard Class | 3           |
| Packing Group           | II          |

## 15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

### International Inventories

| Component   | DSL | NDSL | TSCA | EINECS    | ELINCS | NLP | PICCS | ENCS | AICS | IECSC | KECL |
|-------------|-----|------|------|-----------|--------|-----|-------|------|------|-------|------|
| Formic acid | X   | -    | X    | 200-579-1 | -      |     | X     | X    | X    | X     | X    |
| Water       | X   | -    | X    | 231-791-2 | -      |     | X     | -    | X    | X     | X    |

### Canada

SDS in compliance with provisions of information as set out in Canadian Standard - Part 4, Schedule 1 and 2 of the Hazardous Products Regulations (HPR) and meets the requirements of the HPR (Paragraph 13(1)(a) of the Hazardous Products Act (HPA)).

| Component   | Canada - National Pollutant Release Inventory (NPRI) | Canadian Environmental Protection Agency (CEPA)<br>- List of Toxic Substances | Canada's Chemicals Management Plan (CEPA) |
|-------------|--|---|---|
| Formic acid | Part 1, Group A Substance                            |   |   |

## 16. Other information

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Email: EMSDS.RA@thermofisher.com

**Creation Date** 03-November-2009  
**Revision Date** 18-January-2018  
**Print Date** 18-January-2018

**Revision Summary**

This document has been updated to comply with the requirements of WHMIS 2015 to align with the Globally Harmonised System (GHS) for the Classification and Labelling of Chemicals.

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**