

**Section 1. Supplier Information**



**General Chemical Corp.**  
12336 Emerson Drive  
Brighton, MI 48116  
(248) 587-5600  
**Emergency Telephone: 1-800-424-9300**

**Section 2. Hazardous Ingredients**

<u>Hazardous Component(s)</u>	<u>CAS #</u>	<u>PEL TWA</u>	<u>PEL Ceiling</u>	<u>TLV TWA</u>	<u>TLV STEL</u>	<u>MFG Limits</u>	<u>WGT %</u>
Formic acid	64-18-6	5 ppm	N/E	5 ppm	10 ppm	N/E	30 - 60
2-Butoxyethanol	111-76-2	50 ppm#	N/E	25 ppm#	N/E	25 ppm#	< 5

N/A = Not Applicable; N/E = Not Established; \* = Mists; # = Skin; ' = Respirable Dust; " = Total Dust; ^ = Vapor; \*\* = Fumes; C = Ceiling Limit

All components of this product are listed on the Toxic Substances Control Act (TSCA) Inventory and the Canadian Domestic Substances List (DSL), or are exempt from the listing.

**Section 3. Hazards Identification**

**Primary Routes of Entry**

Inhalation: YES  
Skin: YES  
Ingestion: YES

**Hazardous Materials Information System (HMIS) Ratings**

Health:	* 3	0 = Minimal
Fire:	1	1 = Slight
Reactivity:	1	2 = Moderate
		3 = Serious
		4 = Severe
		* = Chronic Hazard

**Signs of Symptoms of Exposure:**

**INHALATION:** Exposure to mists may cause coughing, sneezing, and other symptoms of respiratory tract irritation. Overexposure may result in lung tissue damage due to corrosive effects.

**SKIN:** Can be a severe skin irritant. May be corrosive and cause severe burns if not washed immediately.

**EYES:** This product is destructive to eye tissues on contact. Will cause severe burns that result in damage to the eyes and even blindness.

**INGESTION:** This product, if swallowed, can cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus, and stomach.

**Chemical Listed as Potential Carcinogens:**

NTP: NO

IARC: NO

OSHA: NO

Target Organs: Eyes, skin, and respiratory system.

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**Section 4. Emergency And First Aid Procedures**

**INHALATION:** If adverse effects such as dizziness, nausea, or irritation are noted, move person to fresh air. If not breathing, give artificial respiration. Get medical attention!

**SKIN:** Immediately wash skin with large amounts of soap and water. Remove contaminated clothing and shoes; wash before reuse. Get medical attention if irritation persists after washing.

**EYES: THE OBJECT IS TO FLUSH MATERIAL OUT IMMEDIATELY, THEN SEEK MEDICAL ATTENTION!** Immediately flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Washing eyes within several seconds is essential to achieve maximum effectiveness. **SEEK MEDICAL ATTENTION IMMEDIATELY!**

**INGESTION: DO NOT INDUCE VOMITING!** Contact a physician immediately!

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**Section 5. Fire Fighting Measures**

Flash Point: > 200 ° F

Method Used: Tagliabue Closed Cup

Flammable Limits in Air % by Volume: LEL: 14

UEL: 34 ; for formic acid.

Extinguisher Media: Carbon dioxide, dry chemical, foam, or water fog.

Special Fire Fighting Procedures: Firefighters should wear a self-contained breathing apparatus with a full facepiece operated in pressure demand or other positive pressure mode, and protective clothing.

Unusual Fire And Explosion Hazards: Corrosive fumes may result from thermal decomposition.

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**Section 6. Accidental Release Measures**

If material is spilled, evacuate the area, ventilate, and avoid breathing vapors. Dike area to contain spill. Clean up area by mopping or with absorbent material and place in closed containers for disposal. Avoid contamination of ground and surface waters. Do not flush to sewer. If spill occurs indoors, turn off air conditioning and/or heating systems, to prevent vapors from contaminating entire building.

CERCLA (Superfund) Reportable Quantity (in lbs RQ Formic acid = 5000 lbs. (Product RQ = 10, 700 lbs. - 1,157 gallons)

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**Section 7. Handling and Storage**

Handling: Avoid contact with skin and eyes; wash thoroughly after handling. Avoid breathing vapor; use with adequate ventilation.

Storage: **KEEP FROM FREEZING!** Store in a dry location at room temperature. Keep container closed and maintain all original markings and labels. Product is corrosive to zinc, aluminum, tin, and alloys of these metals.

Other: **CAUTION!** Do not use cutting or welding torches on containers, even when empty. Containers, even those that have been emptied, will retain product residue and vapors. Do not reuse container without recycling or reconditioning. Handle empty containers as if they were full.

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**Section 8. Exposure Controls and Personal Protection**

Respiratory Protection: Use NIOSH / MSHA approved respirator where high vapor or mist concentrations are present.

Local Exhaust: Special ventilation is suggested at points where vapors can be expected to escape to the workplace air.

Mechanical Exhaust: Mechanical ventilation should be sufficient to maintain exposure levels below exposure limits.

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Protective Gloves: Wear chemical resistant gloves.

Eye Protection: Safety glasses with side shields. Do NOT wear contact lenses. Chemical goggles and/or faceshield should be worn where splashing is possible.

Other Protection: Eye wash and safety shower should be readily available. Wear a chemical resistant apron and boots where splashing is possible.

Hygienic Practices: Protective equipment and clothing should be selected, used and maintained according to applicable standards and regulations. For further information, contact the clothing or equipment manufacturer. Do not eat, drink, or smoke while using this product. Wash hands prior to eating, drinking, smoking, or using restrooms. Cleanse skin thoroughly after contact, before breaks and meals, and at the end of the work shift.

**Section 9. Physical and Chemical Properties**

Boiling Point: 212 ° F (initial) Degree of water solubility:  
Negligible = Less than 0.1%  
Slight = 0.1% - 1%  
Moderate = 1% - 10%  
Appreciable = More than 10%  
Complete = 100%

Specific Gravity (H<sub>2</sub>O=1): 1.10-1.11

Vapor Pressure (mm Hg): > 1 mm Hg

Vapor Density (air=1) N/E

Solubility in Water: Complete.

Reactivity in Water: None.

Weight per Gallon (lb/gal): 9.2 - 9.3 lbs/gal

% Volatile by Volume: 100 %

% Solid by Weight: 0 %

Appearance and Odor: Clear, colorless liquid with a strong acid odor.

Theoretical VOC: 4.8 - 4.9 lbs/gal  
(>0.1 mm Hg @ 20 ° C)

Analytical VOC : 4.4 - 4.5 lbs/gal  
(EPA method 24)

pH: < 1.5

**Section 10. Stability and Reactivity**

Stability: Stable. Hazard Polymerization: Will not occur.

Conditions to Avoid: Heat, sparks, or open flame.

Incompatibility (Materials to Avoid): Oxidizing agents and bases (alkalies).

Hazardous Decomposition Products: Oxides of carbon.

**Section 11. Toxicological Information**

Formic acid [CASRN 000064-18-6]

**ACUTE TOXICITY**

Oral LD50 (rat) = 1.10 - 1.85 g/kg

Inhalation LC50 (rat) > 500 ppm (6 hour) - estimate [60% survival to 500 ppm for 10 days] [2,4-I,F,J,H,5,0-050200]

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2-butoxyethanol [CASRN 000111-76-2]

**ACUTE TOXICITY**

Oral LD50 (guinea pig) = 1.4 g/kg Eye irritation (rabbit): severe.  
Dermal LD50 (guinea pig) > 2 g/kg Skin irritation (rabbit): moderate.  
Inhalation LC50 (guinea pig) > 633 ppm, 1 hr

Reproductive and Developmental Toxicity: Inhalation exposure of pregnant rabbits caused some lethality to the dam and fetus at 200 ppm, but there were no effects at 100 ppm and below. In another study by the same route irritancy was noted in the dams and a related fetotoxicity was observed at 100 and 200 ppm, but there were no effects 50 ppm and below. Birth defects were not noted in either study.

Other Testing: Exposure of rats by inhalation to 2-butoxyethanol caused hemolysis, hemoglobinuria (blood in the urine) and a slight increase in liver weight. Other species, including man, were much less sensitive to hemolysis. The hemolytic effect seen in rats was transitory and/or reversible and not considered to be relevant to human health.

Carcinogenicity: The National Toxicology Program (NTP, 1998) has conducted lifetime inhalation bioassays in rats and mice at concentrations up to 125 ppm and 250 ppm 2-butoxyethanol, respectively. NTP found no evidence of carcinogenic activity in male rats, equivocal evidence in female rats based on adrenal tumors, and some evidence in male and female mice based on liver hemangiosarcoma and forestomach tumors. The relevance of these findings to humans is questionable. NTP concludes that the human carcinogenic potential of this material cannot be determined at this time. [18,7-1,14-082400]

**Section 12. Ecological Information**

Formic acid [CASRN 000064-18-6]

**ECOTOXICITY**

48 hr LC50 (Leuciscus idus) = 122 ppm 48 hr EC50 (Daphnia magna) = 120-151.2 ppm  
96 hr LC50 (Leuciscus idus) = 46-100 ppm 24 hr EC50 (Daphnia magna) = 34.2 ppm  
24 hr LC50 (Artemia salina) = 410 ppm 72 hr EC50 (S. subspicatus) = 26.9 ppm  
24 hr LC50 (L. gibbosus) = 175-5000 ppm 48 hr EC50 (Daphnia magna) = 34.2 ppm  
96 hr EC50 (S. subspicatus) = 25 ppm 96 hr LC50 (S. quadricauda) = 46-100 ppm  
17 hr EC50 (Psuedomonas putida) = 46.7 ppm 24 hr NOEC (Escherichia coli) = 1000 ppm  
0.5 hr EC0 (Belebtschlamm species) = 1000 ppm

DEGRADATION: Determined to be "ready biodegradable" in two separate aerobic tests (OECD Guideline 301E). In six other aerobic tests using various methods, biodegradation of formic acid ranged from 40.5 to 80.5% after 5 days. Seventy percent aerobic degradation occurred after only 1 day using the Warburg technique with activated sludge. Photodegradation (indirect photolysis) occurs in air and water. The half-life in air is 35.7 days and water is 0.9 years.

BIOACCUMULATION: The calculated values for the log octanol/water partition coefficient range from -1.55 to -0.22. The measured log octanol/water partition coefficient is -0.54. [2,4-I,F,J,H,5,0-050200]

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2-butoxyethanol [CASRN 000111-76-2]

**ECOTOXICITY**

48 h LC50 (Daphnia) > 1,000 mg/l    24 h TLm Brine shrimp = 1,000 mg/l  
96 h LC50 Fathead minnow = 1,700 mg/l    IC50 bacteria > 5,000 mg/l

**DEGRADATION**

BOD 5 = 26 % (O2 consumption)    COD (measured) = 2.25 mg/mg  
BOD10 = 74 %    ThOD (calculated) = 2.10 - 2.30 mg/mg  
BOD20 = 88 %    Kow (measured) = 0.83  
28 d Sturm test = 90% (CO2 evolved)    [20,2-1,2,18-011701]

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**Section 13. Disposal Considerations**

Waste Disposal Methods (Federal, State, Local):

In accordance with all federal, state and local requirements.

RCRA Hazardous Waste Number: D002, U123

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**Section 14. Transport Information**

Hazardous Material Description:

(Proper shipping name, hazard class, hazard ID#, packing group)

Domestic ground non-bulk: UN3412, FORMIC ACID SOLUTION, 8, PG II

Domestic ground bulk: RQ UN3412, FORMIC ACID SOLUTION, 8, PG II

International: UN3412, FORMIC ACID SOLUTION, 8, PG II

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**Section 15. Regulatory Information**

SARA 313 Information

'This product contains the following chemical(s) above deminis concentrations and may be subject to reporting under section 313:

Formic acid, CAS# 64-18-6, 30 - 60 %.

Certain glycol ethers, <5 %

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**Section 16. Other Information**

This MSDS contains revisions in the following sections: New product

Prepared by: Andrew J. Thomas    Chemist

Revised by:

The development of this Material Safety Data Sheet (MSDS) relies upon information provided to us by each of our raw material suppliers. This MSDS will be updated as changes occur to their MSDS(s).

We believe the recommendations and technical information contained herein to be accurate. However, they are given without warranty or guarantee, expressed or implied, and we assume no responsibility for losses or damage, direct or indirect, as a result of their use.