



PURITAN PRODUCTS

Effective Date: 04/14/16

Replaces Revision: 05/01/13, 01/15/08

NON-EMERGENCY TELEPHONE
610-866-4225

24-HOUR CHEMTREC EMERGENCY TELEPHONE
800-424-9300

SDS – SAFETY DATA SHEET

1. Identification

Product Identifier: FORMIC ACID

Synonyms: Methanoic Acid, Hydrogen Carboxylic Acid, Formylic Acid

Chemical Formula: HCOOH

Recommended Use of the Chemical and Restrictions On Use: Laboratory Reagent

Manufacturer / Supplier: Puritan Products; 2290 Avenue A, Bethlehem, PA 18017 **Phone:** 610-866-4225

Emergency Phone Number: 24-Hour Chemtrec Emergency Telephone 800-424-9300

2. Hazard(s) Identification

Classification of the Substance or Mixture:

Flammable liquids (Category 3)
Acute toxicity, Oral (Category 4)
Acute toxicity, Inhalation (Category 3)
Skin corrosion (Category 1A)
Serious eye damage (Category 1)
Acute aquatic toxicity (Category 3)

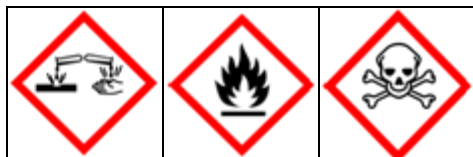
Risk Phrases:

R10: Flammable.
R22: Harmful if swallowed.
R23: Toxic by inhalation.
R35: Causes severe burns.
R52: Harmful to aquatic organisms.

Label Elements:

Trade Name: FORMIC ACID

Signal Word: Danger



Hazard Statements:

H226: Flammable liquid and vapor.
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H331: Toxic if inhaled.
H402: Harmful to aquatic life.

Precautionary Statements:

P261: Avoid breathing dust/ fume/ gas/ mist / vapors/ spray.
P280: Wear protective gloves / protective clothing / eye protection / face protection.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing.
P310: Immediately call a POISON CENTER or doctor / physician.

3. Composition / Information on Ingredients

CAS Number: 64-18-6
EC Number: 200-579-1
Index Number: 607-001-00-0
Molecular Weight: 46.03

Ingredient	CAS Number	EC Number	Percent	Hazardous	Chemical Characterization
Formic Acid	64-18-6	200-579-1	88 - 100%	Yes	Substance
Water	7732-18-5	231-791-2	0 -12%	No	Mixture

4. First-aid Measures

In all cases, Immediately call a POISON CENTER or doctor / physician.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give Oxygen. Get medical attention immediately.

Ingestion: DO NOT INDUCE VOMITING! Give large quantities of water or milk, if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire-fighting Measures

Fire: Flash point: 50C (122F) CC / Autoignition temperature: 601C (1114F) / Flammable limits in air % by volume: uel: 57; lel: 18 / Combustible Liquid and Vapor! Fire data listed is for formic acid. Flash point and explosive limits are for 90% aqueous solutions of Formic Acid.

Explosion: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Sensitive to static discharge.

Fire Extinguishing Media: Dry chemical, Carbon Dioxide, water spray, or Alcohol resistant foam.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering.

Environmental Precautions and Methods and Materials for Containment and Cleaning Up: Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime,) then absorb with an inert material (e. g., vermiculite, dry sand, earth,) and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

7. Handling and Storage

Precautions for Safe Handling and Conditions for Safe Storage, Including Any Incompatibilities: Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Strongly corrosive. Should be handled in 316 stainless steel, glass, ceramic, or similar corrosion resistant materials. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid.) Observe all warnings and precautions listed for the product.

8. Exposure Controls / Personal Protection

Airborne Exposure Limits:

OSHA Permissible Exposure Limit (PEL): 5 ppm (TWA)
ACGIH Threshold Limit Value (TLV): 5 ppm (TWA), 10 ppm (STEL)

Ventilation System: A system of local and / or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved): If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full face piece respirator, air-lined hood, or full face piece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). Formic Acid has questionable warning properties and a low IDLH. Respirator recommended to 6 times the TLV value as a maximum.

Skin Protection: Wear impervious protective clothing, including boots, gloves (rubber or neoprene,) lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and / or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance: Clear, colorless liquid

Odor: Characteristic, pungent odor

Odor Threshold: Not determined

pH: 2.2 g/l at 20C (68 F)

% Volatiles by volume @ 21C (70F): 100

Melting Point: ca. 8C (ca. 46F)

Boiling Point / Boiling Range: 101C (214F)

Flash Point: 50C (122F) CC

Evaporation Rate (BuAC=1): 2.1

Flammability: Combustible Liquid and Vapor!

Upper / Lower Flammability or Explosive Limits: uel: 57; lel: 18

Vapor Pressure (mm Hg): 40 @ 24C (75F)

Vapor Density (Air=1): 1.6 @ 19C (66F)

Relative Density: 1.22 g/cm³ at 25C (77F)
Solubility: Infinitely soluble
Partition Coefficient: n-octanol / water: log Pow: -0.54
Auto-ignition Temperature: 601C (1114F)
Decomposition Temperature: No data available
Viscosity: 1.57 cP at 26C

10. Stability and Reactivity

Reactivity and / or Chemical Stability: Stable under ordinary conditions of use and storage.

Possibility of Hazardous Reactions and Conditions to Avoid: Heat, flame, other sources of ignition.

Incompatible Materials: Sulfuric Acid, strong caustics, Furfuryl Alcohol, Hydrogen Peroxide, strong oxidizers and bases. Reacts explosively with oxidizing agents.

Hazardous Decomposition Products: Carbon Dioxide and Carbon Monoxide may form when heated to decomposition. Dehydrated by Sulfuric Acid to produce Carbon Monoxide.

11. Toxicological Information

Emergency Overview: DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG DAMAGE. VAPOR IS IRRITATING TO EYES AND RESPIRATORY TRACT. COMBUSTIBLE LIQUID AND VAPOR.

Potential Health Effects:

Inhalation: Inhalation of vapors can cause severe irritation of nose, throat, and upper respiratory tract. Inhalation of higher concentrations may cause central nervous system effects and lung damage.

Ingestion: Causes serious burns and corrosion of the mouth, throat, and esophagus, with immediate pain and difficulty swallowing. Other symptoms of abdominal pain, nausea, diarrhea and vomiting can occur, leading to shortness of breath and death. Severe poisonings may cause shock, kidney damage.

Skin Contact: Corrosive. Symptoms of redness, pain, and severe burn can occur.

Eye Contact: Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

Chronic Exposure: Prolonged or repeated exposure to low concentrations may cause skin irritation and burns. Prolonged or repeated exposure may cause liver and kidney damage.

Aggravation of Pre-existing Conditions: Sensitization is rare, but may occur in persons previously sensitized to formaldehyde.

Specific Target Organ Toxicity - Single Exposure (Globally Harmonized System:) No data available.

Specific Target Organ Toxicity - Repeated Exposure (Globally Harmonized System:) No data available.

Numerical Measures of Toxicity: Cancer Lists: NTP Carcinogen

Ingredient	Known	Anticipated	IARC Category
Formic Acid (64-18-6)	No	No	None
Water (7732-18-5)	No	No	None

Acute Toxicity:

Oral rat LD50: 1100 mg/kg; inhalation rat LC50: 15 gm/m³ / 15M; investigated as a tumorigen, mutagen. Investigated as a mutagen, reproductive effector.

12. Ecological Information

Ecotoxicity:

Toxicity to fish LC50 *Leuciscus idus* (Golden orfe): 46 - 100 mg/l - 96 hr

Toxicity to daphnia and other aquatic invertebrates EC50: *Daphnia magna* (Water flea) - 34.2 mg/l - 48 hr

Toxicity to bacteria - *Pseudomonas putida*: 46.7 mg/l - 17 hr

Persistence and Degradability: When released into the soil, this material may biodegrade to a moderate extent. When released into water, this material is expected to readily biodegrade. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals.

Bioaccumulative Potential: Bioaccumulation is unlikely..

Mobility in Soil: When released into the soil, this material is expected to leach into groundwater.

Other adverse effects: US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

13. Disposal Considerations

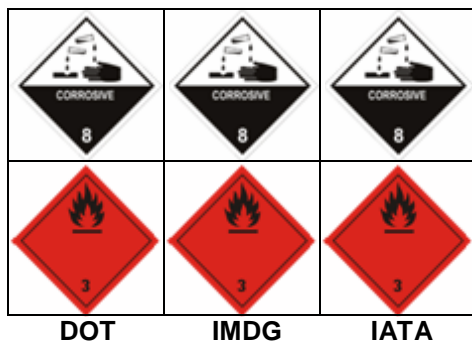
Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

UN Number: UN1779

UN Proper Shipping Name: FORMIC ACID

Packing Group: II



Land Transport ADR/RID and GGVS/GGVE (Cross Border / Domestic)

Transport Hazard Class(es): 8, 3

Maritime Transport IMDG/GGVSea

Transport Hazard Class(es): 8, 3

EMS-No: F-E, S-C

Marine Pollutant: No

Air Transport ICAO-TI and IATA-DGR

Transport Hazard Class(es): 8, 3

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Special Precautions for User: No additional information

15. Regulatory Information

Chemical Inventory Status – Part 1

Ingredient	TSCA	EC	Japan	Australia
Formic Acid (64-18-6)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

Chemical Inventory Status – Part 2

Ingredient	Korea	Canada		Phil.
		DSL	NDSL	
Formic Acid (64-18-6)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

Federal, State & International Regulations - Part 1

Ingredient	SARA 302		SARA 313	
	RQ	TPQ	List Chemical	Catg.
Formic Acid (64-18-6)	No	No	Yes	No
Water (7732-18-5)	No	No	No	No

Federal, State & International Regulations - Part 2

Ingredient	RCRA		TSCA
	CERCLA	261.33	8(d)
Formic Acid (64-18-6)	5000	U123	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No	TSCA 12(b): No	CDTA: No
SARA 311/312: Acute: Yes	Chronic: Yes	Fire: Yes
Reactivity: No	Mixture / Liquid	
	Pressure: No	

Australian Hazchem Code: 2R

Poison Schedule: None allocated

16. Other Information

Revision 04/14/16 – modified Effective Date

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