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SECTION 1. IDENTIFICATION

: FORMIC ACID 94% Product name

Product code : 51377-00, N513777S, N513778S, N513779S, P513774A,

P513772A

Manufacturer or supplier's details

Company name of supplier Eastman Chemical Company

Address 200 South Wilcox Drive

Kingsport TN 37660-5280

Telephone (423) 229-2000

Emergency telephone : For emergency health, safety, and environmental information,

call 1-423-229-4511 or 1-423-229-2000.

Recommended use of the chemical and restrictions on use

Recommended use pickling acids

adjustment of pH value in textile and leather industry

Restrictions on use : No information available.

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Flammable liquids : Category 3

Acute toxicity (Oral) : Category 4

Acute toxicity (Inhalation) : Category 3

Skin corrosion Category 1

Serious eye damage Category 1

GHS label elements

Hazard pictograms







Signal Word Danger

Hazard Statements : H226 Flammable liquid and vapor.

H302 Harmful if swallowed.



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H314 Causes severe skin burns and eye damage.

H331 Toxic if inhaled.

Precautionary Statements

: Prevention:

P210 Keep away from heat/sparks/open flames/hot surfaces.

No smoking.

P233 Keep container tightly closed.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting/ equip-

ment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing vapors.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/

face protection.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT

induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately

all contaminated clothing. Rinse skin with water/shower.

P304 + P340 IF INHALED: Remove person to fresh air and

keep comfortable for breathing.

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.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use water spray, alcohol-resistant

foam, dry chemical or carbon dioxide to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container

tightly closed.

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Disposal:

P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regu-

lations.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Chemical nature : Organic acids

Ingredients



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Chemical name	CAS-No.	Concentration (% w/w)
formic acid	64-18-6	94 - 96

SECTION 4. FIRST AID MEASURES

General advice : Take off all contaminated clothing immediately.

Remove victim from exposure and then have him lie down in

the recovery position.

If not breathing, give artificial respiration.

If inhaled : Remove person to fresh air and keep comfortable for breath-

ıng.

Get medical attention.

In case of skin contact : In case of contact, immediately flush skin with plenty of water

for at least 15 minutes while removing contaminated clothing

and shoes.

Cover wound with sterile dressing.
Get immediate medical advice/ attention.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids,

for at least 15 minutes.

Immediate medical attention is required.

If swallowed : Rinse mouth with water.

Drink plenty of water.

Do NOT induce vomiting.

Never give anything by mouth to an unconscious person.

Get immediate medical advice/ attention.

Most important symptoms and effects, both acute and

delayed

: corrosive effects Harmful if swallowed.

Causes serious eye damage.

Toxic if inhaled. Causes severe burns.

Notes to physician : Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water

Dry powder

Alcohol-resistant foam Carbon dioxide (CO2)

Hazardous combustion prod-

ucts

: In case of fire hazardous decomposition products may be

produced such as: Carbon monoxide

Further information : Collect contaminated fire extinguishing water separately. This

must not be discharged into drains.



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for fire-fighters

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

tive equipment and emer-

gency procedures

Personal precautions, protec- : Keep people away from and upwind of spill/leak.

Wear respiratory protection.

Avoid contact with skin, eyes and clothing.

Environmental precautions : Do not empty into drains.

Methods and materials for containment and cleaning up : Large spills should be collected mechanically (remove by

pumping) for disposal.

Residues

Soak up with inert absorbent material.

Sand

Universal binder

SECTION 7. HANDLING AND STORAGE

Advice on protection against

fire and explosion

: Keep away from sources of ignition - No smoking.

Advice on safe handling : Use only with adequate ventilation.

The pressure in sealed containers can increase under the

influence of heat. Keep away from heat.

Ensure that eyewash stations and safety showers are close to

the workstation location.

Conditions for safe storage Keep away from sources of ignition - No smoking.

Protect from sunlight.

Keep away from combustible material.

The product may form CO (carbon monoxide) under pro-

longed storage.

Before entering storage tanks, the CO (carbon monoxide)

level should be checked.

Materials to avoid

Bases Amines

Strong acids and oxidizing agents

Copper Aluminum

Recommended storage tem-

perature

: < 30 °C

Storage period : <= 24 Months



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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
formic acid	64-18-6	TWA	5 ppm	ACGIH
		STEL	10 ppm	ACGIH
		TWA	5 ppm 9 mg/m3	NIOSH REL
		TWA	5 ppm 9 mg/m3	OSHA Z-1
		TWA	5 ppm 9 mg/m3	OSHA P0

Engineering measures

: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Personal protective equipment

Respiratory protection : If engineering controls do not maintain airborne

concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved

respirator must be worn.

Use NIOSH approved respiratory protection.

Hand protection

Material : Acid-resistant protective gloves.

Material : Chloroprene

Material : butyl-rubber

Remarks : Take note of the information given by the producer

concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of

contact).

Eye protection : Tightly fitting safety goggles

Face-shield

Skin and body protection : Body protection suitability and breakthrough time will differ

depending on the specific use conditions.

acid-resistant protective clothing

Chemical resistant apron

Footwear protecting against chemicals

SAFETY DATA SHEET



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Protective measures : Avoid contact with skin, eyes and clothing.

Avoid inhalation of vapor or mist.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : colorless, clear

Odor : pungent

Odor Threshold : not determined

pH : <1

Melting point/freezing point : 1.6 °C

Boiling point/boiling range : 100 °C

Flash point : 55 °C

Method: Pensky-Martens closed cup

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Upper explosion limit : upper flammability limit

51 %(V) formic acid

Lower explosion limit : lower flammability limit

18 %(V) formic acid

Vapor pressure : ca. 4.4 kPa (20 °C)

Relative vapor density : No data available

Relative density : 1.2133

Density : 1.2133 g/cm3 (20 °C)

Solubility(ies)

Water solubility : completely soluble

Partition coefficient: n-

octanol/water

: SECTION 12: Ecological information

Autoignition temperature : ca. 520 °C

Decomposition temperature : 350 °C

formic acid



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Viscosity

Viscosity, dynamic : 2.1 mPa,s (20 °C)

Viscosity, kinematic : No data available

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Surface tension : 71.5 mN/m, 20 °C, formic acid

SECTION 10. STABILITY AND REACTIVITY

Reactivity : Reacts with the following substances:

Bases Amines

Chemical stability : Stable under normal conditions.

The product may form CO (carbon monoxide) under pro-

longed storage.

Possibility of hazardous reac-

tions

: Reacts with the following substances:

Bases Amines

Exothermic reaction

Conditions to avoid : Do not expose to temperatures above: 30 °C

To avoid thermal decomposition, do not overheat.

Incompatible materials : Bases

Amines

Strong oxidizing agents

Strong acids Copper Aluminum

Combustible material

Hazardous decomposition

products

: Thermal decomposition

Carbon monoxide

The product may form CO (carbon monoxide) under pro-

longed storage.

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Harmful if swallowed. Toxic if inhaled.



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Product:

Acute oral toxicity : Acute toxicity estimate: 776.6 mg/kg

Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 8.35 mg/l

Exposure time: 4 h
Test atmosphere: vapor
Method: Calculation method

Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity : Assessment: Not classified

Ingredients:

formic acid:

Acute oral toxicity : LD50 Oral (Rat): 730 mg/kg

Acute inhalation toxicity : LC50 (Rat): 7.85 mg/l

Exposure time: 4 h

Skin corrosion/irritation

Causes severe burns.

Ingredients:

formic acid:

Assessment: Corrosive

Serious eye damage/eye irritation

Causes serious eye damage.

Ingredients:

formic acid:

Assessment: Corrosive

Respiratory or skin sensitization

Skin sensitization: Not classified based on available information.

Respiratory sensitization: Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity

Not classified based on available information.

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.

OSHA No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a carcinogen or potential carcino-

gen by OSHA.



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NTP No ingredient of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

Not classified based on available information.

STOT-single exposure

Not classified based on available information.

STOT-repeated exposure

Not classified based on available information.

Aspiration toxicity

Not classified based on available information.

Experience with human exposure

Product:

Inhalation : Symptoms: Inhalation of vapors is irritating to the respiratory

system, may cause throat pain and cough., Breathing difficul-

ties

Skin contact : Symptoms: Causes severe skin burns., May cause skin irrita-

tion and/or dermatitis.

Eye contact : Symptoms: Causes serious eye damage.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Ingredients: formic acid:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 130 mg/l

Exposure time: 96 h

Toxicity to daphnia and other

aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 365 mg/l

Exposure time: 48 h

Toxicity to algae : EC50 (Chlorella pyrenoidosa): 1,240 mg/l

Exposure time: 72 h

Persistence and degradability

Product:

Biodegradability : Remarks: Readily biodegradable

Ingredients:

formic acid:

Biodegradability : Result: Readily biodegradable.



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Bioaccumulative potential

Ingredients:

formic acid:

: Bioconcentration factor (BCF): 3.2 Bioaccumulation

Remarks: Does not bioaccumulate.

Partition coefficient: n-

octanol/water

: log Pow: -2.1

Mobility in soil

Product:

Mobility Medium: Water

Remarks: completely soluble

Other adverse effects

Product:

Ozone-Depletion Potential Regulation: 40 CFR Protection of Environment; Part 82 Pro-

tection of Stratospheric Ozone - CAA Section 602 Class I

Substances

Remarks: This product neither contains, nor was

manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A +

Ingredients:

formic acid:

Results of PBT and vPvB

assessment

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be

very persistent and very bioaccumulating (vPvB).

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of as hazardous waste in compliance with local and

national regulations.

Do not dispose of waste into sewer.

Can be incinerated, when in compliance with local regulations.

Contaminated packaging : In accordance with local and national regulations.

The hazard and precautionary statements displayed on the

label also apply to any residues left in the container.



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SECTION 14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No. : UN 1779
Proper shipping name : Formic acid

Class : 8
Subsidiary risk : 3
Packing group : II

Labels : Corrosive, Flammable Liquids

855

Packing instruction (cargo

aircraft)

Packing instruction (passen: 851

ger aircraft)

IMDG-Code

UN number : UN 1779
Proper shipping name : FORMIC ACID

Class : 8
Subsidiary risk : 3
Packing group : II
Labels : 8 (3)
EmS Code : F-E, S-C
Marine pollutant : no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number : UN 1779
Proper shipping name : FORMIC ACID

Class : 8
Subsidiary risk : 3
Packing group : II

Labels : Class 8 - Corrosive, Class 3 - Flammable Liquid

ERG Code : 153 Marine pollutant : no

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know

SARA 311/312 Hazards : Fire Hazard

Acute Health Hazard

Fire Hazard

Acute Health Hazard



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SARA 302 : No chemicals in this material are subject to the reporting

requirements of SARA Title III, Section 302.

SARA 313 : The following components are subject to reporting levels

established by SARA Title III, Section 313:

formic acid 64-18-6 94 %

Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

formic acid 64-18-6 94 %

Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

formic acid 64-18-6 94 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

formic acid 64-18-6 94 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Massachusetts Right To Know

formic acid 64-18-6 90 - 100 %

Pennsylvania Right To Know

formic acid 64-18-6 90 - 100 % Water 7732-18-5 5 - 10 %

New Jersey Right To Know

formic acid 64-18-6 90 - 100 % Water 7732-18-5 5 - 10 %

The ingredients of this product are reported in the following inventories:

CH INV : On the inventory, or in compliance with the inventory

DSL : On the inventory, or in compliance with the inventory

AICS : On the inventory, or in compliance with the inventory

NZIoC : On the inventory, or in compliance with the inventory

ENCS : On the inventory, or in compliance with the inventory



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ISHL : On the inventory, or in compliance with the inventory

KECI: On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : Not listed

TSCA : On the inventory, or in compliance with the inventory

TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System: GLP - Good Laboratory Practice: HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR -No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ -Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations;



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UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB -Very Persistent and Very Bioaccumulative

Further information

NFPA: Flammability Health

Special hazard.

HMIS III:

HEALTH	3
FLAMMABILITY	2
PHYSICAL HAZARD	0

0 = not significant, 1 =Slight, 2 = Moderate, 3 = High

4 = Extreme, * = Chronic

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The information provided in this Material 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.

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