EASTMAN

Safety Data Sheet

Preparation Date 11-04-2014 **Revision date** 11-27-2015 **Revision number** 4

1. Identification of the Substance/Preparation and of the Company/Undertaking

Product identifier

Product name **FORMIC ACID 99%**

Other means of identification

Product code 51375
Synonyms None

Recommended use of the chemical and restrictions on use

Recommended use Preparation of ensilage. Pickling of metals. pH adjustment.
Uses advised against No information available

Details of the Supplier of the Safety Data Sheet

Supplier Address
Taminco US LLC
A subsidiary of Eastman Chemical Company
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Allentown, PA USA 18195
T: +(800) 223-3258

Manufacturer Address
Taminco Finland Oy
a subsidiary of Eastman Chemical Company
Typpitie 1
FI-90620 Oulu
Finland
T: +358 207 108 300
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Emergency telephone number

Emergency Telephone

In case of emergency call CHEMTREC 1-800-424-9300
for International calls 1-703-527-3887

2. Hazards Identification

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Vapors)	Category 3
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
FLAMMABLE LIQUIDS	Category 3

Label Elements

Symbols/Pictograms

Signal Word
DANGER

hazard statements
Harmful if swallowed
Toxic if inhaled
Causes severe skin burns and eye damage
Flammable liquid and vapor

Precautionary Statement - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves/protective clothing/eye protection/face protection
Keep away from heat/sparks/open flames/hot surfaces - no smoke
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge

Precautionary Statements - Response

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 or doctor/physician
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting
Call a POISON CENTER or doctor/physician if you feel unwell
In case of fire: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal
P501 - Dispose of contents/container in accordance with local regulation

Hazards Not Otherwise Classified (HNOC)
Not Applicable

3. Composition/information on Ingredients

Chemical name	CAS-No	Weight %	Trade secret
Formic acid	64-18-6	>=99	No

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. First aid measures

First Aid Measures

General advice If symptoms persist, call a physician. Show this material safety data sheet to the doctor in attendance.

Eye contact	Immediate medical attention is required. Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Skin contact	Take off all contaminated clothing immediately. Wash off immediately with plenty of water for at least 15 minutes. Consult a physician.
Inhalation	Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Consult a physician.
Ingestion	Do NOT induce vomiting. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Call a physician immediately.
Protection of First-aiders	Use personal protective equipment.

Most Important Symptoms and Effects, Both Acute and Delayed

See Section 11: TOXICOLOGICAL INFORMATION.

Indication of Any Immediate Medical Attention and Special Treatment Needed

Treat symptomatically.

5. Fire-fighting measures

Suitable extinguishing media
Carbon dioxide (CO2). Water spray. Dry chemical. Alcohol-resistant foam.

Unsuitable extinguishing media
High volume water jet.

Specific hazards arising from the chemical
In case of fire hazardous decomposition products may be produced such as.

Hazardous combustion products Carbon monoxide.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, NIOSH (approved or equivalent) and full protective gear.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid contact with skin, eyes and clothing. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Wear self-contained breathing apparatus and protective suit. Rubber gloves.

Environmental Precautions

Should not be released into the environment. Remove immediately adhering matter. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system.

Methods and material for containment and cleaning up

Use explosion-proof equipment. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Large spills should be collected mechanically (remove by pumping) for disposal. Keep in suitable, closed containers for disposal. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

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7. Handling and Storage

Precautions for Safe Handling

Use only in area provided with appropriate exhaust ventilation. Keep away from heat and sources of ignition. Handle and open container with care. Wear personal protective equipment. Wash hands after handling. Do not eat, drink or smoke when using this product. Remove contaminated clothing and protective equipment before entering eating areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Conditions for safe storage, including any incompatibilities

In accordance with local and national regulations. Store in original container. Protect from sunlight and store in well-ventilated place. Keep at temperatures below 30°C. Keep away from open flames, hot surfaces and sources of ignition. Incompatible with strong acids and oxidizing agents. Bases. Copper. aluminium. Keep away from combustible material. The product may form CO (carbon monoxide) under prolonged storage. Before entering storage tanks, the CO (carbon monoxide) level should be checked.

incompatible materials Strong acids and oxidizing agents. Bases. copper. Aluminum. Combustible material.

8. Exposure Controls/Personal Protection

Control Parameters

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Formic acid 64-18-6	TWA Value 5ppm; STEL Value 10ppm	5 ppm TWA; 9 mg/m³ TWA	-

IDLH: Immediately Dangerous to Life or Health

Appropriate Engineering Controls

Ensure adequate ventilation, especially in confined areas.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Tightly fitting safety goggles. and. Face-shield.

Skin and Body Protection Wear protective gloves and protective clothing.

Respiratory protection If irritation is experienced, NIOSH approved respiratory protection should be worn. Respiratory protection must be provided in accordance with current local regulations.

General hygiene considerations Regular cleaning of equipment, work area and clothing. Keep away from food, drink and animal feeding stuffs. Contaminated work clothing should not be allowed out of the workplace. For environmental protection remove and wash all contaminated protective equipment before re-use.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Physical state	Clear liquid		
appearance	No information available	**Odor**	Pungent
color	colorless		

Property	VALUES	Remarks • Method
pH	1	

Melting point/freezing point	4 °C / 47.3 °F	
Boiling Point/Range	101.5 °C / 215 °F	
flash point	48 °C / 118 °F	PMCC
evaporation rate	no data available	
flammability (solid, gas)	Not applicable	
Flammability limit in air		
Upper flammability limit:	51 vol%	
Lower flammability limit:	18 vol%	
vapor pressure	4.4 kPa @20°C/68°F	
vapor density		
Specific gravity	1.22	
Water solubility	No information available	
Solubility in Other Solvents	No information available	
Partition coefficient	Log Pow : -2.1 @ 23°C (pH 7)	
Autoignition temperature	520 °C / 968 °F	
decomposition temperature	350 °C / 662 °F	
Kinematic viscosity	1.47 mm²/s	
Dynamic viscosity	1.8 mPas	@20°C/68°F
Explosive properties	Not explosive	
Oxidizing properties	The substance or mixture is not classified as oxidizing	

OTHER INFORMATION

molecular weight	No information available
VOC Content	No information available
density	1.22 g/cm3 @ 20 °C / 68 °F

10. Stability and Reactivity

Reactivity
See Incompatible Materials

Chemical stability
Stable under recommended storage conditions. Strong acid decomposes slowly to form CO (carbon monoxide).

Possibility of Hazardous Reactions
Exothermic reaction. :. Bases. Amines. Risk of violent reaction. :. Strong oxidizing agents.

Hazardous polymerization
Hazardous polymerization does not occur.

Conditions to avoid
Temperatures above 30°C. To avoid thermal decomposition, do not overheat.

incompatible materials
Strong acids and oxidizing agents. Bases. copper. Aluminum. Combustible material.

Hazardous decomposition products
Thermal decomposition. Carbon monoxide. Strong acid decomposes slowly to form CO (carbon monoxide).

11. Toxicological Information

Inhalation	Toxic by inhalation. Corrosive by inhalation.
Eye contact	Causes serious eye damage.
Skin contact	Causes severe burns.
Ingestion	Ingestion causes burns of the upper digestive and respiratory tracts. Harmful if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Inhalation of vapors is irritating to the respiratory system, may cause throat pain and cough If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the esophagus and the stomach Causes burns to skin and eyes

Product information

LD50/oral/rat =	730 mg/kg
Acute dermal toxicity	Not classified
LC50/inhalation/4h/rat =	7.85 mg/l
Eye irritation	Corrosive, Causes serious eye damage
Skin irritation	Corrosive, Causes severe burns
sensitization	Did not cause sensitization on laboratory animals
Mutagenic effects	Did not show mutagenic effects in animal experiments
Reproductive Toxicity	Information given is based on data obtained from similar substances Did not show teratogenic effects in animal experiments
Carcinogenic effects	Information given is based on data obtained from similar substances : Did not show carcinogenic effects in animal experiments
Specific target organ systemic toxicity (single exposure)	No information available
Specific target organ systemic toxicity (repeated exposure)	Information given is based on data obtained from similar substances : No observed adverse effect level : 142 mg/kg/d, Rat, oral

Chemical name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Formic acid 64-18-6	730 mg/kg	-	7.85mg/l

Carcinogenicity	No information available.
Chronic toxicity	Avoid repeated exposure. Possible risks of irreversible effects. Repeated contact may cause allergic reactions in very susceptible persons.
Aspiration Hazard	No information available.

12. Ecological Information

Ecotoxicity

based on 99% solution

Product information

LC50/96h/Fish Danio rerio (zebra fish)	130 mg/l
EC50/48h/Daphnia magna =	365 mg/l
EC50/72h/algae =	1240 mg/l
EC50 / Tox Bacteria	No information available

Information given is based on data obtained from similar substances

Chemical name	Freshwater Algae	Freshwater Fish	Water Flea
Formic acid 64-18-6	EC50/72h: 1240 mg/l	LC50/96h/Danio rerio: 130 mg/l	EC50/48h/Daphnia Magna: 365 mg/l

Persistence/Degradability
Readily biodegradable, according to appropriate OECD test.

Bioaccumulative potential

Bioconcentration factor (BCF) 3.2

Mobility in Soil

Mobility in Soil
Not expected to adsorb on soil.

Mobility in Environmental Media

Soluble in water.

Chemical name	Log Pow
Formic acid 64-18-6	-2.1

Other Adverse Effects None known based on information supplied

13. Disposal Considerations

Waste Treatment Methods

Waste Disposal Method Dispose of in accordance with local regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal.

14. Transport Information

DOT

Shipping Description	UN1779, Formic Acid, 8 (3), PG II
Proper shipping name	Formic acid
Hazard class	8
Subsidiary class	3
Packing group	II
Reportable Quantity (RQ)	5050lb

IATA

UN-No	UN1779
Proper shipping name	Formic acid
Hazard class	8
Subsidiary class	3
Packing group	II
Marine pollutant	No

IMDG/IMO

UN-No	UN1779
Proper shipping name	Formic acid
Hazard class	8
Subsidiary class	3
Packing group	II
Marine pollutant	No

15. Regulatory Information

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies

KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

Federal Regulations

SARA TITLE III SECTION 313 INFORMATION:

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

SARA 311/312 Hazardous Categorization

Acute health hazard	Yes
Chronic health hazard	No
Fire hazard	Yes
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical name	RQ	CERCLA/SARA RQ	RQ
Formic acid 64-18-6	5000lbs	-	-

State Regulations

California Proposition 65

No Data Available

State Right-to-Know

Chemical name	NJ	Ma	Pa
Formic acid 64-18-6	X	X	X
water 7732-18-5	Not Listed	Not listed	Not listed

U.S. EPA Label information

EPA Pesticide registration number Not Applicable

WHMIS Hazard Class

E Corrosive material
B3 Combustible liquid
D2B Toxic materials

CANADA

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR

16. Other Information

NFPA	**HEALTH** 3	**FIRE** 2	**Instability** 0	**Physical hazard** -
HMIS	**HEALTH** 3	**flammability** 2	**Physical hazards** 0	

Preparation Date 11-04-2014
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Revision Summary
Not Available
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 Safety Data Sheet