Material Safety Data Sheet
Formic acid, p.a.

ACC# 95542

Section 1 - Chemical Product and Company Identification

MSDS Name: Formic acid, p.a.
Catalog Numbers: AC270480000, AC270480010, AC270480250
Synonyms: Methanoic acid; Formylic acid; Hydrogen carboxylic acid.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
64-18-6	Formic acid		200-579-1

Hazard Symbols: C
Risk Phrases: 35

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: APHA: 10 max clear liquid. Flash Point: 69 deg C. Hygroscopic (absorbs moisture from the air). Heat sensitive.
Target Organs: Kidneys, central nervous system, liver, respiratory system, eyes, skin, bladder.

Potential Health Effects
Eye: Causes severe eye burns. May cause conjunctivitis. Lachrymator (substance which increases the flow of tears). Causes redness and pain. Lachrymator (substance which increases the flow of tears).
Skin: Causes skin burns. Causes redness and pain.
Ingestion: Harmful if swallowed. May cause kidney damage. May cause severe digestive tract irritation with abdominal pain, nausea, vomiting and diarrhea. May cause burns to the digestive tract.
Inhalation: May cause irritation of the respiratory tract with burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.
Chronic: Not available.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.
Skin: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Ingestion: Get medical aid. Wash mouth out with water. Give milk of magnesia.
Inhalation: If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Will burn if involved in a fire.
Extinguishing Media: In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.
Flash Point: 69 deg C (156.20 deg F)
Autoignition Temperature: 520 deg C (968.00 deg F)
Explosion Limits, Lower:14.00 vol %
Upper: 33.00 vol %
NFPA Rating: (estimated) Health: 3; Flammability: 2; Instability: 0

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container.

Section 7 - Handling and Storage

Handling: Contents may develop pressure upon prolonged storage. Do not breathe dust, vapor, mist, or gas. Do not get in eyes, on skin, or on clothing. Use only in a chemical fume hood.
Storage: Keep away from sources of ignition. Do not store near combustible materials. Store in a tightly closed container. Store in a dry area. Keep refrigerated. (Store below 4°C/39°F.)

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Formic acid	5 ppm TWA; 10 ppm STEL	5 ppm TWA; 9 mg/m3 TWA 30 ppm IDLH	5 ppm TWA; 9 mg/m3 TWA

OSHA Vacated PELs: Formic acid: 5 ppm TWA; 9 mg/m3 TWA
Personal Protective Equipment
Eyes: Not available.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to minimize contact with skin.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Section 9 - Physical and Chemical Properties

Physical State: Clear liquid
Appearance: colorless - APHA: 10 max
Odor: pungent odor - penetrating odor
pH: Not available.
Vapor Pressure: 44 mbar @ 20 deg C
Vapor Density: Not available.
Evaporation Rate:900 KJ/kg (101°C)
Viscosity: 1.47 mPas 20 deg C
Boiling Point: 101 deg C @ 760.00mm Hg
Freezing/Melting Point:8 deg C
Decomposition Temperature: Not available.
Solubility: Miscible.
Specific Gravity/Density:1.2200g/cm3
Molecular Formula:HCO2H
Molecular Weight:46.02

Section 10 - Stability and Reactivity

Chemical Stability: Not available.
Conditions to Avoid: Incompatible materials, exposure to moist air or water.
Incompatibilities with Other Materials: Metals, strong oxidizing agents, strong bases, aluminum, finely powdered metals, permanganates, sulfuric acid, hydrogen peroxide, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), nitro compounds (organic, e.g. nitrobenzene, nitroglycerine, picric acid, trinitrotoluene).
Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, hydrogen gas.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:
CAS# 64-18-6: LQ4900000
LD50/LC50:
CAS# 64-18-6:
Draize test, rabbit, eye: 122 mg Severe;
Inhalation, mouse: LC50 = 6200 mg/m3/15M;
Inhalation, rat: LC50 = 15 gm/m3/15M;
Oral, mouse: LD50 = 700 mg/kg;
Oral, rat: LD50 = 1100 mg/kg;

Carcinogenicity:
CAS# 64-18-6: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effects: No data available.
Neurotoxicity: No data available.
Mutagenicity: No data available.
Other Studies: See actual entry in RTECS for complete information. The toxicological properties have not been fully inve stigated.

Section 12 - Ecological Information

Ecotoxicity: Fish: Leuciscus idus: 3.6 mg/L; 96H; . ia: 3.6 mg/L; 48H; . log Pow: -0.54
Environmental: No information available.
Physical: No information available.
Other: Readily biodegradable.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: CAS# 64-18-6: waste number U123 (Corrosive waste, Toxic waste).

Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
Shipping Name:	FORMIC ACID				No information available.
Hazard Class:	8				
UN Number:	UN1779				
Packing Group:	II				

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 64-18-6 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
SARA

CERCLA Hazardous Substances and corresponding RQs
CAS# 64-18-6: 5000 lb final RQ; 2270 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 64-18-6: acute, flammable.
Section 313
This chemical is not at a high enough concentration to be reportable under Section 313. No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 64-18-6 is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 64-18-6 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.
California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
C
Risk Phrases:
R 35 Causes severe burns.

Safety Phrases:
S 23 Do not inhale gas/fumes/vapour/spray.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

WGK (Water Danger/Protection)
CAS# 64-18-6: 1
Canada - DSL/NDSL

CAS# 64-18-6 is listed on Canada's DSL List.

Canada - WHMIS

This product does not have a WHMIS classification.

Canadian Ingredient Disclosure List

CAS# 64-18-6 is listed on the Canadian Ingredient Disclosure List.

Exposure Limits

CAS# 64-18-6: OEL-ARAB Republic of Egypt:TWA 5 ppm (9 mg/m3) OEL-AUSTRALIA:TWA 5 ppm (9 mg/m3) OEL-AUSTRIA:TWA 5 ppm (9 mg/m3) OEL-BELGIUM:TWA 5 ppm (9.4 mg/m3) OEL-DENMARK:TWA 5 ppm (9 mg/m3) OEL-FINLAND:TWA 5 ppm (9 mg/m3);STEL 10 ppm (18 mg/m3);Skin OEL-FRANCE:STEL 5 ppm (9 mg/m3) OEL-GERMANY:TWA 5 ppm (9 mg/m3) OEL-HUNGARY:TWA 5 mg/m3;STEL 8 mg/m3 OEL-JAPAN:TWA 5 ppm (9.4 mg/m3) OEL-THE NETHERLANDS:TWA 5 ppm (9 mg/m3) OEL-THE PHILIPPINES:TWA 5 ppm (9 mg/m3) OEL-RUSSIA:TWA 5 ppm;STEL 1 mg/m3;Skin OEL-SWITZERLAND:TWA 5 ppm (9 mg/m3);STEL 10 ppm (18 mg/m3) OEL-UNITED KINGDOM:TWA 5 ppm (9 mg/m3) OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 7/23/1999
Revision #4 Date: 6/10/2003