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MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1. Product identifiers

Product name: Formic acid, 98-100% Product Code: F 1516 CAS No : 64-18-6

1.2. Relevant identified uses of the substance or mixture and uses advised against Use : Industrial. For professional use only.

1.3. Details of the supplier of the safety data sheet
Company identification
OTTO CHEMIE PVT LTD
101, Aarkay Ruby Industrial Estate(1B), Opp Shree Narayan Industrial Estate, Chinchpada, Vasai East, Waliv, Maharashtra 401208.
Email <u>info@ottokemi.com</u>

1.4. Emergency telephone number Phone no. : + 91 22 2207 0099 (9:00am - 6:00 pm)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture Flammable liquids, (Category 3) H226: Flammable liquid and vapor. Acute toxicity, (Category 4) H302: Harmful if swallowed. Acute toxicity, (Category 3) H331: Toxic if inhaled. Skin corrosion, (Sub-category H314: Causes severe skin burns and eye 1A) damage. H318: Causes serious eye damage Serious eye damage, (Category 1) 2.2 Label elements Labelling according Regulation (EC) No 1272/2008 Pictogram Signal Word Danger Hazard Statements H226 Flammable liquid and vapor. Harmful if swallowed. H302 H314 Causes severe skin burns and eye damage. Toxic if inhaled. H331 **Precautionary Statements** Keep away from heat, hot surfaces, sparks, open flames and P210 other ignition sources. No smoking. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P301 + P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsina. Supplemental Hazard information (EU) EUH071 Corrosive to the respiratory tract. Reduced Labeling (<= 125 ml) Pictogram Signal Word Danger Hazard Statements Toxic if inhaled. H331 H314 Causes severe skin burns and eye damage.

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Precautionary Statements P280 Wear protective gloves/ protective clothing/ eye protection/ fac		
P303 + P361 + P3	53	protection. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
P304 + P340 + P3	10	IF INHALED: Remove person to fresh air and keep comfortable
P305 + P351 + P3	38	for breathing. Immediately call a POISON CENTER/ doctor. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazard information (EU)		
FUH071	a. a	Corrosive to the respiratory tract.
2.3 Other hazards		
This substance/mixture contains no components considered to be either persistent,		
bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at		
levels of 0.1% or higher.		
Ecological information:		
The substance/mixture does not contain components considered to have endocrine		
disrupting properties according to REACH Article 57(f) or Commission Delegated regulation		
(EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.		
Toxicological information:		
The substance/mixture does not contain components considered to have endocrine		
disrupting properties according to REACH Article 57(f) or Commission Delegated regulation		
(EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.		
SECTION 2. Composition information on Ingradiante		
SECTION 3: Composition/information on ingredients 3.1 Substances		
Formula	: CH2O2	
Molecular weight	: 46,03 g/mol	
CAS-No.	: 64-18-6	
EC No.	200 570 1	

EC-No. : 200-579-1 Classification Concentration Component Formic acid Flam. Liq. 3; Acute Tox. 4; Acute Tox. 3; CAS-No. 64-18-6 <= 100 % Skin Corr. 1A; Eye Dam. 1; H226, H302, EC-No. 200-579-1 H331, H314, H318 Concentration limits: >= 90 %: Skin Corr. 1A, H314; 10 - < 90 %: Skin Corr. 1B, H314; 2 - < 10 %: Skin Irrit. 2, H315; 2 - < 10 %: Eye Irrit. 2, H319; > 78,5 %: Acute Tox. 3, H331; 75 -78.5 %: Acute Tox. 4, H332; > 75 %: , EUH071;

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures
General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.
If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.
In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Call a physician immediately.
In case of eye contact
After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist.
Remove contact lenses.
If swallowed

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After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Pulmonary failure possible after aspiration of vomit. Call a physician immediately. Do not attempt to neutralise. 4.2 Most important symptoms and effects, both acute and delayed The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11 4.3 Indication of any immediate medical attention and special treatment needed No data available **SECTION 5: Firefighting measures** 5.1 Extinguishing media Suitable extinguishing media Water Foam Čarbon dioxide (CO2) Dry powder Unsuitable extinguishing media For this substance/mixture no limitations of extinguishing agents are given. 5.2 Special hazards arising from the substance or mixture Carbon oxides Combustible. Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air at elevated temperatures. Development of hazardous combustion gases or vapours possible in the event of fire. 5.3 Advice for firefighters Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. 5.4 Further information Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system. **SECTION 6: Accidental release measures** 6.1 Personal precautions, protective equipment and emergency procedures Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8. 6.2 Environmental precautions Do not let product enter drains. Risk of explosion. 6.3 Methods and materials for containment and cleaning up Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area. 6.4 Reference to other sections For disposal see section 13. **SECTION 7: Handling and storage** 7.1 Precautions for safe handling Advice on safe handling Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols. Advice on protection against fire and explosion Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge. Hygiene measures Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2. 7.2 Conditions for safe storage, including any incompatibilities Storage conditions Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and

sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

Vent periodically. Handle and open container with care. Hygroscopic. Refrigerate before opening.

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Storage class Storage class (TRGS 510): 3: Flammable liquids 7.3 Specific end use(s) Apart from the uses mentioned in section 1.2 no other specific uses are stipulated **SECTION 8: Exposure controls/personal protection** 8.1 Control parameters Ingredients with workplace control parameters 8.2 Exposure controls Personal protective equipment Eye/face protection Use equipment for eve protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Tightly fitting safety goggles Skin protection Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Full contact Material: Nature latex/chloroprene Minimum layer thickness: 0,6 mm Break through time: 480 min Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M) Splash contact Material: Nature latex/chloroprene Minimum layer thickness: 0,6 mm Break through time: 480 min Material tested:Lapren® (KCL 706 / Aldrich Z677558, Size M) data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374 If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario. **Body Protection** Flame retardant antistatic protective clothing. Respiratory protection Recommended Filter type: Filter E-(P3) The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented. Control of environmental exposure Do not let product enter drains. Risk of explosion. **SECTION 9: Physical and chemical properties** 9.1 Information on basic physical and chemical properties a) Physical state liquid b) Color colorless c) Odor stinging d) Melting Melting point/ range: 8,2 - 8,4 °C - lit. point/freezing point e) Initial boiling point 100 - 101 °C - lit. and boiling range f) Flammability (solid, No data available gas) g) Upper/lower Upper explosion limit: 38 %(V)

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flammability or explosive limits h) Flash point

i) Autoignition temperature
j) Decomposition temperature
k) pH
l) Viscosity

m) Water solubility n) Partition coefficient: n-octanol/water o) Vapor pressure p) Density Relative density q) Relative vapor density r) Particle characteristics s) Explosive properties t) Oxidizing properties 9.2 Other safety information Surface tension

Dissociation constant

Relative vapor density

SECTION 10: Stability and reactivity

10.1 Reactivity Vapor/air-mixtures are explosive at intense warming. 10.2 Chemical stability The product is chemically stable under standard ambient conditions (room temperature). Contains the following stabilizer(s): water (5 %) 10.3 Possibility of hazardous reactions Risk of ignition or formation of inflammable gases or vapours with: Aluminum Risk of explosion with: organic nitro compounds sodium hypochlorite hydrogen peroxide furfuryl alcohol Generates dangerous gases or fumes in contact with: alkalines Strong oxidizing agents sulfuric acid nonmetallic oxides metal catalysts Oxides of phosphorus Nitric acid nitrates Exothermic reaction with: alkaline earth hydroxides alkali hydroxides bases

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Lower explosion limit: 18 %(V)

49,5 °C - closed cup - Regulation (EC) No. 440/2008, Annex, A.9 528 °C at 1.008 hPa - Tested according to Directive 92/69/EEC. 350 °C Method: OECD Test Guideline 113 2,2 at 10 g/l at 20 °C Viscosity, kinematic: 1,47 mm2/s at 20 °C - OECD Test Guideline 1141,02 mm2/s at 40 °C - OECD Test Guideline 114 Viscosity, dynamic: 1,8 mPa.s at 20 °C - OECD Test Guideline 1141,22 mPa.s at 40 °C - OECD Test Guideline 114 at 20 °C miscible in all proportions, (experimental) log Pow. -2,1 at 23 °C - OECD Test Guideline 107 -Bioaccumulation is not expected. 171 hPa at 50 °C - OECD Test Guideline 104 1,22 g/cm3 at 25 °C - lit. 1,22 at 20 °C - OECD Test Guideline 109 1,59 - (Air = 1.0)

No data available

Not classified as explosive. none

71,5 mN/m at 1g/l at 20 °C - OECD Test Guideline 115 3,7 at 20 °C - OECD Test Guideline 112 1,59 - (Air = 1.0)

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Amines 10.4 Conditions to avoid Heating. 10.5 Incompatible materials No data available 10.6 Hazardous decomposition products In the event of fire: see section 5

SECTION 11: Toxicological information

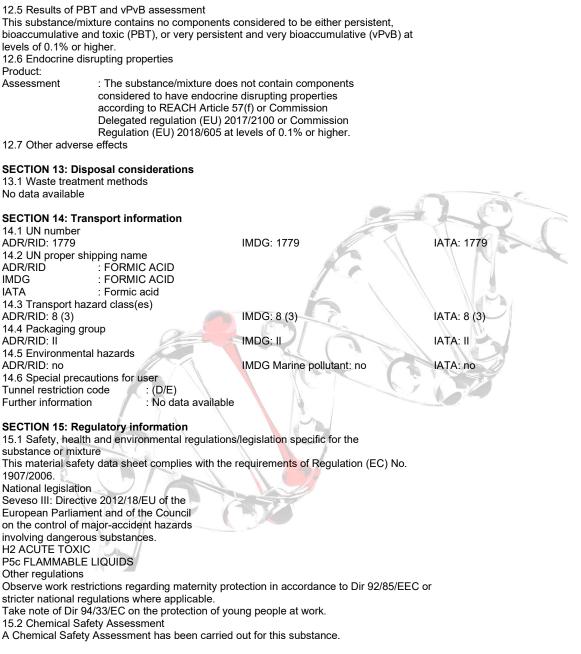
11.1 Information on toxicological effects Routes of Entry: Absorbed through skin. Dermal contact. Eye contact. Toxicity to Animals: Oral LD50 Rat: 1500 mg/kg; Dermal LD50 Rabbit: 2000mg/kg Inhalation LC50 Rat: > 50mg/L. Chronic Effects on Humans: CARCINOGENIC EFFECTS: Classified None. by NTP, None. by OSHA, None. by NIOSH. Other Toxic Effects on Humans: Hazardous in case of skin contact (irritant), of inhalation (lung irritant). Special Remarks on Toxicity to Animals: Not available. Special Remarks on Chronic Effects on Humans: Not available. Special Remarks on other Toxic Effects on Humans: Not available. **SECTION 12: Ecological information** 12.1 Toxicity Toxicity to fish static test LC50 - Danio rerio (zebra fish) - 130 mg/l - 96 h (OECD Test Guideline 203) Remarks: The value is given in analogy to the following substances: ammonium formate Toxicity to daphnia and other aquatic invertebrates static test EC50 - Daphnia magna (Water flea) - 365 mg/l - 48 h (OECD Test Guideline 202) Remarks: The value is given in analogy to the following substances: ammonium formate Toxicity to algae static test ErC50 - Pseudokirchneriella subcapitata - 1.240 mg/l - 72 h (OECD Test Guideline 201) Remarks: The value is given in analogy to the following substances: ammonium formate Toxicity to bacteria static test NOEC - activated sludge - 72 mg/l - 13 d Remarks: (ECHA) Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity) semi-static test NOEC - Daphnia magna (Water flea) - >= 100 mg/l - 21 d (OECD Test Guideline 211) 12.2 Persistence and degradability Biodegradability aerobic - Exposure time 14 d Result: 100 % - Readily biodegradable. (OECD Test Guideline 301C) **Biochemical Oxygen** Demand (BOD) 86 mg/g Remarks: (External MSDS) Ratio BOD/ThBOD 8,60 % 12.3 Bioaccumulative potential Bioaccumulation is unlikely. Does not significantly accumulate in organisms. 12.4 Mobility in soil No data available

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SECTION 16: Other Information

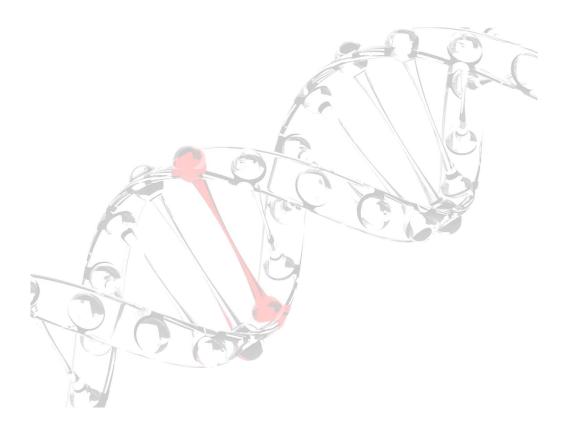
This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.

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