MATERIAL SAFETY DATA SHEET

METHYL FORMATE

1. CHEMICAL IDENTITY

Chemical Name :	Methyl Formate	Chemical Classification :	Aliphatic Ester
Synonyms :	Methyl Methonoate, Formic acid, Methyl Ester of formic acid.	Trade Name :	
Formula :	$HCOOCH_3$	C.A.S. No. :	107-31-3
		U.N. No. :	1243

Regulated Identification :

Shipping Name :	Methyl Formate		
Codes/Label :	Flammable Liquid, Class 3	Hazchem Code No. :	2 S E
Hazardous waste I.D. No. :	5		
Hazardous ingredients :	C. A. S. No.		
1. Methyl Formate	107-31-3		

2. PHYSICAL AND CHEMICAL DATA

Boiling Range/point degreeC : 31.5	Physical State	: Liquid	Appearance : Colourless
Melting/Freezing Point degree C :	-99.8		Odour : Pleasant agreeable odour ester like.
Vapour Pressure at 35 degree C :	400	mm Hg at 16.0 degree	
Vapour Density : 2.07 (Air = 1)	Solubility in water at 30 degree C : Moderately Soluble (30 %) .300 g /ltr at 20^0C		Others : Moderately soulble in methyl alcohol, Miscible with alcohol. Lighter than water. Heavier than air.
Specific Gravity : 0.977 Water = 1	pH : 4 to 5 (a) 200 g/l water.		

3. FIRE AND EXPLOSION HAZARD DATA

Flammability : Yes Highly flammable liquid	LEL : 5.9 %	Flash Point degree C : - 19	Autoignition temperature degree C :
TDG Flammability : 3	UEL : 23 %	Flash Point degree C : - 18.8	440
Explosion Sensitivity to Impact :	Stable	Explosion Sensitivity to Static Electricity : Yes	Hazardous Combustion Products :
Hazardous Polymerisation :	Will not Occur.	Data not available	Emits acrid smoke and irritating fumes, CO, CO_2
Combustible liquid : Yes	Explosive Material : No	Corrosive Material :	NO

Flammable Material : Yes	Oxidiser : No	Others :	Forms explosive mixture with air.
Pyrophoric Material : No	Organic Peroxide :	No	

4. REACTIVITY DATA

Chemical Stability :	Stable.
Incompatibility with other material :	Avoid heat, sparks, open flames. Strong Oxidisers, strong alkalies, acids alcohols
Reactivity :	Reacts with strong oxidisers. Reacts violently with water to form formic acid and methanol. Dangerous upon exposure to heat or flame. Emits highly toxic fumes and can react vigorously with oxidizing materials.
Hazardous Reaction Products	Reacts with Methanol + Sodium Methoxide to form an explosive product.

5. HEALTH HAZARDS DATA

Routes of Entry :	Inhalation, Ingestion, Eye, Skin. TARGET ORGANS ARE EYES, RESPIRATORY SYSTEM AND CENTRAL NERVOUS SYSTEM.
Effects of Exposure/Symptoms :	
Inhalation	Causes irritation of mucous membrane, respiratory tract. Prolonged inhalation causes narcosis of central nervous system, including some temporary visual disturbance, dyspnea, chest oppresin.
Eyes & Skin	Contact with liquid iritates eyes and skin if allowed to remain on it.

Ingestion	Causes irritation of mouth, stomach and central nervous system depression, including visual disturbances, dyspnea.
Emergency Treatment	INHALATION : Remove the victim to fresh air area. If pulmonary edema develops, administer oxygen. Assist breathing if necessary. Consult a physician. EYES : Irrigate with plenty of water for 15 mins. Consult a physician. SKIN : Wash the affected area thoroughly with water and soap. Consult a physician INGESTION : Do not induce vomiting. Seek medical aid immediately.Drink plenty of water.

TLV (ACGIH)	100 ppm	250 mg/m3	STEL : 150 ppm, 375 mg/m3
Permissible Exposure Limit	Not Listed	Not listed	Odour Threshold Not available
LD - 50 (Rabbit)	1620 mg/kg	IDLH	5000 ppm
LCLo (guinea)	10,000 ppm		

NFPA Hazard Signals	Health	Flammability	Reactivity	Special
	2	4	0	--

6. PREVENTIVE MEASURES

Personal Protective Equipment	Avoid contact with liquid or vapours. Provide self-contained breathing apparatus, face shield or safety goggles, rubber PVC hand gloves, apron and shoes. Wash away any material with copious amount of soap and water.
Handling and Storage Precautions	Avoid eye and skin contact. Avoid inhaling. Store in a cool,dry and well ventilated location. Keep containers tightly closed. Maximum storage temperature 30 degree C. Keep the containers away from heat, sparks and oxidising materials. Local exhaust preferred.

7. EMERGENCY AND FIRST AID MEASURE

FIRE	FIRE EXTINGUSTING MEDIA :	Alcohol, foam, Use BA set for fire fighting, water fog, carbon dioxide, dry chemical.
FIRE	Special Procedures :	Keep the containers cool by spraying water, if exposed to heat or flame. Wear SCBA set in confined areas. Apply water from as far as distance as possible. Use Alcohol foam or chemical powder.
	Unusual Hazards :	Keep containers tightly close. Avoid heat, open flames, Static electricity, electric equipments and sparks. Closed containers may explode when exposed to extreme heat. Flashback along vapour trail may occur. Use non sparking tools.

EXPOSURE	First Aid Measures	INHALATION : Remove the victim to fresh air area. If pulmonary edema develops, administer oxygen. EYES : Irrigate with plenty of water for 15 minutes SKIN : Wash thoroughly the affected area with plenty of water and soap. INGESTION : Do not induce vomiting. Seek medical aid immediately. Consult a physician for all types of exposures.
	Antidotes/Dosages	--
Notes to Physician	If victim is unconscious never induce vomitting nor give liquids. Place victim in a stable side position and keep warm.	
SPILLS	Steps to be taken	Shut off leaks if without risk. Contain the leaking liquid on sand or earth. Wash the surface with water and soap. Small spills can be covered with absorbent material. Remove all ignition sources. Contain large spills and pump away.
	Waste disposal Method	Seal all the waste in vapour tight plastic bags for eventual disposal. Incineration. Treat contaminated water for spill/leak control or used for dilution.

8. ADDITIONAL INFORMATION / REFERENCES :

It is a very dangerous **FIRE HAZARD** when exposed to heat, or flame. Industrial fatalities have occured with exposure to high concentrations. Water to form formic acid and methyl alcohol. The effect of polymerisation is slow at ordinary temperature but when hot may rupture the containers.