
 NAVIN FLUORINE INTERNATIONAL LIMITED		MATERIAL SAFETY DATA SHEET (MSDS) 1,1,1,2 – Tetrafluoroethane.(R134a)		
1. CHEMICAL IDENTITY				
Chemical Name		1,1,1,2 – Tetrafluoroethane.(R134a)		
Synonym				
Formula		CH ₂ FCF ₃		
2. COMPOSITION / INFORMATION ON INGREDIENTS				
Ingredients name & CAS no 1,1,1,2-TETRAFLUORO ETHANE C.A.S. No 811-97-2.				
3. PHYSICAL / CHEMICAL DATA				
Boiling Point		-26.5 °C	Vapour Pressure at 25 °C	
Melting Point		-101 °C	Solubility in water	
Vapour Density (Air = 1)		3.6 @ 25 °C	Appearance	
Specific Gravity (Water=1)		1.208 @ 25 °C	Odour	
pH (1% Soln.)		NA	Other	
Physical state		Liquefied Gas.	----	
Ether (slight).				
4. FIRE / EXPLOSION HAZARD DATA				
Flammability		Not flammable	LEL%	None
Auto Ignition Temp		>743 °C	UEL%	None
TDG Flammability		NA		
Explosion Sensitivity to Impact		NA		
Explosion Sensitivity to static electricity		NA		
Hazardous Combustion Product		Emits toxic & corrosive fumes may be produced by thermal decomposition carbonyl fluoride, hydrogen fluoride, carbon monoxide.		
Hazardous Polymerization		Polymerization will not occur.		
Combustible liquid		NA	Oxidizer	No
Flammable material		No	Organic Peroxide	No
Pyrophoric material		No	Corrosive	No
Explosive material		No	Other	
5. STABILITY & REACTIVITY DATA				
Chemical stability		Stable under normal temperature & pressures.		
Incompatibility		Incompatible with alkali or alkaline earth metals - powdered Al, Zn, Be, etc.		
Conditions to avoid		Avoid open flames and high temperatures		
Hazardous reaction/decomposition products		Decomposition products are hazardous. This material can be decomposed by high temperatures (open flames, glowing metal surfaces, etc.) forming hydrofluoric acid and possibly carbonyl fluoride. These materials are toxic and irritating. Contact should be avoided.		
6. HEALTH HAZARD DATA				
Effects of exposure/ Symptoms		Skin, Eyes, Inhalation ,Ingestion		
		Skin: Immediate effects of overexposure may include: Frostbite, if liquid or escaping vapor contacts the skin. Eyes: "Frostbite-like" effects may occur if the liquid or escaping vapors contact the eyes. Inhalation: Gross overexposure may cause: Central nervous system depression with dizziness, confusion, in coordination, drowsiness or unconsciousness. Irregular heart beat with a strange sensation in the chest, "heart thumping", apprehension, lightheadedness, feeling of fainting, dizziness, weakness, sometimes progressing to loss of consciousness and death. Suffocation, if air is displaced by vapors.		

7. TOXICOLOGICAL INFORMATION			
	LD 50 / LC50	NA	
	Permissible Exposure Limit-OSHA(PEL)	None established	
	NFPA hazard signal	Health : 1, Flammability : 0, Reactivity : 1	
8. ECOLOGICAL INFORMATION			
	Eco toxicological Information AQUATIC TOXICITY: 48 hour EC50 - Daphnia magna: 980 mg/L. 96 hour LC50 - Rainbow trout: 450 mg/L		
9. PREVENTIVE MEASURES/EXPOSURE CONTROL/PERSONAL PROTECTION			
	Engineering Controls	Normal ventilation for standard manufacturing procedures is generally adequate. Local exhaust should be used when large amounts are released. Mechanical ventilation should be used in low or enclosed places. Refrigerant concentration monitors may be necessary to determine vapor concentrations in work areas prior to use of torches or other open flames, or if employees are entering enclosed areas.	
	Personal Protective Equipments	Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves	
10. HANDLING & STORAGE			
	Normal Handling	Should not be mixed with air for leak testing or used for any other purpose above atmospheric pressure. Contact with chlorine or other strong oxidizing agents should also be avoided.	
	Storage Recommendation	Store in a clean, dry place. Do not heat above 52 C (126 F). Valve protection caps and valve outlet threaded plugs must remain in place unless container is secured with valve outlet piped to use point. Do NOT drag, slide or roll cylinders. Use a suitable hand truck for cylinder movement. Never attempt to lift cylinder by its cap. Use a pressure reducing regulator when connecting cylinder to lower pressure (>3000 psig) piping or systems. Do NOT heat cylinder. Use a check valve or trap in the discharge line to prevent hazardous back flow into the cylinder. Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Separate full containers from empty containers. Storage area temperatures should not exceed 125 deg F (52 deg C) and should be free of combustible materials. Avoid area where salt or other corrosive materials are present. Avoid excessive inventory and storage time. Use a first-in first-out system. Keep accurate inventor records.	
11. EMERGENCY / FIRST AID MEASURE			
	Fire	Fire extinguishing medium	Use media appropriate for surrounding material.
	Exposure/first aid measures	Inhalation	If high concentrations are inhaled, immediately remove to fresh air. Keep person calm. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.
		Skin / Eyes	SKIN CONTACT: In case of contact, immediately flush skin with plenty of water for at least 15 minutes, while removing contaminated clothing and shoes. Call a physician. Wash contaminated clothing before reuse. Treat for frostbite if necessary by gently warming affected area. EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.
		Ingestion	Ingestion is not considered a potential route of exposure.
	Special procedure	Use approved self contained positive pressure breathing apparatus with full face piece and protective clothing	

12. ACCIDENTAL RELEASE MEASURES		
	General Information	Use proper personal protective equipment as indicated in section 9
	Spills / Release	Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up. Ventilate area, especially low or enclosed places where heavy vapors might collect. Remove open flames. Use self-contained breathing apparatus (SCBA) if large spill or leak occurs.
13. DISPOSAL CONSIDERAIONS:		
	Dispose of in a manner consistent with federal, state, and local regulations.	
14. TRANSPORT INFORMATION		
	Shipping Name	1,1,1,2-TETRAFLUOROETHANE
	Hazard Class	2.2
	Hazard Class label	
	UN Number	3195
	DOT/IMO label	NONFLAMMABLE GAS
15. REGULATORY INFORMATION		
	European/International Regulations: European Labeling in Accordance with EC Directives	
16. NAME OF FIRM - NAVIN FLUORINE INTERNATIONAL LIMITED		
	Mailing address	Post Office - Bhestan, Surat, PIN 395 023, Gujarat, India
	Telephone	+91-261-2890325 to 2890329
	Fax	+91-261-2890288
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