

1. PRODUCT IDENTIFICATION

Revision Date : 01/07/2014

Product Name	: Polytetrafluoroethylene (PTFE)
MSDS NO	: 1314
CAS No	: 9002-84-0
Types	: INOFLON [®] M665, INOFLON [®] M670, INOFLON [®] M675, INOFLON [®] M690, INOFLON [®] M695, INOFLON [®] M280, INOFLON [®] M290, INOFLON [®] M295
Use	: Resin for molding and / or extrusion

2. COMPANY INFORMATION

Contact Details	: Gujarat Fluorochemicals Ltd. 12/ A, GIDC, Dahej Industrial Estate, Tehsil Vagra, District- Bharuch - 392130, Gujarat, INDIA
Telephone	: +91-2641-618003
TeleFax	: +91-2641-618012
Emergency Contact No	: +91-2641-618080-81

3. COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	: Polytetrafluoroethylene
Concentration (%)	: >99

4. HAZARDS IDENTIFICATION**Over View**

As the material is an inert polymer thus no risk expected for the human health and environment in the normal use of the product. This assessment is based on information available for the components contained in the material. However, some risk may be expected at temperatures greater than 400°C (752°F) for emission of decomposed noxious compounds which are extremely corrosive and can cause severe burns not immediately visible.

Potential effects on long exposure to human health

The decomposed chemical products of the material are very dangerous in case of contact with skin and eyes or when inhaled. On inhalation the symptoms may not occur until several hours after the exposure.

Eye Effects

No effect are expected during normal use. Eye contact with thermally decomposed products causes pain, redness, tearing, irritation, burns and corneal abrasion.

Skin Effects

No effects are expected during normal use. Skin contact with thermally decomposed products can cause redness, itching, irritation, burns.

Ingestion / Oral Effects

No effects are expected during normal use.

Inhalation Effects

No effects expected during normal use. Inhalation of thermally decomposed products can cause headache, cough, chills and fever called polymer fume fever (symptoms are flue like condition with fever, chest pain or tightness, shortness of breath, cough, muscle aches etc). These symptoms generally disappear after 24-48 hours without further complication.

Depending upon the finished product manufacturing condition, it is possible that small quantities of residual gases, including perfluoroisobutylene (PFIB), hexafluoropropylene (HFP), tetrafluoroethylene (TFE), and hydrogen fluoride (HF) may be trapped and slowly evolves from resins

The Health hazards of the decomposition products are as follows :

Hydrogen Fluoride (HF)

Inhalation of hydrogen fluoride at higher concentrations may cause : symptoms of choking, coughing and severe eye, nose and throat irritation, possibly followed by fever, chills, difficulty in breathing, cyanosis and pulmonary edema. Hydrogen fluoride is corrosive to the eyes, skin and respiratory tract and may be absorbed through the skin in toxic amounts. It can cause delayed burns that may not be immediately visible or painful. Acute or chronic overexposure to hydrogen fluoride can injure the liver and kidneys. If a person is highly exposed to hydrogen fluoride, he should seek immediate medical attention.

Carbonyl Fluoride (COF)₂

The effects of overexposure to COF₂ may initially include : skin irritation with discomfort or rash; eye corrosion with corneal or conjunctival ulceration (destruction of the lens of the eye and surrounding tissues); irritation of the upper of respiratory passage; or temporary lung irritation effects with cough, discomfort, difficulty in breathing, or shortness breath. The effects of exposure may be delayed for several hours. If the effects observed include severe breathing difficulties, including congestion in the chest, seek immediate medical attention, including a period of observation.

Tetrafluoroethylene (TFE)

TFE is flammable, gaseous monomer that may cause acute effects when inhaled. Inhalation of TFE may cause irritation of the upper respiratory tract and eyes, mild central nervous system depression, nausea and vomiting, and dry cough. Massive inhalation of the gas may produce cardiac arrhythmia, cardiac arrest and death. Chronic overexposure may cause toxic effects, primarily to the kidney.

Perfluoroisobutylene (PFIB)

The effects of inhalation exposure to PFIB have been studied in animals. Severe adverse effects occurred, including pulmonary edema, which can lead to death. Observed symptoms include wheezing, sneezing, difficulty in breathing, and abnormally deep or rapid breathing. Animals that survive for 24 hours after exposure apparently recovered with no after-effects. Little human exposure data available.

Hexafluoropropylene (HFP)

Hexafluoropropylene has a low toxicity after acute exposure. When administered for a long period it may cause toxic effects primarily to the kidney.

Carbon Monoxide (CO)

Carbon monoxide reduces the oxygen carrying capacity of the blood, resulting in a decreased capacity to exertion, increased load on the heart and with severe exposure, unconsciousness and death.

5. FIRST AID MEASURES

Eye

No effects are expected during normal use. In the case of contact with thermally degraded products, flush immediately and continuously with cold water and have eyes examined by medical personnel.

Skin

No effects are expected during normal use. In the case of contact with thermally degraded products, flush immediately and continuously with cold water and wash off the material by soap, give attention to flushing skin under nails. If required seek for medical advice.

Ingestion

Get medical attention if gastrointestinal symptoms develop.

Inhalation

No effects are expected during normal use. In the case of inhalation of thermally degraded product bring the patient to fresh air. A qualified individual should provide oxygen or artificial respiration if breathing problem appears. Get medical attention.

Other Information

In all cases of exposure to thermally degraded product, ask for immediate medical advice, mentioning that Hydrogen Fluoride may be one of the decomposition products.

6. FIRE FIGHTING MEASURES

Flammable Properties

Flash Ignition Temperature :530 - 550°C (986-1022°F) (Method ASTM D 1929)

Self Ignition Temperature :530 - 560°C (986-1040°F) (Method ASTM D 1929)

Fire or Explosion Hazards

Although it is difficult to ignite the material and flame goes out when initiating source is removed but exposure to air can form explosive mixture. Explosion may occur in the presence of spark at certain concentrations. Fluoride gas will be released in thermal decomposition. When exposed to temperatures above 400°C (752°F) it can decompose to produce toxic and corrosive substances, including HF, CO and COF₂. As it does not burn without an external fuel source hence the use of airborne dispersion be avoided.

Precautions to be taken in case of fire

Wear self-contained breathing apparatus (SCBA).

Wear full turnout gear or Level A equipment to protect skin, eyes and respiratory system from contact with HF. Decontaminate personnel and equipment with water wash-down after fire and smoke exposure, as well as after salvage.

Special Fire Fighting Procedures

Move the container out of firing area.

Extinguishing Medium

Water mist, water spray, water stream, CO dry chemical foam, sand.

7. ACCIDENTAL RELEASE MEASURES

Spill and Leak Response: In case of an accidental release, evacuate all personnel away from affected area. Protect people from entering into the hazardous area. Cut fire source. Personal Protective Equipment should have self-contained breathing apparatus and full protective clothing. Avoid raising dust. If leakage is serious, area should be covered by canvas or plastic sheet. The waste will be collected and transported to waste treatment unit.

8. HANDLING AND STORAGE

Handling

Handling area should be well ventilated as packaged containers may contain significant concentrations of toxic gases. Operator must be trained and standard operation procedure must be followed. Suitable respiratory equipment is recommended. Smoking is strictly prohibited in working area as smoking while using this product can result in contamination of the tobacco and / or smoke and lead to polymer fume fever.

Storage

Store in dry, well ventilated areas at room temperature away from sources of fire and heat. Protect from contamination.

9. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Ingredient	Authority	Type	Limit
PTFE	OSHA	PEL for total dust	15mg/m ³
PTFE	OSHA	PEL for respirable fraction	5mg/m ³
PTFE	OSHA	TLV-TWA for Inhalable particulate	10mg/m ³
PTFE	OSHA	TLV-TWA for respirable particulate	3mg/m ³

OSHA : Occupational Safety and Health Administration

PEL : Permissible Exposure Limits for Particulates not otherwise regulated

TLV : Threshold limiting value

TWA : Time-Weighted average

Reference : Guide to the Safe handling of fluoropolymer resins, fourth edition by SPI.

Engineering controls : Appropriate ventilation is recommended when material is heated. Use local exhaust to completely remove vapors and fumes.

Respiratory Protection : Self-contained breathing apparatus is required if concentration exceeds the exposure limit

Eye Protection : Avoid eye contact . Use chemical safety goggles if necessary.

Body Protection : Avoid contact with molten material.

Hand Protection : Wear regular work gloves.

Other Protection : Keep good hygiene habit.

10. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Solid	pH Value	Not Available
Texture	Granular, Powder	Volatile Content	Not Available
Odor	No Odor	Melting Point Range	327-342°C (621-648°F)
Color	White		
Specific Gravity	2.14-2.20		
Boiling Point Data	Not Available		
Solubility	Insoluble		

11. STABILITY AND REACTIVITY

Stability

Stable at normal temperatures.

Incompatibility

It can react with finely divided metal powders such as aluminum, magnesium and with strong oxidizers like fluorine and fluorine chloride to produce fire and / or explosion.

Conditions to avoid

Do not overheat. Hazardous decomposition products may evolve when heated above 380°C (716°F).

Hazardous Polymerization

No hazardous polymerization.

Decomposition

Heating of the material in the temp. range of 380°C (716°F) to 400°C (752°F) releases decomposition products such as HF, COF₂ etc.

For details Ref. MSDS-GFL clause 4, page no. 2 & 3.

12. TOXICOLOGICAL INFORMATION

Human exposure to degradation products may cause polymer fume fever.

Please refer MSDS-GFL clause 4, page no. 2 & 3 - inhalation effects under hazard identification.

13. ECOLOGICAL INFORMATION

No eco-toxicological effects.

14. DISPOSAL CONSIDERATIONS

Recommended Method of Disposal

Dispose of container and unused contents in accordance with state and local requirements. Incineration is recommended. But none of the polymer should be incinerated unless the incinerator is equipped to scrub out HF, HCL and other acidic products of combustion.

15. TRANSPORTATION INFORMATION

Safe to carry by any means of transportation. Not restricted any mode of transportation.

Precaution for Transportation

Complete packing is required when transporting and loading need to be stable. Container shall be protected from felling down or damage during transportation. Avoid transport with oxidant. Protected from sunlight, rain and high temperature.

16. REGULATORY INFORMATION

It comply with -

Regulations on Safety Control of Hazardous Chemical Substance (Feb. 17, 1987).

Practical Rules for regulations on Safety Control of Hazardous Chemical Substance (1992 No.677)

Rules for handling Hazardous Chemical Substance (1996 No.423) Classification : 2.2 class: No Flammable gas.

17. OTHER INFORMATION

Hazard classification : Health : 2 Flammability : 1 Reactivity : 0 Special Hazards : None as per National Fire Protection Association (NFPA).

The material should not be used in medical applications involving permanent implantation in the human body. For further details in this regard please contact us at inoflon@gfl.co.in.

DISCLAIMER

The information in this Material Safety Data Sheet (MSDS) is believed to be correct to the best of our knowledge and information. It is subject to revision depending on the additional knowledge gained by us with the time. The information provided in this MSDS should be treated as guidance and not to be considered as warranties or quality specification.

For more information, please contact Gujarat Fluorochemicals Limited

Corporate & Marketing Office :

INOX Towers, Plot No.17, Sector 16A
Noida-201301, U.P., INDIA

Tel : +91-120-6149600

Fax : +91-120-6149610

Works :

12/A, GIDC Dahej Industrial Estate, Tehsil
Vagra, Distt. Bharuch-392130, Gujarat, INDIA

Website : www.inoflon.com

Email : inoflon@gfl.co.in

