

PRODUCT NAME : POLYTETRAFLUOROETHYLENE

1. Product and Company Identification

Product Name: Polytetrafluoroethylene (Inner ring)
Synonyms: PTFE
Item Numbers : C10516494, C10516497, C10517087

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2. Composition/Information on Ingredients

Ingredient	% Weight	CAS No	Hazard class*	Risk phrase*
Polytetrafluoroethylene	100	9002-84-0	N/A	N/A

*Hazard class & Risk phrase These columns are only completed for ingredients which are classified as hazardous under EU Directive (67/548/EEC, as amended) and are present in sufficient concentration to make the overall substance hazardous . In all other situations, the column will be completed as "Not applicable".

3. Hazards Identification

EMERGENCY OVERVIEW

The material is an inert polymer and no risk is expected for the human health and the environment in the normal use of the product. Some risk may be expected at temperatures greater than 350°C for emission of noxious fluorine compounds (including HF & COF₂) which are extremely corrosive and can cause severe burns not immediately visible.

Symptoms following exposure.

The products of chemical decomposition are very dangerous in case of contact with eyes and skin or when inhaled; in this last case the symptoms do not occur until several hours after exposure.

Eye Effects: No effects requiring first aid are expected during normal use. Eye contact with thermally decomposed products cause redness, irritation, burns.

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Skin Effects: No effects requiring first aid are expected during normal use. Skin contact with thermally decomposed products cause redness, irritation, burns.

Ingestion/ Oral Effects: No effects requiring first aid are expected during normal use.

Inhalation Effects: No effects requiring first aid are expected during normal use. Inhalation of thermally decomposed products cause headache, short breathing, cough, chills and fever, tachycardia (polymer fume fever). Smoking tobacco contaminated with PTFE may also cause polymer fume fever.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None anticipated for polymer. Fumes produced at elevated temperatures, may aggravate pre-existing eye, skin, and respiratory conditions.

NFPA Hazard codes		HMIS Hazard codes		Rating System
Health	1	Health	0	0 = No Hazard
Flammability	0	Flammability	0	1 = Slight hazard
Instability:	0	Reactivity	0	2 = Moderate Hazard
				3 = Serious Hazard
				4 = Severe hazard

4. First Aid Measures

Eyes: No effects requiring first aid are expected during normal use.
In the case of contact with thermally degraded PTFE, flush immediately and continuously with old running water and seek immediate medical assistance*.

Skin: No effects requiring first aid are expected during normal use.
In the case of contact with thermally degraded PTFE, flush immediately and continuously with cold running water and soap (pay particular attention to flushing skin under nails. Seek immediate medical assistance*.

Ingestion/Oral: No effects requiring first aid are expected during normal use.

Inhalation: No effects requiring first aid are expected during normal use.
In the case of inhalation of thermally degraded PTFE seek immediate medical attention, remove the patient to fresh air. If breathing problems occur, a qualified individual should administer oxygen or artificial respiration.

Other Information: *In all cases of exposure to thermally degraded PTFE, seek immediate medical advice, indicating that Hydrogen Fluoride is a decomposition product.

5. Fire Fighting Measures

Extinguishing Media: Water spray, water fog, water stream, CO₂, dry chemical foam, earth or sand.

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Fire and Explosion Hazard: When exposed to temperatures above 350°C PTFE can decompose to produce toxic and corrosive substances, including HF and COF₂.

Special Protective Equipment for Fire Fighters: Fire fighters should wear a self contained breathing apparatus (SCBA) which meets appropriate standards operated in positive pressure mode, and full turn out gear. Wear skin protection adequate to protect from thermal decomposition products.

Use acid resistant protective clothing (capable of resisting Hydrofluoric acid) to handle cool parts containing decomposed PTFE.

For Flammability Properties - see Section 9

6. Accidental Release Measures

No material specific actions are required.

7. Handling and Storage

Handling: See section 5 fire fighting measures, for information on handling of degraded or charred material.

Storage: store in a cool , well ventilated space away from direct sunlight and sources of ignition. Store in original packaging showing code numbers.

Avoid heating to decomposition temperatures. If heating is necessary, use adequate ventilation. Do not carry cigarettes or cigars or smoke in areas where this product is being used or stored. Smoking contaminated tobacco products may cause polymer fume fever. Wash thoroughly after handling and before meals and breaks.

8. Exposure Controls/Personal Protection

Exposure Limits

Ingredient	ACGIH - TLV -	OSHA - PEL	Occupational Exposure Limits EH40 (UK)
PTFE	None*	None	Thermal decomposition products-maximum exposure-2.6mgm ⁻³

* ACGIH recommends PTFE decomposition products be quantitatively determined in air as fluoride to provide an index of exposure. Although no TLV is recommended, ACGIH states "air concentration should be controlled as low as possible".

Threshold Limits of Decomposition products: (ACGIH 1999/00):
Hydrogen fluoride: 3 ppm (Ceiling) ACGIH TLV; 3 ppm OSHA PEL
Carbonyl fluoride: 2 ppm (TWA) ACGIH TLV; 5 ppm (Ceiling)

Personal Protection:

Engineering Measures: None required under normal conditions of use

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Respiratory Protection: None required under normal conditions of use
Hand/Skin Protection: None required under normal conditions of use
Eye/Face Protection: None required under normal conditions of use
Hygiene Measures: Practise good workplace hygiene. Do not eat or smoke when handling. Wash hands after handling and before eating and smoking.
Other/General Protection: None required under normal conditions of use

9. Physical and Chemical Properties

Appearance and Odour	White and no odour	Boiling Point	Data not available	°C/°F
pH (as supplied)	No data available	Freezing Point	327-335°C	°C/°F
Solubility in Water	Insoluble	Auto Ignition	Data not available	°C/°F
Volatile Content by Volume	No data available	Flash Point	Data not available	°C/°F
Specific Gravity	0.3 - 0.6			
Vapour Pressure (mbar)	No data available	Vapour Pressure (Torr)	Data not available	

10. Stability and Reactivity

Stability: Stable in normal conditions
Negligible decomposition starts at 250°C, at temperatures above 350°C starts the emission of noxious fluorine compounds (HF & COF₂).

Material/Conditions to Avoid: Flames and high temperatures.
Avoid contact with combustible materials, avoid contact with molten alkaline metals.

Hazardous Decomposition: When exposed to temperatures above 350°C PTFE can be composed to produce toxic and corrosive substances including HF and COF₂.

11. Toxicological Information

For a comprehensive description for the various toxicological (health) effects which may arise if the user comes into contact with the substance or preparation refer to Section 3 Hazards Identification.

Animal Data:

LD50 value: No data available
LC50 value: 3500mgm³ at 626°C or 2700mgm³ at 800°C. Refer to pyrolysis products of PTFE

Carcinogenicity: No known carcinogenic effects.

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Inhalation: PTFE decomposition products vary widely in toxicity in experimental animals. Four hour LC50s (inhalation) for decomposition products range from 0.76 ppm (perfluoroisobutane) to 40,000 ppm (tetrafluoroethylene monomer). Workers exposed to PTFE fumes produced at 350-380 °C (temperatures associated with liberation of hexafluoroethane, perfluoroisobutylene and octafluorocyclobutene) exhibited symptoms consistent with polymer fume fever at workplace air concentrations of 3.5 mg/m³ compounds containing fluorine.

Chronic: Repeated episodes of polymer fume fever may damage the lungs.

12. Ecological Information

The ecological effects of the product have not been established. The product is not expected to be substantially biodegradable. The material contains not chlorofluorocarbons (CFC).

13. Disposal Considerations

The material must be properly contained . Dispose of at approved land fill sites, or by high temperature incineration, using licensed contractors. Disposal must be in accordance with local authority and national regulations.

14. Transport Information

The product is not classified as dangerous under transportation regulations.

PARAMETER	EUROPEAN	CANADIAN TDG	UNITED STATES DOT
Proper Shipping Name	Not applicable	Not applicable	Not applicable
Hazard Class	Not applicable	Not applicable	Not applicable
Identification Number	Not applicable	Not applicable	Not applicable
Shipping Label	Not applicable	Not applicable	Not applicable

15. Regulatory Information**European Regulatory Information**

This product has been classified in accordance with the Dangerous Substances Directive (67/548/EEC, as amended) and the Preparations Directive (88/379/EEC, as amended), implemented in the UK as the Chemical (Hazard Information and Packing) Regulations 1994 (CHIP, as amended).

Classified as dangerous to supply : No

Risk Phrases : Not applicable

Safety Phrases : Not applicable

Symbols : None

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United States Regulatory Information

All materials contained in this product are listed on the U.S. Toxic Substances Control Act (TSCA).

SARA TITLE III SECTION 313 SUPPLIER INFORMATION:

This product does not contain toxic chemicals subject to the reporting requirements of section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986 and 40 CFR Part 372.

California Proposition 65: This product does not contain chemicals known to the State of California to cause cancer or reproductive toxicity.

Canadian Regulatory Information

All ingredients contained in this product are included on the Canadian DSL.

WHMIS Classification: Not applicable.

16. Other Information

Source of information for this data sheet is :

Ausimont materials safety data sheet for Algoflon dated 18 March 1997 reference SYM/SS191

National Library of Medicine (NLM) electronic databases (HSDB, RTECS)

This MSDS is compiled in accordance with ANSI Z400.1 and the EU Safety Data Sheet Directive 91/155/EEC

Glossary : **CAS**, Chemical Abstracts Service; **NFPA**, National Fire Protection Association; **HMIS**, Hazardous Material Information Service; **LD**, Lethal Dose; **LC**, Lethal Concentration; **ACGIH**, American Conference of Governmental Industrial Hygienists; **TLV**, threshold limit value; **OSHA**, Occupational Safety and Health Administration, US department of Labour; **PEL**, Permissible exposure limit; **EH40 (UK)**, HSE Guidance Note EH40 Occupational exposure limits; **PPM**, parts per million; **TWA**, Time-Weighted Average; **STEL**, Short Term Exposure Limit; **Canadian TDG**, Canadian Transportation of Dangerous Goods; **US DOT**, US Department of Transportation. **HSDB**, Hazardous Substances Data Bank; **RTECS**, Registry of Toxic Effects of Chemical Substances; **DSL**, Domestic Substances List ; **TSCA**, Toxic Substances Control Act Public Law 94-469; **CERCLA**, Comprehensive Environmental Response, Compensation and Liability Act; **EPCRA**, Emergency Planning and Community Right-to-Know Act; **CAA**, Clean Air Act; US, **SARA (Title III)**, Superfund Amendments and Reauthorization Act.; **SARA 313**, Superfund Amendments and Reauthorization Act, Section 313; **EHS**, Extremely Hazardous Substance; **WHMIS**, Workplace Hazardous Materials Information System.

Revisions

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Although the information and recommendations in this data sheet are to the best of our knowledge correct, it is recommended that you make your own determination of the material's suitability for your purpose before you use it. The information contained in this data sheet has been reproduced from the manufacturers data, the accuracy of this information is the responsibility of the manufacturer. BOC Edwards accept no responsibility for damage of any nature resulting from the use of, or the reliance upon this data sheet.