

Description

INOFLON[®] FP 7040 is a high molecular weight, dispersed polytetrafluoroethylene (PTFE) fine powder resin. It is polymerized in an aqueous dispersion medium to produce agglomerated fine dispersion resin. Properly processed product made from INOFLON[®] FP PTFE provides a superior property typical of PTFE resins such as high gloss, low friction and non-stick surface, chemically inert to virtually all industrial chemical and solvent, better surface finishing, excellent weatherability etc.

This form of PTFE is unique, highly crystalline (96–98%) with a high molecular weight. The crystalline form of PTFE changes from a triclinic to a hexagonal lattice at 19°C (66.2°F). Above this temperature, fine powder PTFE becomes softer and more deformable which is important in its processing. Because it does not melt and flow, fine powder PTFE is often fabricated by a technology adopted from ceramic processing called *paste extrusion*.

Typical End Use Products

Application of INOFLON[®] FP 7040 include wire and cable insulation, pipe liners, tubings, pressure hoses, expanded joint sealings etc.

Processing

INOFLON[®] FP 7040 is fabricated by paste extrusion, where PTFE powder is first blended at temperatures below 19 °C (66.2°F) with a hydrocarbon lubricant which acts as an extrusion aid. After ageing at about 30 °C (86°F) it is then formed into a cylindrical preform at a fairly low pressure and placed inside the barrel of a paste extruder where it is forced through a die at a constant ram rate. The extrudate is passed through multiple ovens and a cooling device where it is first dried, then sintered, and finally cooled. Drying and sintering can be performed continuously "in line" with the extrusion or in separate drying and sintering ovens. The lubricant can also be removed by extraction in a hot solvent bath.

Safety Precautions

Handling and processing of PTFE must be done in ventilated area to prevent personnel exposure to the fumes liberated during sintering and heating of the resin. Fumes must not be inhaled and eye and skin contact should be avoided. In case of skin contact wash with soap and water.

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Typical Properties of INOFLON® FP 7040

In case of eye contact, flush with water immediately and seek medical help. Smoking tobacco or cigarettes contaminated with PTFE may result in a flu-like condition including chills, fever and sore throat that may not start until a few hours after exposure has taken place. These symptoms usually pass within about 24 hours. Vapors and gases generated by PTFE during sintering must be completely removed from the factory areas. Mixtures of some metal powders such as magnesium or aluminum are flammable and explosive under some conditions. Please read the Material Safety Data Sheet and the detailed information in the "Guide to the Safe Handling of Fluoropolymers Resins" published by the fluoropolymer division of the Society of the Plastics Industry available at www.fluoropolymers.org

Powder Properties	Unit	Test Method	Nominal Value
Bulk density	g/L	ASTM D 4895	500
Avg. particle size (d ₅₀)	µm	ASTM D 4895	500
Extrusion pressure (Reduction Ratio 400:1)	MPa	ASTM D 4895	27.5±13.5
Moisture content	%	ASTM D 4895	0.02 -0.04
Std. specific gravity (SSG)	-	ASTM D 4895	2.175± 0.025
Tensile strength	MPa (Psi)	ASTM D 4895	30 (4351)
Elongation	%	ASTM D 4895	320
Melting point	°C (°F)	ASTM D 4895	327 (621)
Thermal instability index (TII)	-	ASTM D 4895	20 -50

Note: These are typical properties and not to be used for specification purpose

Handling and Storage

INOFLON® FP 7040 is susceptible to shear damage, particularly above its transition point 19°C (66.2°F). Handling and transportation of the containers could easily subject the powder to sufficient shear to spoil it if the resin temperature is above transition point. To ensure that the resin does not fibrillate, it should be cooled below its transition temperature prior to handling and transportation. A typical commercial container (20–30 kg) should be cooled 24–48 hours at <15°C (59°F) to assure temperature uniformity throughout the container. Specially designed shallow cylindrical drums are used to minimize lump formation, compaction, and shearing of the resin. To prevent moisture contamination, the drum must not be opened where the ambient dew point is above the temperature of resin to avoid immediate condensation on the resin. Storage and handling facilities should be clean. Very small foreign particle are highly visible in the white resin, keep resin drum closed and clean. Good housekeeping and careful handling are essential.

Packaging

INOFLON® FP 7040 is packed in plastic or fibre drums.

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NOTE Warning : Do not use any of INOFLON® PTFE resins in medical devices that are designed for permanent implantation in the human body. For other medical uses, prior permission of GFL may be sought.