

## Technical Information

INOFLON<sup>®</sup> M280 is a next generation free flow ram extrusion grade resin which is chemically modified to give superior performance compared to standard PTFE. Its significantly lower melt viscosity than standard PTFE gives better particle fusion during sintering yielding in less permeability and smoother surfaces.

INOFLON<sup>®</sup> M280 is a free flow resin designed for the special requirements of ram extrusion process. It is designed for improved performance in low-permeation pipes for steel lining offering excellent flaring properties and parts that require better flex fatigue properties. It can be used preferably in applications such as liner for steel pipes, bellows requiring high flex fatigue, seal rings, valve seats, high-performance machined parts, etc.

## Product Features

- ◆ Low permeability
- ◆ Better flex fatigue properties
- ◆ Better dimensional stability during sintering
- ◆ Reduced deformation under load
- ◆ Good weldability
- ◆ Good electrical and mechanical properties

## Typical Properties of INOFLON<sup>®</sup> M280

| Properties                   | Test Method     | Unit      | Nominal Value                        |
|------------------------------|-----------------|-----------|--------------------------------------|
| Bulk density                 | ASTM D 4894     | g/l       | 700                                  |
| Average particle size (d50 ) | ASTM D 4894     | µm        | 500                                  |
| Powder Flow                  | ASTM D 1895     | g/min.    | 400                                  |
| Std. specific gravity (SSG)  | ASTM D 4894     | -         | 2.160                                |
| Melting points               | ASTM D 4894     | °C (°F)   | 342 (648) Initial<br>327 (621) Final |
| Tensile strength             | Internal Method | MPa (psi) | 20 (2900)                            |
| Elongation                   | Internal Method | %         | 400                                  |

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

## FDA Compliance

When products made from INOFLON<sup>®</sup> M280 are correctly processed, that is sintered at high temperature practiced by industries, they may comply with FDA Regulation 21 CFR 177.1550 for use in contact with food.

## Packaging

INOFLON<sup>®</sup> M280 is packed in 25 & 40Kgs plastic drums.

## Handling and storage

INOFLON<sup>®</sup> M280 is being produced in a clean environment and therefore the ideal resin for all applications, where superior cleanliness is required, especially such as production, storage and transportation of ultrapure chemicals for semiconductor production. Therefore for best results the powder processing areas should be kept clean and free of all contamination. Organic contamination and foreign matter usually appear as dark spots often easily visible against the translucent Modified PTFE background. Organic contamination material degrades at the sintering temperatures and forms discolored spots. They oxidize away as carbon dioxide wherever sufficient oxygen exposure takes place. To avoid contamination and discoloration throughout the whole INOFLON<sup>®</sup> products, it is recommended to process the modified INOFLON<sup>®</sup> grades under special cleanliness precautions. This is required for those production areas, where the product is handled as a powder. As soon as the billet is moulded the cleanliness of the powder can be considered to be 'protected'. Storage of PTFE at 23°C (73.4°F) or lower prevents lump formation as a result of movement and transportation.

## Processing

INOFLON<sup>®</sup> M280 is processed by ram extrusion, in which preforming and sintering steps are combined in a continuous operation. Small and large diameter rods and tubings are fabricated by feeding successive charges of powder down a cylindrical heated die using a defined temperature profile. The enhanced hardness of the agglomerates of the powder enables the extrusion of thin walled tubes with wall > 2 mm and small diameter tubes with diameter > 6 mm. For the manufacturing of very thin walled tubes it is recommended to use a two piston hydraulic system where the movement of the ram and the center die is separated to reduce pressure peaks caused by friction at the inner diameter and outer diameter wall.

## Safety precautions

Handling and processing of PTFE must be done in ventilated areas to prevent personnel exposure to the fumes liberated during sintering and heating of the resin. Fumes should not be inhaled and eye and skin contact must be avoided. In case of skin contact wash with soap and water immediately. 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 occur until a few hours after exposure has taken place.

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 Fluoropolymer Resins" published by the Fluoropolymer Division of The Society of the Plastics Industry available at [www.fluoropolymers.org](http://www.fluoropolymers.org)

INOFLON<sup>®</sup> is the brand name of Gujarat Fluorochemicals Limited (GFL) used for its brand of fluoropolymer resin. INOFLON<sup>®</sup> can be used in applications duly approved by GFL. Customers who plan to use the word INOFLON<sup>®</sup> as the trade mark on or relation to their own fluoropolymer parts and other products in any style or combination or in any manner whatsoever must contact GFL for prior permission for such use. No consumer/user of GFL fluoropolymer resin is permitted to claim that their products contain INOFLON<sup>®</sup> without prior permission from GFL.

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**Note warning:** Do not use any of INOFLON<sup>®</sup> 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.

For more information, please contact Gujarat Fluorochemicals Limited

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