

## TECHNICAL DATA SHEET

### TECHNICAL INFORMATION

INOFLON® M290 is a next-generation free flow moulding grade resin which is chemically modified to give superior performance than standard PTFE. Its significantly lower melt viscosity than standard PTFE gives better particle fusion during sintering and smoother surfaces result in improved performance.

INOFLON® M290 is designed for compression moulding of blocks and sheets, automated and iso-static moulding. It can be used preferably in applications such as seal rings, valve seats or bearing pads, diaphragms, bellows, etc.

### FEATURES AND BENEFITS

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

### TYPICAL PROPERTIES

| Properties                  | Test Method | Unit      | Nominal Value                        |
|-----------------------------|-------------|-----------|--------------------------------------|
| Bulk density                | ASTM D 4894 | g/l       | 750                                  |
| Average particle size (d50) | ASTM D 4894 | µm        | 475                                  |
| Mould shrinkage             | ASTM D 4894 | %         | 4.0                                  |
| Powder flow                 | ASTM D 1895 | g/min     | 400                                  |
| Std. specific gravity (SSG) | ASTM D 4894 | -         | 2.155                                |
| Melting points              | ASTM D 4894 | °C (°F)   | 342 (648) Initial<br>327 (621) Final |
| Tensile strength            | ASTM D 4894 | MPa (psi) | 30 (4351)                            |
| Elongation                  | ASTM D 4894 | %         | 450                                  |
| Flex life                   | ASTM D 2176 | Cycles    | >1.5 x 10 <sup>7</sup>               |
| Dielectric strength         | ASTM D 149  | kV/mm     | 80                                   |

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

### FDA COMPLIANCE

When products made from INOFLON® M290 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® M290 is packed in 25 and 40 kg plastic drums.

# INOFLON® M290

## HANDLING AND STORAGE

INOFLON® M290 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 oxidise away as carbon dioxide wherever sufficient oxygen exposure takes place. To avoid contamination and discoloration throughout the whole INOFLON® products, it is recommended to process the modified INOFLON® 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® M290 is processed using automatic, isostatic, and compression moulding methods. A two-step process is used to fabricate parts from INOFLON® M290. Before using, the powder must be conditioned above 19°C (66.2° F). Firstly, the mould is filled with resin and compacted into a preform that is similar to the final shape of the desired moulding. Preforming is easiest when the resin temperature is uniform between 21-27°C (69.8-80.6°F). As temperature declines below this range, the resin will be increasingly difficult to mould without cracks due to the problem of condensed moisture. The preform is then sintered in an oven where it undergoes controlled heating and cooling cycle. The two cycles together are commonly called sintering cycle and peak holding temperature is called sintering temperature. The sintering temperature should be in the range of 370-375°C (698-707°F). INOFLON® M290 is also processed by ram extrusion, in which preforming and sintering steps are combined in a continuous operation. Large diameter rods and tubings are fabricated by feeding successive charges of powder down a cylindrical heated die using a defined temperature profile.

## 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 for the Safe Handling of Fluoropolymer Resins" available at [www.plasticseurope.org](http://www.plasticseurope.org).

INOFLON® is the brand name of Gujarat Fluorochemicals Limited (GFL) used for its brand of fluoropolymer resin. INOFLON® can be used in applications duly approved by GFL. Customers who plan to use the word INOFLON® as the trademark on or relation to their fluoropolymer parts and other products in any style or combination or 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® without prior permission from GFL.

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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.

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