

## Technical Information

INOFLON<sup>®</sup> M690 is a next generation 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 results improved performance. It is designed for improved performance in big billets and for parts requires better flex fatigue properties. It can be used preferably in application such as seal rings, valve seats or bearing pads, diaphragms, bellows, big billet moulding and very thin skived films, 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> M690

Properties	Test Method	Unit	Nominal Value
Bulk density	ASTM D 4894	g/l	300
Average particle size (d50 )	ASTM D 4894	µm	25
Mould shrinkage	ASTM D 4894	%	5.0
Std. specific gravity (SSG)	ASTM D 4894	-	2.155
Melting points	ASTM D 4894	°C (°F)	342 (648) Initial 327 (621) Final
Tensile strength	ASTM D 4894	MPa (psi)	30 (4351)
Elongation	ASTM D 4894	%	400
Flex Life	ASTM D 2176	Cycles	>1.5 x 10 <sup>6</sup>
Dielectric Strength	ASTM D 149	kV/mm	90

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

## FDA Compliance

When products made from INOFLON<sup>®</sup> M690 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> M690 is packed in 25Kgs plastic drums or corrugated boxes.

## Handling and storage

INOFLON<sup>®</sup> M690 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

Before using, the powder must be conditioned above 19°C (66.2°F). First mould is filled with resin and compacted into preform that is similar to final shape of 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 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).

## 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.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 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® without prior permission from GFL.

The information provided in the bulletin is furnished at no cost to the recipient and is based on information and technical data that Gujarat Fluorochemicals Limited believes is correct and sound. Those who choose to use the information must be technically qualified, and do so entirely at their own cost and risk. The users must determine and insure that their specific conditions of processing present no health or safety hazards. GFL does not warrant, either expressly or impliedly in respect of use of this information for application of its INOFLON® branded Fluoropolymer resin and shall bear no liability as a result of any loss or damage caused directly or indirectly due to use of any information provided in this bulletin. Nothing contained herein can be taken or construed as a grant of license by GFL to operate under or a recommendation to infringe any patents.

**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.

For more information, please contact Gujarat Fluorochemicals Limited

### Corporate & Marketing Office

Gujarat Fluorochemicals Ltd.

Inox Towers, Plot No. 17 Sector 16A, Noida- 201301 U.P., India

T: +91-120-6149600 F: +91-120-6149610

W: [www.inoflon.com](http://www.inoflon.com) E: [Inoflon@gfl.co.in](mailto:Inoflon@gfl.co.in)

### Germany

Gujarat Fluorochemicals GmbH, 6<sup>th</sup> Floor, Regus Business Centre, Am Kaiserkai 1, 20457 Hamburg, Germany

Tel: +49-40-808074-667/668

### Works

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

### USA

GFL Americas LLC, 1212 Corporate Dr., Suite-540, Irving, Texas 75038, USA

Tel: +1-512-446-770