

## INOFLON<sup>®</sup> 230

### TECHNICAL DATA SHEET

#### TECHNICAL INFORMATION

INOFLON<sup>®</sup> 230 is a virgin granular semi free flow resin grade. This compression moulding grade is the best to compromise between superior properties of low flow and high bulk density free flow resin. INOFLON<sup>®</sup> 230 is an excellent candidate for compression and isostatic moulding. Many end products are fabricated by moulding INOFLON<sup>®</sup> 230 and machining them into desired shapes. Examples include parts such as seals, discs, ball valve seats, and labware, large diameter rods, mechanical bushings, electrical insulators, seal rings, etc.

#### PRODUCT FEATURES

- High bulk density
- Excellent chemical resistance
- Service temperature: -250°C (-418°F) to +250°C (482°F)
- Good electrical and mechanical properties

#### TYPICAL PROPERTIES

Properties	Test Method	Unit	Nominal Value
Bulk density	ASTM D 4894	g/l	750
Average particle size (d <sub>50</sub> )	ASTM D 4894	µm	300
Mould shrinkage	ASTM D 4894	%	2.25
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	%	275

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

#### FDA COMPLIANCE

When products made from INOFLON<sup>®</sup> 230 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> 230 is packed in 25 and 40 kg plastic drums.

# INOFロン® 230

## HANDLING AND STORAGE

Preforming at temperatures in the range of 23-28°C (73.4-82.4°F) is most preferable. Resin temperature must be above 19°C (66.2°F) during moulding because of a special molecular transition of PTFE at 19°C (66.2°F). PTFE molecule, which has a helical shape, tightens up by transition from a helix where 15 carbons are required for 180° turn to 13 carbons. Below 19°C (66.2°F), the PTFE molecule becomes stiff and less conformable, thus there is a chance that moulded parts could end up cracked. PTFE powder becomes sticky, forms lumps, and loses all flow at temperatures above 28°C (82.4°F).

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 white 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. It is, therefore, not unusual to encounter discoloration inside a part away from the surface where hardly any oxygen is present.

## PROCESSING

INOFロン® 230 is processed using isostatic and compression moulding methods. A two-step process is used to fabricate parts from INOFロン® 230. Before using, the powder must be conditioned above 19°C (66.2°F). First, the mould is filled with the resin. Next, it is compacted into a preform that has a shape similar to the final shape of the desired moulding. The preform is then sintered in an oven where it undergoes heating and cooling cycles, in which heating and cooling rates and dwell times are defined and programmed. The two cycles together are commonly called the sintering cycle. The preform is heated to a temperature above the crystalline melting point of the resin during the sintering cycle. The cooling cycle is used to control the crystallinity of the part. The properties of a part are functions of preforming pressure, dwell time, sintering time and temperature, and cooling rate.

## 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).

INOFロン® is the brand name of Gujarat Fluorochemicals Limited (GFL) used for its brand of fluoropolymer resin. INOFロン® can be used in applications duly approved by GFL. Customers who plan to use the word INOFロン® 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 INOFロン® without prior permission from GFL.

The information provided in the bulletin is furnished at no cost to the recipient and is based on the 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 ensure that their specific conditions of processing present no health or safety hazards. GFL does not warranty, either expressly or impliedly in respect of the use of this information for application of its INOFロン® 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.

WARNING: Do not use any of INOFロン® 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.

## SALES AND TECHNICAL SUPPORT

### Corporate & Marketing Headquarter

Gujarat Fluorochemicals Limited  
INOX Towers, 17, Sector-16A,  
Noida - 201301 U.P., India  
+91 120 6149600

### Europe

Gujarat Fluorochemicals GmbH  
Regus Center Watermark 14<sup>th</sup> Floor,  
Überseeallee 10, 20457 Hamburg, Germany  
+49 40 808074-667/668

### Works

Gujarat Fluorochemicals Limited  
12/A Dahej, GIDC, Industrial Estate,  
Tehsil Vagra, Dist. Bharuch 392130, Gujarat, India  
+91 2641 618003

### Americas

GFL Americas, LLC  
1212 Corporate Dr., Suite-540,  
Irving, TX 75038, USA  
+1 512 446 7700

