

# Nanofluor<sup>®</sup> Y75N

An ultra-pure grade of translucent fluoroelastomer

## Description

A translucent brown fluoropolymer compound reinforced with semi-crystalline perfluoropolymer nano-particles, specially developed to meet the demands of the semiconductor industry.

Nanofluor<sup>®</sup> Y75N combines a fully fluorinated nano-filler system which significantly reduces gas permeability. The absence of metallic or carbon-based fillers produces an exceptionally pure, translucent elastomer that is less prone to chemical attack with the benefit of reduced swelling following exposure to aggressive media.

Nanofluor<sup>®</sup> Y75N is a truly novel material which bridges the gap between fluorocarbons (FKM) and perfluoroelastomers (FFKM). Its high fluorine content provides unrivalled purity, excellent high temperature capability and very good chemical resistance. Nanofluor<sup>®</sup> Y75N is a cost effective upgrade from FKM and fluorosilicone in many semiconductor applications.

## Key Attributes

- ▶ Good all round chemical and temperature resistance.
- ▶ Outstanding mechanical properties.
- ▶ Exceptional oxygen plasma resistance.
- ▶ Exceptionally pure - does not contain any inorganic fillers or metal oxides which cause particulation problems.
- ▶ Extremely low permeability and out-gassing properties making it ideal for vacuum sealing applications.
- ▶ High sealing conformity reduces surface permeation.

## Typical Applications

Designed for use in semiconductor applications, including:-

- ▶ NW and KF flange fittings
- ▶ Dry plasma etch
- ▶ Wet etch (acid based)
- ▶ Dry ashing
- ▶ Oxidation/diffusion
- ▶ Lithography
- ▶ Static seals: O-rings, body seals, cathode seals
- ▶ Gaskets

## Helium Leak / Permeation Testing

Material type	Time to 1E <sup>-10</sup> mbarl/s	Time to 1E <sup>-9</sup> mbarl/s	Leak rate at 120 seconds (E <sup>-12</sup> )
Typical Silicone	20	23	200,000
Typical Perfluoroelastomer	127	157	63
Nanofluor <sup>®</sup>	213	262	5



## Typical Material Properties

Property	ASTM	ISO	Value
Material Type	Advanced Fluoropolymer		
Colour			Translucent brown
Hardness: (°IRHD) (Shore A)	D1415	ISO48	67
	D2240	ISO7619	68
Tensile Strength (MPa)	D412	ISO37	17.0
Elongation at break (%)	D412	ISO37	360
100% Modulus (MPa)	D412	ISO37	3.5
Compression Set (%): 24 hrs @ 200°C (392°F) 70 hrs @ 204°C (400°F)	D395	ISO815	15
			25
Minimum Operating Temperature		-20°C	-4°F
Maximum Operating Temperature: Continuous Short term		+180°C	+356°F
		+225°C	+437°F

**SPECIAL NOTE:** This information is to the best of our knowledge accurate and reliable. However, PPE Ltd makes no warranty, expressed or implied, that parts manufactured from this material will perform satisfactorily in the customer's application. It is the customer's responsibility to evaluate parts prior to use, especially in applications where their failure may result in injury and/or damage. It should also be noted that all elastomeric parts have a finite life, therefore a regular program of inspection and replacement is strongly recommended. In non-black grades of elastomer, it is possible to observe slight variations in colour. This is normal and is inherent in the part; it is not indicative of foreign matter. These colour variations are not expected to adversely affect the performance of the part. The material properties above should not be used for specification purposes.

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**Seal & Design  
Able Division**

5533 Steeles Avenue West Unit 11  
Toronto, Ontario M9L 1S7  
Ph: (416) 741-0750  
Gasket@AbleSealAndDesign.com



**Seal & Design  
Corporate Headquarters**

4015 Casilio Parkway  
Clarence, NY 14031  
Ph: (716) 759-2222  
Info@SealAndDesign.com  
www.SealAndDesign.com



**Seal & Design  
Higbee Division**

6741 Thompson Rd N  
Syracuse, NY 13221  
Ph: (315) 432-8021  
Sales@Higbee-Inc.com