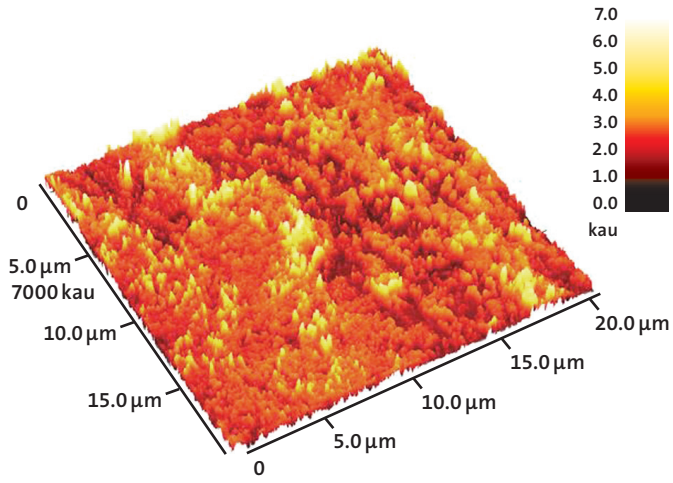
FLUOROXPRENE® MATERIALS

Processes like a plastic, behaves like rubber. FluoroXprene materials have nearly the chemical resistance of PTFE but perform almost like a rubber. FluoroXprene fluorinated thermoplastic elastomers are unique materials that bridge the technology gaps between PTFE and rubber.

Two phase morphology allows for customization by adjusting the ratio of fluoro thermoplastic and fluoro elastomer.

FluoroXprene materials compounding allows for a change of characteristics. By changing the ratio of plastic to rubber (or the type of plastic and/or type of rubber) its characteristics can be changed or modified for specific applications

AFM micrograph of FluoroXprene showing the unique two-phase morphology



VALUES FOR THE CUSTOMER

FluoroXprene materials demonstrate a number of important characteristics that make it superior to other elastomeric and thermoplastic materials.

- Improved creep resistance versus traditional thermoplastics
- High temperature and chemical resistance
- Higher flexural strength versus traditional elastomeric material
- Unmatched fuel permeation resistance compared to FKM rubber
- Allows, for the first time, a thermoplastic elastomer material to be used in demanding applications regarding chemical and thermal resistance
- Ease of processing
- Recyclable

FEATURES AND BENEFITS

A comparison of FluoroXprene to both PTFE and standard rubber demonstrates the clear advantage of FluoroXprene.

PTFE	Rubber	FluoroXprene
High chemical resistance	Limited chemical resistance	High chemical resistance
Complex process: heat, pressure, time (hours)	Net shape molding: heat, pressure, time (minutes)	Net shape molding: pressure, time (seconds)
Not recyclable	Limited recycling possible	100% recyclable
Concerns with dimensional stability under load; creep	Dimensional stability is function of crosslink density and chemical/thermal environment	More dimensionally stable than conventional plastics due to ability to radiation treat causing cross linking of the elastomer phase to the plastic phase
Simple modifications possible	Substantial variations possible through compounding	Substantial variations possible through compounding
No elastic behavior	Highly elastic	Highly elastic

Comparison of physical properties for FluoroXprene and FKM elastomer

	FKM control	FluoroXprene
Hardness (Shore A)	80 ~ 95	80 ~ 100
Tensile strength (MPa)	6.0 ~ 12.0	2.0 ~ 25.0
Elongation at break (%)	100 ~ 300	10 ~ 350
Compression set (70 h @ 150 °C in air)	15 ~ 50	27 ~ 55

Comparison of fuel permeation resistance for FluoroXprene and FKM (ASTM D-814, CE10 Fuel, 30 days @ 40 °C)

	Permeation rate ($g/m^2/day$)	Permeation constant ($g\text{-}mm/m^2/day$)
FKM (Ter-polymer)	15	28
FKM (Co-polymer)	29	55
FluoroXprene	1 ~ 4	2 ~ 8

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