

# Kimura<sup>®</sup> K13X

High performance elastomer (HPE)

## KIMURA<sup>®</sup>

### Description

A dark brown high performance polymer containing a unique self-reinforcing polymer structure, developed specifically for critical semiconductor applications. The high purity of the polymer combined with the absence of any fillers makes this polymer suitable for processes involving lower feature sizes. This material has a low coefficient of thermal expansion, low compression set and has an extremely low etch rate in aggressive plasma environments.

### Key Attributes

- ▶ Exceptionally pure - does not contain any fillers which may cause particulation problems.
- ▶ Outstanding plasma resistance – ideal for Chlorine, Fluorine & Oxygen chemistries.
- ▶ Exceptionally low plasma etch rate
- ▶ Low thermal expansion
- ▶ Retro-fits existing O-ring grooves (including FKM & FFKM grooves)
- ▶ Low permeation
- ▶ Low out-gassing
- ▶ Low adhesion (reduced sticking)
- ▶ Low friction, high strength and high modulus make K13X ideal for constant force dynamic applications.

### Typical Applications

Dynamic seals - gate valves, door seals, pendulum valves, ISO valves, bonded gates and lip seals.

Static seals - O-rings, body seals, chamber lid seals, cathode assembly seals, electro-static-chuck seals and flange fittings.

Wafer-handling products – end effector pads & vacuum suction pads

Suitable for use in:

Dry semiconductor processes sub 65nm node including:-

- Etch
- Atomic Layer Deposition (ALD)
- Physical Vapour Deposition (PVD)



### Typical Material Properties

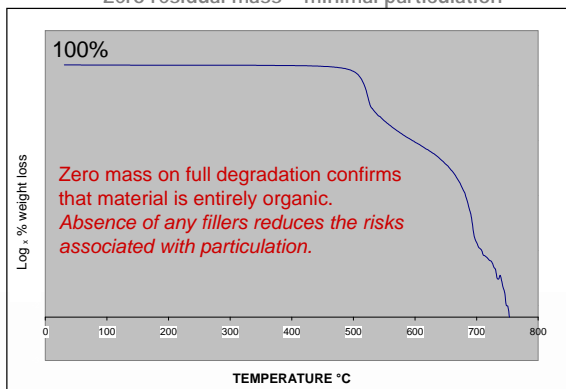
Property	ASTM	ISO	Value
Material Type			HPE
Colour			Brown
Hardness: (°IRHD)	D1415	ISO48	79
	(Shore A) D2240	ISO7619	80
Tensile Strength (MPa)	D412	ISO37	23
Elongation at break (%)	D412	ISO37	160
100% Modulus (MPa)	D412	ISO37	13.8
Compression Set (%): 72 hrs @ 204°C (400°F)	D395	ISO815	28%
Minimum Operating Temperature			-15°C (+5°F)
Maximum Operating Temperature			+280°C (+536°F)
Coefficient of Thermal Expansion			2.18x10 <sup>-4</sup>
Coefficient of Static Friction (μ) @ room temp (21°C/70°F) @ 150°C/302°F			0.35
			0.44

**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. The material properties above should not be used for specification purposes.

Kimura<sup>®</sup> is a registered trademark of Precision Polymer Engineering Limited.



Zero residual mass = minimal particulation



© Copyright Precision Polymer Engineering Ltd | Issue 4, Revision 0

www.prepol.com | Europe: +44 (0) 1254 295400 | USA: +1 408 441 2043 | Asia: +81 804 354 2781 | Email: prepol.sales@idexcorp.com