

V90DM

Dissipative fluoroelastomer for Semiconductor applications

Introduction

Electrostatic charge build up during semiconductor device processing is unavoidable and has a major impact on integrated circuits, especially at lower feature sizes. Electrostatic build-up can have several detrimental effects on devices including; particle contamination from attraction and electrostatic adhesion of airborne particles and physical damage to mask materials or device layers through an electrostatic discharge (ESD) event. Electrostatic damage can be immediately obvious during testing throughout the manufacturing process, or latent, only creating a failure in the field once the device is in use.

Description

V90DM is a fluoroelastomer with electrostatic dissipative characteristics, specifically developed to provide optimum resistivity in order to control the rate of release of electrostatic charges from the substrate or from nearby surfaces, thereby avoiding ESD damage during wafer processing.

V90DM does not contain undesirable metallic elements which may contaminate and alter the electrical characteristics of critical semiconductor devices.

Key Attributes

- ▶ Dissipative to release electrostatic charge build-up
- ▶ Free from metallic ion contaminants
- ▶ Excellent chemical resistance to a wide range of media
- ▶ High temperature capability

Typical Applications

- ▶ Wafer handling products such as end effector and vacuum suction pads
- ▶ Static seals such as O-rings within various process tool locations
- ▶ Dynamic seals such as transfer chamber gate valves and lip seals



Typical Material Properties

Property	ASTM	ISO	Value
Material Type	FKM	FPM	
Colour			Black
Hardness: (IRHD)	D1415	ISO48	90
	D2240		91
Tensile Strength (MPa)	D412	ISO37	20.0
Elongation at break (%)	D412	ISO37	150
100% Modulus (MPa)	D412	ISO37	17.0
Compression Set: 72 hrs @ 204°C (400°F)	D395	ISO815	30
Minimum Operating Temperature			-15°C (+5°F)
Maximum Operating Temperature*			+225°C (+437°F)
Coefficient of Thermal Expansion (°C ⁻¹)			2.18x10 ⁻⁴
Volume resistivity (ohm-cm) Over the frequency range: 0 to 1000000 Hz	D257		2.00E+6 to 1.00E+9

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.

V90DM volume resistance (ohm)		
1.00E+20	1.00E+19	1.00E+18
1.00E+17	1.00E+16	1.00E+15
1.00E+14	1.00E+13	1.00E+12
1.00E+11	1.00E+10	1.00E+09
1.00E+08	1.00E+07	1.00E+06
1.00E+05	1.00E+04	1.00E+03
1.00E+02	1.00E+01	1.00E+00
Insulative	Dissipative	Conductive



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