# **NOVADURAN™ SEF-500T**



# Mitsubishi Engineering-Plastics Corp



# **Technical Data**

Product Description			
Un-reinforced / Flame Retardant (B	romine-free), Tracking resistant		
General			
Material Status	Commercial: Active		
UL Yellow Card <sup>1</sup>	• E53664-100125289		
Search for UL Yellow Card	<ul><li>Mitsubishi Engineering-Plas</li><li>NOVADURAN™</li></ul>	stics Corp	
Availability	<ul><li> Africa &amp; Middle East</li><li> Asia Pacific</li></ul>	<ul><li>Europe</li><li>Latin America</li></ul>	North America
Features	Bromine Free	<ul> <li>Flame Retardant</li> </ul>	<ul> <li>Tracking Resistant</li> </ul>
Uses	<ul><li>Automotive Applications</li><li>Automotive Electronics</li></ul>	<ul><li>Electrical/Electronic Applications</li><li>General Purpose</li></ul>	

Physical	Nominal Value Unit	Test Method
Density	1.31 g/cm <sup>3</sup>	ISO 1183
Melt Volume-Flow Rate (MVR) (250°C/2.16 kg)	5.00 cm <sup>3</sup> /10min	ISO 1133
Molding Shrinkage		Internal Method
Across Flow: 2.00 mm	1.8 %	
Flow: 2.00 mm	2.2 %	
Water Absorption (Saturation, 23°C)	0.080 %	ISO 62
Mechanical	Nominal Value Unit	Test Method
Tensile Modulus	2700 MPa	ISO 527-2/1
Tensile Stress (Yield)	35.0 MPa	ISO 527-2/50
Tensile Strain (Break)	40 %	ISO 527-2/50
Flexural Modulus <sup>3</sup>	2200 MPa	ISO 178
Flexural Stress <sup>3</sup>	62.0 MPa	ISO 178
Impact	Nominal Value Unit	Test Method
Charpy Notched Impact Strength (23°C)	6.0 kJ/m²	ISO 179
Charpy Unnotched Impact Strength (23°C)	62 kJ/m²	ISO 179
Thermal	Nominal Value Unit	Test Method
Heat Deflection Temperature		
0.45 MPa, Annealed	180 °C	ISO 75-2/B
1.8 MPa, Annealed	86.0 °C	ISO 75-2/A
Melting Temperature	224 °C	ISO 11357-3
CLTE		ISO 11359-2
Flow: -30 to 35°C	1.1E-4 cm/cm/°C	
Flow: -30 to 120°C	1.4E-4 cm/cm/°C	
Flow: 35 to 120°C	1.7E-4 cm/cm/°C	
Transverse: -30 to 35°C	1.1E-4 cm/cm/°C	
Transverse : -30 to 120°C	1.4E-4 cm/cm/°C	
Transverse : 35 to 120°C	1.6E-4 cm/cm/°C	
RTI Elec (0.75 mm)	75.0 °C	UL 746
RTI Imp (0.75 mm)	75.0 °C	UL 746
RTI Str (0.75 mm)	75.0 °C	UL 746



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Surface Resistivity         1.0E+15 ohms         IEC 60093           Volume Resistivity         1.0E+16 ohms⋅cm         IEC 60093           Electric Strength (2.00 mm)         22 kV/mm         IEC 60243-1           Dielectric Constant (1 MHz)         3.50         IEC 60250           Dissipation Factor (1 MHz)         0.019         IEC 60250           Comparative Tracking Index (CTI)         PLC 0         UL 746           Iammability         Nominal Value Unit         Test Method           Flame Rating         V-0           1.6 mm         V-0           3.2 mm         V-0				
Volume Resistivity         1.0E+16 ohms cm         IEC 60093           Electric Strength (2.00 mm)         22 kV/mm         IEC 60243-1           Dielectric Constant (1 MHz)         3.50         IEC 60250           Dissipation Factor (1 MHz)         0.019         IEC 60250           Comparative Tracking Index (CTI)         PLC 0         UL 746           Iamability         Nominal Value Unit         Test Method           Flame Rating         V-0         UL 94           0.75 mm         V-0         V-0           1.6 mm         V-0         V-0           3.2 mm         V-0         V-0           Orying Temperature - Hot Air Dryer         120 °C           Drying Time - Hot Air Dryer         5.0 to 8.0 hr           Rear Temperature         245 °C           Middle Temperature         250 °C           Nozzle Temperature         60 to 80 °C           Mold Temperature         60 to 80 °C           Injection Pressure         20.0 to 150 MPa           Injection Rate         Moderate-Fast	Electrical	Nominal Value Unit	Test Method	
Electric Strength (2.00 mm)   22 kV/mm   IEC 60243-1     Dielectric Constant (1 MHz)   3.50   IEC 60250     Dissipation Factor (1 MHz)   0.019   IEC 60250     Comparative Tracking Index (CTI)   PLC 0   UL 746     Elammability   Nominal Value Unit   Test Method     Flame Rating	Surface Resistivity	1.0E+15 ohms	IEC 60093	
Dielectric Constant (1 MHz)   3.50   IEC 60250     Dissipation Factor (1 MHz)   0.019   IEC 60250     Comparative Tracking Index (CTI)   PLC 0   UL 746     Clammability   Nominal Value Unit   Test Method     Flame Rating   UL 94     0.75 mm   V-0     1.6 mm   V-0     3.2 mm   V-0     3.2 mm   V-0     Third Temperature - Hot Air Dryer   120 °C     Drying Temperature - Hot Air Dryer   5.0 to 8.0 hr     Rear Temperature   Rear Temperature   235 °C     Middle Temperature   240 °C     Front Temperature   245 °C     Mold Temperature   60 to 80 °C     Injection Pressure   10.0 to 150 MPa     Injection Rate   Moderate-Fast	Volume Resistivity	1.0E+16 ohms·cm	IEC 60093	
Dissipation Factor (1 MHz)         0.019         IEC 60250           Comparative Tracking Index (CTI)         PLC 0         UL 746           Elammability         Nominal Value Unit         Test Method           Flame Rating         UL 94           0.75 mm         V-0           1.6 mm         V-0           3.2 mm         V-0           Nominal Value Unit         V-0           Drying Temperature - Hot Air Dryer         120 °C           Drying Time - Hot Air Dryer         5.0 to 8.0 hr           Rear Temperature         235 °C           Middle Temperature         240 °C           Front Temperature         250 °C           Nozzle Temperature         60 to 80 °C           Injection Pressure         20.0 to 150 MPa           Injection Rate         Moderate-Fast	Electric Strength (2.00 mm)	22 kV/mm	IEC 60243-1	
Comparative Tracking Index (CTI)         PLC 0         UL 746           Elammability         Nominal Value Unit         Test Method           Flame Rating         UL 94           0.75 mm         V-0           1.6 mm         V-0           3.2 mm         V-0           Nominal Value Unit           Drying Temperature - Hot Air Dryer         120 °C           Drying Time - Hot Air Dryer         5.0 to 8.0 hr           Rear Temperature         235 °C           Middle Temperature         240 °C           Front Temperature         250 °C           Nozzle Temperature         60 to 80 °C           Injection Pressure         20.0 to 150 MPa           Injection Rate         Moderate-Fast	Dielectric Constant (1 MHz)	3.50	IEC 60250	
Flammability         Nominal Value Unit         Test Method           Flame Rating         UL 94           0.75 mm         V-0           1.6 mm         V-0           3.2 mm         V-0           Nominal Value Unit           Drying Temperature - Hot Air Dryer         120 °C           Drying Time - Hot Air Dryer         5.0 to 8.0 hr           Rear Temperature         235 °C           Middle Temperature         240 °C           Front Temperature         250 °C           Nozzle Temperature         245 °C           Mold Temperature         60 to 80 °C           Injection Pressure         20.0 to 150 MPa           Injection Rate         Moderate-Fast	Dissipation Factor (1 MHz)	0.019	IEC 60250	
Flame Rating         UL 94           0.75 mm         V-0           1.6 mm         V-0           3.2 mm         V-0    Nominal Value Unit  Drying Temperature - Hot Air Dryer  120 °C  Drying Time - Hot Air Dryer  5.0 to 8.0 hr  Rear Temperature  235 °C  Middle Temperature  240 °C  Front Temperature  250 °C  Nozzle Temperature  60 to 80 °C  Injection Pressure  10.0 to 150 MPa  Injection Rate  Moderate-Fast	Comparative Tracking Index (CTI)	PLC 0	UL 746	
0.75 mm       V-0         1.6 mm       V-0         3.2 mm       V-0         Nominal Value Unit         Drying Temperature - Hot Air Dryer       120 °C         Drying Time - Hot Air Dryer       5.0 to 8.0 hr         Rear Temperature       235 °C         Middle Temperature       240 °C         Front Temperature       250 °C         Nozzle Temperature       245 °C         Mold Temperature       60 to 80 °C         Injection Pressure       20.0 to 150 MPa         Injection Rate       Moderate-Fast	Flammability	Nominal Value Unit	Test Method	
1.6 mm V-0 3.2 mm V-0  Nominal Value Unit  Drying Temperature - Hot Air Dryer 120 °C  Drying Time - Hot Air Dryer 5.0 to 8.0 hr  Rear Temperature 235 °C  Middle Temperature 240 °C  Front Temperature 250 °C  Nozzle Temperature 245 °C  Mold Temperature 60 to 80 °C  Injection Pressure 20.0 to 150 MPa  Injection Rate Moderate-Fast	Flame Rating		UL 94	
3.2 mm V-0  Nominal Value Unit  Drying Temperature - Hot Air Dryer 120 °C  Drying Time - Hot Air Dryer 5.0 to 8.0 hr  Rear Temperature 235 °C  Middle Temperature 240 °C  Front Temperature 250 °C  Nozzle Temperature 245 °C  Mold Temperature 60 to 80 °C  Injection Pressure 20.0 to 150 MPa  Injection Rate Moderate-Fast	0.75 mm	V-0		
njection  Drying Temperature - Hot Air Dryer  Drying Time - Hot Air Dryer  Drying Time - Hot Air Dryer  Event Temperature  Middle Temperature  Moderate-Fast  Nominal Value Unit  120 °C  120	1.6 mm	V-0		
Drying Temperature - Hot Air Dryer  Drying Time - Hot Air Dryer  Sol to 8.0 hr  Rear Temperature  235 °C  Middle Temperature  240 °C  Front Temperature  250 °C  Nozzle Temperature  4245 °C  Mold Temperature  60 to 80 °C  Injection Pressure  Injection Rate  Moderate-Fast	3.2 mm	V-0		
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Front Temperature 250 °C  Nozzle Temperature 245 °C  Mold Temperature 60 to 80 °C  Injection Pressure 20.0 to 150 MPa  Injection Rate Moderate-Fast	Rear Temperature	235 °C		
Nozzle Temperature245 °CMold Temperature60 to 80 °CInjection Pressure20.0 to 150 MPaInjection RateModerate-Fast	Middle Temperature	240 °C		
Mold Temperature 60 to 80 °C Injection Pressure 20.0 to 150 MPa Injection Rate Moderate-Fast	Front Temperature	250 °C		
Injection Pressure 20.0 to 150 MPa Injection Rate Moderate-Fast	Nozzle Temperature	245 °C	245 °C	
Injection Rate Moderate-Fast	Mold Temperature	60 to 80 °C		
•	Injection Pressure	20.0 to 150 MPa		
Screw Speed 80 to 120 rpm	Injection Rate	Moderate-Fast		
	Screw Speed	80 to 120 rpm		

#### **Notes**

<sup>&</sup>lt;sup>1</sup> A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

<sup>&</sup>lt;sup>2</sup> Typical properties: these are not to be construed as specifications.

<sup>&</sup>lt;sup>3</sup> 2.0 mm/min

#### NOVADURAN™ SEF-500T

Polybutylene Terephthalate

# Mitsubishi Engineering-Plastics Corp

# PROSPECTOR® www.ulprospector.com

## Where to Buy

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Mitsubishi Engineering-Plastics Corp

, Japan

Telephone: +81-463-21-8610 Web: http://www.m-ep.co.jp/

#### Distributor

### Chase Plastic Services, Inc.

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## The Materials Group

Telephone: 616-863-6046

Web: http://thematerialsgroup.com/

Availability: North America



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