

### General Information

#### Product Description

Un-reinforced / Flame Retardant V-0, Toughness

#### General

|          |                                                                                                                                                                                |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Features | <ul style="list-style-type: none"> <li>Flame Retardant</li> <li>Good Toughness</li> </ul>                                                                                      |
| Uses     | <ul style="list-style-type: none"> <li>Automotive Applications</li> <li>Automotive Electronics</li> <li>Electrical/Electronic Applications</li> <li>General Purpose</li> </ul> |

### ASTM & ISO Properties <sup>1</sup>

| Physical                                    | Nominal Value | Unit                   | Test Method     |
|---------------------------------------------|---------------|------------------------|-----------------|
| Density                                     | 1.43          | g/cm <sup>3</sup>      | ISO 1183        |
| Melt Volume-Flow Rate (MVR) (250°C/2.16 kg) | 20            | cm <sup>3</sup> /10min | ISO 1133        |
| Molding Shrinkage                           |               |                        | Internal Method |
| Across Flow : 2.00 mm                       | 1.8           | %                      |                 |
| Flow : 2.00 mm                              | 1.9           | %                      |                 |
| Water Absorption (Saturation, 23°C)         | 0.080         | %                      | ISO 62          |
| Mechanical                                  | Nominal Value | Unit                   | Test Method     |
| Tensile Modulus                             | 2970          | MPa                    | ISO 527-1/1     |
| Tensile Stress (Yield)                      | 63.0          | MPa                    | ISO 527-2/50    |
| Tensile Strain                              |               |                        | ISO 527-2/50    |
| Yield                                       | 6.0           | %                      |                 |
| Break                                       | 20            | %                      |                 |
| Flexural Modulus <sup>2</sup>               | 2780          | MPa                    | ISO 178         |
| Flexural Stress <sup>2</sup>                | 96.0          | MPa                    | ISO 178         |
| Impact                                      | Nominal Value | Unit                   | Test Method     |
| Charpy Notched Impact Strength (23°C)       | 2.0           | kJ/m <sup>2</sup>      | ISO 179         |
| Charpy Unnotched Impact Strength (23°C)     | 110           | kJ/m <sup>2</sup>      | ISO 179         |
| Thermal                                     | Nominal Value | Unit                   | Test Method     |
| Deflection Temperature Under Load           |               |                        |                 |
| 0.45 MPa, Annealed                          | 165           | °C                     | ISO 75-2/B      |
| 1.8 MPa, Annealed                           | 67.0          | °C                     | ISO 75-2/A      |
| Melting Temperature                         | 224           | °C                     | ISO 11357-3     |
| CLTE                                        |               |                        | ISO 11359-2     |
| Flow : -30 to 35°C                          | 8.0E-5        | cm/cm/°C               |                 |
| Flow : -30 to 120°C                         | 1.2E-4        | cm/cm/°C               |                 |
| Flow : 35 to 120°C                          | 1.4E-4        | cm/cm/°C               |                 |
| Transverse : -30 to 35°C                    | 8.8E-5        | cm/cm/°C               |                 |
| Transverse : -30 to 120°C                   | 1.2E-4        | cm/cm/°C               |                 |
| Transverse : 35 to 120°C                    | 1.5E-4        | cm/cm/°C               |                 |
| RTI Elec (0.71 mm)                          | 150           | °C                     | UL 746B         |



# NOVADURAN™ 5010N1

Mitsubishi Engineering-Plastics Corp - Polybutylene Terephthalate

| Thermal                          | Nominal Value | Unit    | Test Method |
|----------------------------------|---------------|---------|-------------|
| RTI Imp (0.71 mm)                | 130           | °C      | UL 746B     |
| RTI Str (0.71 mm)                | 130           | °C      | UL 746B     |
| Electrical                       | Nominal Value | Unit    | Test Method |
| Surface Resistivity              | 1.0E+15       | ohms    | IEC 60093   |
| Volume Resistivity               | 1.0E+16       | ohms·cm | IEC 60093   |
| Electric Strength                |               |         | IEC 60243-1 |
| 1.00 mm                          | 21            | kV/mm   |             |
| 2.00 mm                          | 18            | kV/mm   |             |
| Dielectric Constant (1 MHz)      | 3.20          |         | IEC 60250   |
| Dissipation Factor (1 MHz)       | 0.020         |         | IEC 60250   |
| Comparative Tracking Index (CTI) | PLC 3         |         | UL 746A     |
| Flammability                     | Nominal Value | Unit    | Test Method |
| Flame Rating                     |               |         | UL 94       |
| 0.71 mm                          | V-0           |         |             |
| 1.5 mm                           | V-0           |         |             |
| 3.0 mm                           | V-0           |         |             |

## Processing Information

| Injection                          | 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 |      |
| Screw Speed                        | 80 to 120     | rpm  |

