

# RAMTOUGH PZ333G2

Polycarbonate  
Polyram Ram-On Industries

Message:  
10% GLASS-FIBER REINFORCED, FLAME RETARDANT POLYCARBONATE FOR INJECTION MOULDING APPLICATIONS.

| General Information                      |                                                       |                   |                       |
|------------------------------------------|-------------------------------------------------------|-------------------|-----------------------|
| Filler / Reinforcement                   | Glass fiber reinforced material, 10% filler by weight |                   |                       |
| Additive                                 | Flame retardancy                                      |                   |                       |
| Features                                 | Flame retardancy                                      |                   |                       |
| Processing Method                        | Injection molding                                     |                   |                       |
| Physical                                 | Nominal Value                                         | Unit              | Test Method           |
| Specific Gravity                         | 1.30                                                  | g/cm <sup>3</sup> | ASTM D792, ISO 1183   |
| Melt Mass-Flow Rate (MFR) (300°C/1.2 kg) | 15                                                    | g/10 min          | ASTM D1238, ISO 1133  |
| Molding Shrinkage                        | 0.40 - 0.60                                           | %                 | ISO 2577              |
| Mechanical                               | Nominal Value                                         | Unit              | Test Method           |
| Tensile Modulus                          | 3200                                                  | MPa               | ASTM D638, ISO 527-2  |
| Tensile Strength (Yield)                 | 60.0                                                  | MPa               | ASTM D638, ISO 527-2  |
| Tensile Elongation                       |                                                       |                   |                       |
| Fracture                                 | 10                                                    | %                 | ASTM D638             |
| Fracture                                 | 15                                                    | %                 | ISO 527-2             |
| Flexural Modulus                         | 3400                                                  | MPa               | ASTM D790, ISO 178    |
| Flexural Strength                        | 120                                                   | MPa               | ASTM D790, ISO 178    |
| Impact                                   | Nominal Value                                         | Unit              | Test Method           |
| Notched Izod Impact                      |                                                       |                   |                       |
| 23°C                                     | 90                                                    | J/m               | ASTM D256             |
| 23°C                                     | 8.0                                                   | kJ/m <sup>2</sup> | ISO 180               |
| Thermal                                  | Nominal Value                                         | Unit              | Test Method           |
| Heat Deflection Temperature              |                                                       |                   |                       |
| 0.45 MPa, not annealed                   | 265                                                   | °C                | ISO 75-2/B            |
| 1.8 MPa, not annealed                    | 135                                                   | °C                | ASTM D648, ISO 75-2/A |
| Vicat Softening Temperature              | 265                                                   | °C                | ASTM D1525            |
| Electrical                               | Nominal Value                                         | Unit              | Test Method           |
| Surface Resistivity                      | 1.0E+14                                               | ohms              | IEC 60093             |
| Volume Resistivity                       | 1.0E+18                                               | ohms · cm         | IEC 60093             |
| Flammability                             | Nominal Value                                         | Unit              | Test Method           |
| Flame Rating (3.00 mm)                   | V-0                                                   |                   | UL 94                 |
| Injection                                | Nominal Value                                         | Unit              |                       |
| Drying Temperature                       | 120                                                   | °C                |                       |
| Drying Time                              | 4.0 - 5.0                                             | hr                |                       |

|                        |               |     |
|------------------------|---------------|-----|
| Suggested Max Moisture | 0.020         | %   |
| Rear Temperature       | 270 - 290     | °C  |
| Middle Temperature     | 280 - 300     | °C  |
| Front Temperature      | 290 - 310     | °C  |
| Processing (Melt) Temp | 270 - 310     | °C  |
| Mold Temperature       | 80.0 - 120    | °C  |
| Injection Pressure     | 70.0 - 107    | MPa |
| Holding Pressure       | 35.0 - 85.0   | MPa |
| Back Pressure          | 0.350 - 0.700 | MPa |
| Screw Speed            | 60 - 90       | rpm |

#### Injection instructions

Fill Speed: 25 to 50 mm/sec

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#### Recommended distributors for this material

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