

CYCOLAC G320Resin

SABIC Innovative Plastics Europe - Acrylonitrile Butadiene Styrene

| General Information                                                                                                                                                                                                                                |                             |                    |                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------|--------------------------------|
| Product Description                                                                                                                                                                                                                                |                             |                    |                                |
| CYCOLAC G320 is a super high impact resistant ABS grade. It combines impact resistance with high stiffness, good temperature resistance and processability. It has a good fit in automotive interiors where impact resistance is the main criteria |                             |                    |                                |
| General                                                                                                                                                                                                                                            |                             |                    |                                |
| Material Status                                                                                                                                                                                                                                    | • Commercial: Active        |                    |                                |
| Availability                                                                                                                                                                                                                                       | • Europe                    |                    |                                |
| Features                                                                                                                                                                                                                                           | • Good Processability       | • High Stiffness   | • Ultra High Impact Resistance |
| Uses                                                                                                                                                                                                                                               | • Automotive Interior Parts |                    |                                |
| RoHS Compliance                                                                                                                                                                                                                                    | • RoHS Compliant            |                    |                                |
| Forms                                                                                                                                                                                                                                              | • Pellets                   |                    |                                |
| Processing Method                                                                                                                                                                                                                                  | • Injection Molding         |                    |                                |
| ASTM and ISO Properties <sup>1</sup>                                                                                                                                                                                                               |                             |                    |                                |
| Physical                                                                                                                                                                                                                                           | Nominal Value (English)     | Nominal Value (SI) | Test Method                    |
| Density                                                                                                                                                                                                                                            | 1.05 g/cm³                  | 1.05 g/cm³         | ISO 1183                       |
| Melt Mass-Flow Rate (MFR) (220°C/10.0 kg)                                                                                                                                                                                                          | 7.0 g/10 min                | 7.0 g/10 min       | ISO 1133                       |
| Melt Volume-Flow Rate (MVR) (220°C/10.0 kg)                                                                                                                                                                                                        | 0.427 in³/10min             | 7.00 cm³/10min     | ISO 1133                       |
| Molding Shrinkage (Flow)                                                                                                                                                                                                                           | 0.0050 to 0.0070 in/in      | 0.50 to 0.70 %     | ASTM D955                      |
| Water Absorption                                                                                                                                                                                                                                   |                             |                    | ISO 62                         |
| 73 °F (23 °C), Saturation                                                                                                                                                                                                                          | 1.0 %                       | 1.0 %              |                                |
| 73 °F (23 °C), Equilibrium, 50 % RH                                                                                                                                                                                                                | 0.20 %                      | 0.20 %             |                                |
| Mechanical                                                                                                                                                                                                                                         | Nominal Value (English)     | Nominal Value (SI) | Test Method                    |
| Tensile Modulus                                                                                                                                                                                                                                    | 334000 psi                  | 2300 MPa           | ISO 527-2/1                    |
| Tensile Stress                                                                                                                                                                                                                                     |                             |                    |                                |
| Yield                                                                                                                                                                                                                                              | 5800 psi                    | 40.0 MPa           | ISO 527-2/5                    |
| Yield                                                                                                                                                                                                                                              | 6530 psi                    | 45.0 MPa           | ISO 527-2/50                   |
| Break                                                                                                                                                                                                                                              | 5080 psi                    | 35.0 MPa           | ISO 527-2/5                    |
| Break                                                                                                                                                                                                                                              | 5080 psi                    | 35.0 MPa           | ISO 527-2/50                   |
| Tensile Strain                                                                                                                                                                                                                                     |                             |                    |                                |
| Yield                                                                                                                                                                                                                                              | 2.0 %                       | 2.0 %              | ISO 527-2/5                    |
| Yield                                                                                                                                                                                                                                              | 3.0 %                       | 3.0 %              | ISO 527-2/50                   |
| Break                                                                                                                                                                                                                                              | 10 %                        | 10 %               | ISO 527-2/5                    |
| Break                                                                                                                                                                                                                                              | 15 %                        | 15 %               | ISO 527-2/50                   |
| Flexural Modulus <sup>2</sup>                                                                                                                                                                                                                      | 334000 psi                  | 2300 MPa           | ISO 178                        |
| Flexural Strength <sup>2, 3</sup>                                                                                                                                                                                                                  | 9140 psi                    | 63.0 MPa           | ISO 178                        |
| Taber Abrasion Resistance <sup>4</sup> (1000 Cycles)                                                                                                                                                                                               | 90.0 mg                     | 90.0 mg            | ASTM D1044                     |
| Impact                                                                                                                                                                                                                                             | Nominal Value (English)     | Nominal Value (SI) | Test Method                    |
| Charpy Notched Impact Strength                                                                                                                                                                                                                     |                             |                    | ISO 179/1eA                    |
| -22 °F (-30 °C)                                                                                                                                                                                                                                    | 5.71 ft-lb/in²              | 12.0 kJ/m²         |                                |
| 73 °F (23 °C)                                                                                                                                                                                                                                      | 18.1 ft-lb/in²              | 38.0 kJ/m²         |                                |
| Notched Izod Impact Strength                                                                                                                                                                                                                       |                             |                    | ISO 180/1A                     |
| -22 °F (-30 °C)                                                                                                                                                                                                                                    | 5.71 ft-lb/in²              | 12.0 kJ/m²         |                                |
| 73 °F (23 °C)                                                                                                                                                                                                                                      | 19.0 ft-lb/in²              | 40.0 kJ/m²         |                                |

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| Hardness                                 | Nominal Value (English) | Nominal Value (SI) | Test Method    |
|------------------------------------------|-------------------------|--------------------|----------------|
| Rockwell Hardness (R-Scale)              | 109                     | 109                | ISO 2039-2     |
| Ball Indentation Hardness - H 358/30     | 11600 psi               | 80.0 MPa           | ISO 2039-1     |
| Thermal                                  | Nominal Value (English) | Nominal Value (SI) | Test Method    |
| Heat Deflection Temperature <sup>5</sup> |                         |                    |                |
| 66 psi (0.45 MPa), Unannealed            | 192 °F                  | 89.0 °C            | ISO 75-2/Be    |
| 264 psi (1.8 MPa), Unannealed            | 171 °F                  | 77.0 °C            | ISO 75-2/Ae    |
| Vicat Softening Temperature              |                         |                    |                |
| --                                       | 199 °F                  | 93.0 °C            | ISO 306/B50    |
| --                                       | 203 °F                  | 95.0 °C            | ISO 306/B120   |
| CLTE                                     |                         |                    | ISO 11359-2    |
| Flow, 73 to 140 °F (23 to 60 °C)         | 0.000044 in/in/°F       | 0.000080 cm/cm/°C  |                |
| Transverse, 73 to 140 °F (23 to 60 °C)   | 0.000044 in/in/°F       | 0.000080 cm/cm/°C  |                |
| Thermal Conductivity                     | 1.4 Btu·in/hr/ft²/°F    | 0.20 W/m/K         | ISO 8302       |
| Ball Pressure Test, 167 °F (75 °C)       | Pass                    | Pass               | IEC 60695-10-2 |
| Electrical                               | Nominal Value (English) | Nominal Value (SI) | Test Method    |
| Surface Resistivity                      | > 1.0E+15 ohms          | > 1.0E+15 ohms     | IEC 60093      |
| Volume Resistivity                       | > 1.0E+15 ohm·cm        | > 1.0E+15 ohm·cm   | IEC 60093      |
| Relative Permittivity                    |                         |                    | IEC 60250      |
| 50 Hz                                    | 2.90                    | 2.90               |                |
| 60 Hz                                    | 2.90                    | 2.90               |                |
| 1E+6 Hz                                  | 2.60                    | 2.60               |                |
| Dissipation Factor                       |                         |                    | IEC 60250      |
| 50 Hz                                    | 0.00800                 | 0.00800            |                |
| 60 Hz                                    | 0.00800                 | 0.00800            |                |
| 1E+6 Hz                                  | 0.00900                 | 0.00900            |                |
| Electric Strength                        |                         |                    | IEC 60243-1    |
| 0.126 in (3.20 mm), in Oil               | 431.80 V/mil            | 17.00 kV/mm        |                |
| Flammability                             | Nominal Value (English) | Nominal Value (SI) | Test Method    |
| Burning Rate (0.0394 in (1.00 mm))       | 0.98 in/min             | 25 mm/min          | ISO 3795       |
| Flame Rating - UL                        |                         |                    | UL 94          |
| 0.125 in (3.17 mm), Testing by SABIC     | HB                      | HB                 |                |
| Glow Wire Flammability Index             |                         |                    | IEC 60695-2-12 |
| 0.0394 in (1.000 mm)                     | 1200 °F                 | 650 °C             |                |
| Processing Information                   |                         |                    |                |
| Injection                                | Nominal Value (English) | Nominal Value (SI) |                |
| Drying Temperature                       | 185 to 203 °F           | 85.0 to 95.0 °C    |                |
| Drying Time                              | 2.0 to 4.0 hr           | 2.0 to 4.0 hr      |                |
| Suggested Max Moisture                   | 0.10 %                  | 0.10 %             |                |
| Hopper Temperature                       | 140 to 176 °F           | 60.0 to 80.0 °C    |                |
| Rear Temperature                         | 410 to 482 °F           | 210 to 250 °C      |                |
| Middle Temperature                       | 410 to 482 °F           | 210 to 250 °C      |                |
| Front Temperature                        | 446 to 518 °F           | 230 to 270 °C      |                |
| Nozzle Temperature                       | 428 to 500 °F           | 220 to 260 °C      |                |
| Processing (Melt) Temp                   | 464 to 518 °F           | 240 to 270 °C      |                |
| Mold Temperature                         | 104 to 176 °F           | 40.0 to 80.0 °C    |                |