

# CYCOLAC™ MG29 resin

Acrylonitrile Butadiene Styrene

SABIC Innovative Plastics

## Message:

Super high impact ABS. Good low temperature toughness. High gloss.

| General Information                |                              |          |                 |
|------------------------------------|------------------------------|----------|-----------------|
| Features                           | Ultra-high impact resistance |          |                 |
|                                    | Low Temperature Flexibility  |          |                 |
|                                    | Highlight                    |          |                 |
| Processing Method                  | Injection molding            |          |                 |
| Physical                           | Nominal Value                | Unit     | Test Method     |
| Specific Gravity                   | 1.04                         | g/cm³    | ASTM D792       |
| Melt Mass-Flow Rate (MFR)          |                              |          |                 |
| 230°C/3.8 kg                       | 1.2                          | g/10 min | ASTM D1238      |
| 220°C/10.0 kg                      | 8.0                          | g/10 min | ISO 1133        |
| Molding Shrinkage - Flow (3.20 mm) | 0.50 - 0.80                  | %        | Internal method |
| Mechanical                         | Nominal Value                | Unit     | Test Method     |
| Tensile Modulus                    |                              |          |                 |
| -- <sup>1</sup>                    | 2000                         | MPa      | ASTM D638       |
| --                                 | 2050                         | MPa      | ISO 527-2/1     |
| Tensile Strength                   |                              |          |                 |
| Yield <sup>2</sup>                 | 39.0                         | MPa      | ASTM D638       |
| Yield                              | 42.0                         | MPa      | ISO 527-2/50    |
| Fracture <sup>3</sup>              | 31.0                         | MPa      | ASTM D638       |
| Fracture                           | 32.0                         | MPa      | ISO 527-2/50    |
| Tensile Elongation                 |                              |          |                 |
| Yield <sup>4</sup>                 | 2.4                          | %        | ASTM D638       |
| Yield                              | 2.8                          | %        | ISO 527-2/50    |
| Fracture <sup>5</sup>              | 26                           | %        | ASTM D638       |
| Fracture                           | 20                           | %        | ISO 527-2/50    |
| Flexural Modulus                   |                              |          |                 |
| 50.0mm span <sup>6</sup>           | 2070                         | MPa      | ASTM D790       |
| -- <sup>7</sup>                    | 1990                         | MPa      | ISO 178         |
| Flexural Stress                    |                              |          |                 |
| --                                 | 61.0                         | MPa      | ISO 178         |
| Yield, 50.0mm span <sup>8</sup>    | 65.0                         | MPa      | ASTM D790       |
| Impact                             | Nominal Value                | Unit     | Test Method     |
| Notched Izod Impact                |                              |          |                 |

| 23°C                                            | 460           | J/m               | ASTM D256                |
|-------------------------------------------------|---------------|-------------------|--------------------------|
| -30°C <sup>9</sup>                              | 12            | kJ/m <sup>2</sup> | ISO 180/1A               |
| 23°C <sup>10</sup>                              | 37            | kJ/m <sup>2</sup> | ISO 180/1A               |
| Instrumented Dart Impact (23°C, Total Energy)   | 29.0          | J                 | ASTM D3763               |
| Thermal                                         | Nominal Value | Unit              | Test Method              |
| Deflection Temperature Under Load               |               |                   |                          |
| 0.45 MPa, unannealed, 3.20mm                    | 94.0          | °C                | ASTM D648                |
| 1.8 MPa, unannealed, 3.20mm                     | 79.0          | °C                | ASTM D648                |
| 1.8 MPa, unannealed, 64.0mm span <sup>11</sup>  | 79.0          | °C                | ISO 75-2/Af              |
| Vicat Softening Temperature                     |               |                   |                          |
| --                                              | 99.0          | °C                | ASTM D1525 <sup>12</sup> |
| --                                              | 98.0          | °C                | ISO 306/B50              |
| Linear thermal expansion coefficient            |               |                   | ASTM E831                |
| Flow: -40 to 40°C                               | 9.5E-5        | cm/cm/°C          | ASTM E831                |
| Lateral: -40 to 40°C                            | 9.4E-5        | cm/cm/°C          | ASTM E831                |
| RTI Elec                                        | 60.0          | °C                | UL 746                   |
| RTI Imp                                         | 60.0          | °C                | UL 746                   |
| RTI                                             | 60.0          | °C                | UL 746                   |
| Electrical                                      | Nominal Value |                   | Test Method              |
| Arc Resistance <sup>13</sup>                    | PLC 5         |                   | ASTM D495                |
| Comparative Tracking Index (CTI)                | PLC 0         |                   | UL 746                   |
| High Amp Arc Ignition (HAI)                     | PLC 1         |                   | UL 746                   |
| High Voltage Arc Tracking Rate (HVTR)           | PLC 0         |                   | UL 746                   |
| Hot-wire Ignition (HWI)                         | PLC 3         |                   | UL 746                   |
| Flammability                                    | Nominal Value |                   | Test Method              |
| Flame Rating (1.50 mm)                          | HB            |                   | UL 94                    |
| Fill Analysis                                   | Nominal Value | Unit              | Test Method              |
| Melt Viscosity (240°C, 1000 sec <sup>-1</sup> ) | 280           | Pa · s            | ASTM D3835               |
| Injection                                       | Nominal Value | Unit              |                          |
| Drying Temperature                              | 87.8 - 93.3   | °C                |                          |
| Drying Time                                     | 2.0 - 4.0     | hr                |                          |
| Drying Time, Maximum                            | 8.0           | hr                |                          |
| Suggested Max Moisture                          | 0.010         | %                 |                          |
| Suggested Shot Size                             | 50 - 70       | %                 |                          |
| Rear Temperature                                | 188 - 199     | °C                |                          |
| Middle Temperature                              | 210 - 221     | °C                |                          |
| Front Temperature                               | 227 - 238     | °C                |                          |
| Nozzle Temperature                              | 232 - 274     | °C                |                          |
| Processing (Melt) Temp                          | 232 - 274     | °C                |                          |
| Mold Temperature                                | 48.9 - 65.6   | °C                |                          |
| Back Pressure                                   | 0.345 - 0.689 | MPa               |                          |

|             |                           |     |
|-------------|---------------------------|-----|
| Screw Speed | 30 - 60                   | rpm |
| Vent Depth  | 0.038 - 0.051             | mm  |
| NOTE        |                           |     |
| 1.          | 5.0 mm/min                |     |
| 2.          | Type 1, 5.0 mm/min        |     |
| 3.          | Type 1, 5.0 mm/min        |     |
| 4.          | Type 1, 5.0 mm/min        |     |
| 5.          | Type 1, 5.0 mm/min        |     |
| 6.          | 1.3 mm/min                |     |
| 7.          | 2.0 mm/min                |     |
| 8.          | 1.3 mm/min                |     |
| 9.          | 80*10*4                   |     |
| 10.         | 80*10*4                   |     |
| 11.         | 80*10*4 mm                |     |
| 12.         | 标准 B (120°C/h), 载荷2 (50N) |     |
| 13.         | Tungsten electrode        |     |

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