

# CYCOLAC™ RESIN HMG94MD

REGION EUROPE

## DESCRIPTION

Superior flow, injection molding ABS for thin-wall medical applications. Biocompatible (ISO 10993). FDA compliant. Gamma & EtO sterilizable.

## TYPICAL PROPERTY VALUES

Revision 20170816

| PROPERTIES                                   | TYPICAL VALUES | UNITS             | TEST METHODS |
|----------------------------------------------|----------------|-------------------|--------------|
| <b>MECHANICAL</b>                            |                |                   |              |
| Tensile Stress, yld, Type I, 5 mm/min        | 46             | MPa               | ASTM D 638   |
| Tensile Stress, brk, Type I, 5 mm/min        | 35             | MPa               | ASTM D 638   |
| Tensile Strain, yld, Type I, 5 mm/min        | 2              | %                 | ASTM D 638   |
| Tensile Strain, brk, Type I, 5 mm/min        | 18             | %                 | ASTM D 638   |
| Tensile Modulus, 5 mm/min                    | 2480           | MPa               | ASTM D 638   |
| Flexural Stress, yld, 1.3 mm/min, 50 mm span | 79             | MPa               | ASTM D 790   |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 2620           | MPa               | ASTM D 790   |
| Tensile Stress, yield, 5 mm/min              | 40             | MPa               | ISO 527      |
| Tensile Stress, break, 5 mm/min              | 35             | MPa               | ISO 527      |
| Tensile Strain, yield, 5 mm/min              | 2              | %                 | ISO 527      |
| Tensile Strain, break, 5 mm/min              | 35             | %                 | ISO 527      |
| Tensile Modulus, 1 mm/min                    | 2450           | MPa               | ISO 527      |
| Flexural Stress, yield, 2 mm/min             | 70             | MPa               | ISO 178      |
| Flexural Modulus, 2 mm/min                   | 2500           | MPa               | ISO 178      |
| <b>IMPACT</b>                                |                |                   |              |
| Izod Impact, notched, 23°C                   | 240            | J/m               | ASTM D 256   |
| Izod Impact, notched, -30°C                  | 80             | J/m               | ASTM D 256   |
| Instrumented Impact Total Energy, 23°C       | 21             | J                 | ASTM D 3763  |
| Izod Impact, notched 80*10*4 +23°C           | 16             | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod Impact, notched 80*10*4 -30°C           | 7              | kJ/m <sup>2</sup> | ISO 180/1A   |
| Charpy 23°C, V-notch Edgew 80*10*4 sp=62mm   | 23             | kJ/m <sup>2</sup> | ISO 179/1eA  |
| <b>THERMAL</b>                               |                |                   |              |
| Vicat Softening Temp, Rate B/50              | 98             | °C                | ASTM D 1525  |
| HDT, 0.45 MPa, 3.2 mm, unannealed            | 93             | °C                | ASTM D 648   |



| PROPERTIES                            | TYPICAL VALUES | UNITS             | TEST METHODS |
|---------------------------------------|----------------|-------------------|--------------|
| HDT, 1.82 MPa, 3.2mm, unannealed      | 77             | °C                | ASTM D 648   |
| CTE, -40°C to 40°C, flow              | 8.8E-05        | 1/°C              | ISO 11359-2  |
| CTE, -40°C to 40°C, xflow             | 8.5E-05        | 1/°C              | ISO 11359-2  |
| Vicat Softening Temp, Rate B/50       | 98             | °C                | ISO 306      |
| Vicat Softening Temp, Rate B/120      | 100            | °C                | ISO 306      |
| HDT/Af, 1.8 MPa Flatw 80*10*4 sp=64mm | 80             | °C                | ISO 75/Af    |
| PHYSICAL                              |                |                   |              |
| Specific Gravity                      | 1.04           | -                 | ASTM D 792   |
| Mold Shrinkage, flow, 3.2 mm (5)      | 0.5 – 0.8      | %                 | SABIC method |
| Melt Flow Rate, 230°C/3.8 kgf         | 11.7           | g/10 min          | ASTM D 1238  |
| Density                               | 1.06           | g/cm <sup>3</sup> | ISO 1183     |
| Melt Flow Rate, 220°C/5.0 kg          | 12             | g/10 min          | ISO 1133     |
| Melt Viscosity, 240°C, 1000 sec-1     | 173            | Pa-s              | ISO 11443    |
| INJECTION MOLDING                     |                |                   |              |
| Drying Temperature                    | 80 – 90        | °C                |              |
| Drying Time                           | 2 – 4          | hrs               |              |
| Drying Time (Cumulative)              | 8              | hrs               |              |
| Maximum Moisture Content              | 0.1            | %                 |              |
| Melt Temperature                      | 205 – 245      | °C                |              |
| Nozzle Temperature                    | 205 – 245      | °C                |              |
| Front - Zone 3 Temperature            | 205 – 225      | °C                |              |
| Middle - Zone 2 Temperature           | 200 – 210      | °C                |              |
| Rear - Zone 1 Temperature             | 190 – 200      | °C                |              |
| Mold Temperature                      | 50 – 70        | °C                |              |
| Back Pressure                         | 0.3 – 0.7      | MPa               |              |
| Screw Speed                           | 30 – 60        | rpm               |              |
| Shot to Cylinder Size                 | 50 – 70        | %                 |              |
| Vent Depth                            | 0.038 – 0.051  | mm                |              |

## DISCLAIMER

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