

## ASTAGLAS™ DR101

ASTAGLAS™ DR101 is a transparent high impact and heat resistance Poly(Methyl Methacrylate) Acrylic for injection moulding and extrusion processes. Typical applications require an optimum balance of toughness and heat resistance products for automotive, lighting, appliance and houseware applications.

|                                         | CONDITIONS                    | UNITS    | TYPICAL<br>VALUES | TESTING<br>METHODS |
|-----------------------------------------|-------------------------------|----------|-------------------|--------------------|
| <b>1. Mechanical Properties</b>         |                               |          |                   |                    |
| Notched Izod Impact Strength            | 12.7 mm x 3.2 mm              | J/m      | 46                | ASTM D256          |
| Tensile Strength                        | 12.7 mm x 3.2 mm @ 5.0 mm/min | MPa      | 42                | ASTM D638          |
| Tensile Modulus                         | 12.7 mm x 3.2 mm @ 5.0 mm/min | MPa      | 2000              | ASTM D638          |
| Elongation to Fail                      | 12.7 mm x 3.2 mm @ 5.0 mm/min | %        | 35                | ASTM D638          |
| Flexural Strength                       | 12.7 mm x 3.2 mm @ 1.3 mm/min | MPa      | 65                | ASTM D790          |
| Flexural Modulus                        | 12.7 mm x 3.2 mm @ 1.3 mm/min | MPa      | 1820              | ASTM D790          |
| <b>2. Thermal Properties</b>            |                               |          |                   |                    |
| HDT (Annealed @ 80°C, 4hrs)             | 12.7 mm x 3.2 mm @ 1.82 MPa   | °C       | 87                | ASTM D648          |
| VICAT Softening Temperature             | 1 kg (Unannealed)             | °C       | 105               | ASTM D1525         |
| Coefficient of Linear Thermal Expansion |                               | cm/cm/°C | 1.00E-04          | ASTM D696          |
| <b>4. Physical Properties</b>           |                               |          |                   |                    |
| Melt Flow Rate                          | 230°C, 3.8 kg                 | g/10 min | 1.3               | ASTM D1238         |
|                                         | 220°C, 10 kg                  | g/10 min | n/a               | ASTM D1238         |
| Specific Gravity                        |                               | -        | 1.16              | ASTM D792          |
| Rockwell Hardness                       |                               | M        | 45                | ASTM D785          |
|                                         | R Scale                       | R        | 110               | ASTM D785          |
| UL Flammability                         | 1.6 mm                        | Rating   | HB                | UL 94              |
| Haze                                    | 3.2 mm                        | %        | < 2               | ASTM D1003         |
| Water Absorbtion                        | 24 hours                      | %        | 0.40              | ASTM D570          |
| Total Light Transmittance               | 3.2 mm                        | %        | 90                | ASTM D1003         |
| Refractive Index                        |                               | -        | 1.49              | ASTM D542          |
| Mould Shrinkage                         |                               | %        | 0.55              | ASTM D955          |

All test results were obtained using uncoloured material.

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Material Safety Data Sheet (MSDS) Code: 17628

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# TYPICAL PROCESSING CONDITIONS

## ASTAGLAS™ DR101

The following typical guidelines are offered as initial processing conditions for ASTAGLAS™ DR101

In practice, processing parameters may need to be varied to give commercially acceptable performance in conjunction with optimum physical properties. For specific technical advice on part design or processing conditions, contact the Marplex Technical Service Department.

|                                                  |        |                                 |
|--------------------------------------------------|--------|---------------------------------|
| Temperature of pellet bed in dehumidifying drier |        | 80 - 85°C                       |
| Minimum drying time at desired pellet bed temp   |        | 3 - 5 hours                     |
| Mould temperature                                |        | 50 - 85°C                       |
| Nozzle temperature                               |        | Do not exceed stock temperature |
| Melt temperature                                 |        | 220 - 250°C                     |
| Cylinder temperatures                            | Rear   | 200 - 230°C                     |
|                                                  | Middle | 210 - 240°C                     |
|                                                  | Front  | 220 - 250°C                     |
| Fill speed                                       |        | Slow - Medium                   |
| Screw speed                                      |        | 40 - 80 rpm                     |
| Screw back pressure                              |        | 0.1 - 1.0 MPa                   |
| Injection pressure                               |        | 60 - 130 MPa                    |
| Clamp pressure                                   |        | 5 - 9 kN/cm <sup>2</sup>        |

### Comments:

01. Cleanliness of the dryer, machine hopper and machine screw/barrel/nozzle assembly are essential for processing ASTAGLAS™ PMMA and producing contamination free components.
02. ASTAGLAS™ PMMA is not compatible during moulding with other polymers.
03. It is suggested that the pre-drying, moulding die and material temperatures are manually confirmed using a hand held temperature measuring device.
04. If required, component annealing at 70 - 80 °C for 2 - 4 hours is suggested.

### Conversions:

1 MPa = 145psi  
1 MPa = 10.2kg/cm<sup>2</sup>  
1 MPa = 10 bar  
°C = 5(°F-32)/9  
1 kN/cm<sup>2</sup> = 0.85 ton/in<sup>2</sup>