

# IUPILON® POLYCARBONATE

## ENGINEERING THERMOPLASTIC

IUPILON® IS A REGISTERED TRADEMARK OF MITSUBISHI ENGINEERING PLASTICS CORPORATION

### IUPILON® S2000UR

IUPILON® S2000UR / S2001UR / S2003UR are the standard medium viscosity (medium melt flow) grades in the Iupilon® range and are well suited to general purpose injection moulding applications which require a mould release agent (R) and UV stabilisation (U). Offering an exceptional combination of transparency, toughness, heat resistance, flame retardancy and processability, typical applications include automotive taillight housings and safety helmet visors.

Note: [ Standard grade = S2000UR ] / [ FDA approved = S2001UR ] / [ Steam resistant = S2003UR ].

|                                         | <u>CONDITIONS</u>          | <u>UNITS</u> | <u>TYPICAL<br/>VALUES</u> | <u>TESTING<br/>METHODS</u> |
|-----------------------------------------|----------------------------|--------------|---------------------------|----------------------------|
| <b><u>1. Mechanical Properties</u></b>  |                            |              |                           |                            |
| Notched Izod Impact Strength            | 12.7 x 3.2 mm              | J/m          | 875                       | ASTM D256                  |
| Falling Dart Impact                     | 3.2 mm                     | J            | >85                       | ASTM D3029                 |
| Tensile Strength                        | 12.7 x 3.2 mm @ 20 mm/min  | MPa          | 64                        | ASTM D638                  |
| Elongation to Fail                      | 12.7 x 3.2 mm @ 20 mm/min  | %            | 120                       | ASTM D638                  |
| Flexural Strength                       | 12.7 x 6.4 mm @ 2.8 mm/min | MPa          | 89                        | ASTM D790                  |
| Flexural Modulus                        | 12.7 x 6.4 mm @ 2.8 mm/min | MPa          | 2350                      | ASTM D790                  |
| <b><u>2. Thermal Properties</u></b>     |                            |              |                           |                            |
| Heat Deflection Temperature             | 12.7 x 6.4 mm @ 1.82 MPa   | °C           | 138                       | ASTM D648                  |
|                                         | 12.7 x 6.4 mm @ 0.46 MPa   | °C           | 153                       | ASTM D648                  |
| Coefficient of Linear Thermal Expansion |                            | cm/cm/°C     | (6-7) exp-5               | ASTM D696                  |
| <b><u>3. Electrical Properties</u></b>  |                            |              |                           |                            |
| Volume Resistivity                      |                            | Ohm.cm       | 2.1 exp16                 | ASTM D149                  |
| Dielectric Constant                     |                            | MHz          | 2.85                      | ASTM D150                  |
| <b><u>4. Physical Properties</u></b>    |                            |              |                           |                            |
| Melt Flow Rate                          | 300°C, 1.20 kg             | g/10 min     | 12                        | ASTM D1238                 |
| Specific Gravity                        |                            | -            | 1.20                      | ASTM D792                  |
| Rockwell Hardness                       |                            | R            | 123                       | ASTM D785                  |
| UL Flammability                         | 1.6 mm                     | Rating       | V-2                       | UL 94                      |
| Water Absorption                        | 24 hours                   | %            | 0.24                      | ASTM D570                  |
| Total Light Transmittance               | 3.0 mm                     | %            | 85                        | ASTM D1003                 |
| Reinforcement Level                     |                            | %            | -                         | n/a                        |
| Mould Shrinkage                         | 3.0 x Ø100 mm disc         | %            | 0.6±0.2                   | ASTM D955                  |



# TYPICAL PROCESSING CONDITIONS

## IUPILON® S2000UR

The following typical guidelines are offered as initial processing conditions for **IUPILON® S2000UR**. 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 | 120 - 125 °C                    |
| Minimum drying time at desired pellet bed temp   | 4 - 6 hours                     |
| Mould temperature                                | 60 - 110 °C                     |
| Nozzle temperature                               | Do not exceed stock temperature |
| Stock temperature                                | 270 - 300 °C                    |
| Cylinder temperatures                            | Rear 245 - 265 °C               |
|                                                  | Middle 260 - 280 °C             |
|                                                  | Front 275 - 295 °C              |
| Fill speed                                       | Medium                          |
| Screw speed                                      | 40 - 60 rpm                     |
| Screw back pressure                              | 0.1 - 0.5 MPa                   |
| Injection pressure                               | 60 - 140 MPa                    |
| Clamp pressure                                   | 4 - 8 kN/cm <sup>2</sup>        |

### Comment(s):

- 1 Cleanliness of the dryer, machine hopper and machine screw/barrel/nozzle assembly are essential for processing Iupilon® Polycarbonate and producing contamination free moulded components.
- 2 Iupilon® Polycarbonate is not compatible with other polymers.
- 3 It is suggested that the pre-drying, moulding die and material temperatures are manually confirmed using a hand held temperature measuring device.

**Conversions:** 1 MPa = 145 psi  
= 10.2 kg/cm<sup>2</sup>  
= 10 bar  
°C = 5(°F-32)/9  
1 kN/cm<sup>2</sup> = 0.65 ton/in<sup>2</sup>

