

# ForTii® Ace MX53

## PPA-GF50

50% Glass Reinforced, PA4T, Heat Stabilized, for Automotive applications

ForTii® Ace MX53 is a PPA with unique fatigue performance and chemical resistance. The high aromatic content and high Tg lead to excellent part stiffness and low creep, even up to 150°C. Moisture uptake occurs slowly with very limited impact on dimensions.

| Properties                    | Typical Data  | Unit | Test Method  |
|-------------------------------|---------------|------|--------------|
| <b>Rheological properties</b> |               |      |              |
|                               | dry / cond    |      |              |
| Molding shrinkage (parallel)  | 0.35 / *      | %    | ISO 294-4    |
| Molding shrinkage (normal)    | 0.9 / *       | %    | ISO 294-4    |
| <b>Mechanical properties</b>  |               |      |              |
|                               | dry / cond    |      |              |
| Tensile modulus               | 18000 / 18900 | MPa  | ISO 527-1/-2 |
| Tensile modulus (-40°C)       | 18500 / -     | MPa  | ISO 527-1/-2 |
| Tensile modulus (40°C)        | 17500 / 17500 | MPa  | ISO 527-1/-2 |
| Tensile modulus (80°C)        | 17300 / 16000 | MPa  | ISO 527-1/-2 |
| Tensile modulus (100°C)       | 17000 / 11000 | MPa  | ISO 527-1/-2 |
| Tensile modulus (120°C)       | 16000 / -     | MPa  | ISO 527-1/-2 |
| Tensile modulus (150°C)       | 11500         | MPa  | ISO 527-1/-2 |
| Tensile modulus (160°C)       | 10000         | MPa  | ISO 527-1/-2 |
| Tensile modulus (180°C)       | 8000          | MPa  | ISO 527-1/-2 |
| Tensile modulus (200°C)       | 7200          | MPa  | ISO 527-1/-2 |
| Stress at break               | 260 / 250     | MPa  | ISO 527-1/-2 |
| Stress at break (-40°C)       | 300 / -       | MPa  | ISO 527-1/-2 |
| Stress at break (40°C)        | 235 / 220     | MPa  | ISO 527-1/-2 |
| Stress at break (80°C)        | 205 / 160     | MPa  | ISO 527-1/-2 |
| Stress at break (100°C)       | 190 / 125     | MPa  | ISO 527-1/-2 |



ForTii<sup>®</sup> Ace MX53

| Properties                             | Typical Data  | Unit              | Test Method  |
|----------------------------------------|---------------|-------------------|--------------|
| Stress at break (120°C)                | 170 / -       | MPa               | ISO 527-1/-2 |
| Stress at break (150°C)                | 130           | MPa               | ISO 527-1/-2 |
| Stress at break (160°C)                | 120           | MPa               | ISO 527-1/-2 |
| Stress at break (180°C)                | 100           | MPa               | ISO 527-1/-2 |
| Stress at break (200°C)                | 85            | MPa               | ISO 527-1/-2 |
| Strain at break                        | 2.1 / 2       | %                 | ISO 527-1/-2 |
| Strain at break (-40°C)                | 2.3 / -       | %                 | ISO 527-1/-2 |
| Strain at break (40°C)                 | 2 / 2         | %                 | ISO 527-1/-2 |
| Strain at break (80°C)                 | 2 / 2.6       | %                 | ISO 527-1/-2 |
| Strain at break (100°C)                | 2.05 / 3.4    | %                 | ISO 527-1/-2 |
| Strain at break (120°C)                | 2.1 / -       | %                 | ISO 527-1/-2 |
| Strain at break (150°C)                | 3.4           | %                 | ISO 527-1/-2 |
| Strain at break (160°C)                | 4.1           | %                 | ISO 527-1/-2 |
| Strain at break (180°C)                | 4.9           | %                 | ISO 527-1/-2 |
| Strain at break (200°C)                | 5             | %                 | ISO 527-1/-2 |
| Flexural modulus                       | 17000 / 17800 | MPa               | ISO 178      |
| Flexural strength                      | 380 / 360     | MPa               | ISO 178      |
| Flexural modulus (120°C)               | 15700         | MPa               | ISO 178      |
| Flexural modulus (160°C)               | 10000         | MPa               | ISO 178      |
| Flexural modulus (180°C)               | 8000          | MPa               | ISO 178      |
| Flexural modulus (200°C)               | 7400          | MPa               | ISO 178      |
| Charpy impact strength (+23°C)         | 80 / 75       | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy impact strength (-30°C)         | 70 / 65       | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy notched impact strength (+23°C) | 12 / 11       | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength (-30°C) | 12 / 11       | kJ/m <sup>2</sup> | ISO 179/1eA  |

## Thermal properties

dry / cond

|                                              |          |        |                |
|----------------------------------------------|----------|--------|----------------|
| Melting temperature (10°C/min)               | 335 / *  | °C     | ISO 11357-1/-3 |
| Temp. of deflection under load (1.80 MPa)    | 320 / *  | °C     | ISO 75-1/-2    |
| Coeff. of linear therm. expansion (parallel) | 0.15 / * | E-4/°C | ISO 11359-1/-2 |



# ForTii<sup>®</sup> Ace MX53

| Properties                                   | Typical Data | Unit   | Test Method            |
|----------------------------------------------|--------------|--------|------------------------|
| Coeff. of linear therm. expansion (normal)   | 0.5 / *      | E-4/°C | ISO 11359-1/-2         |
| Coeff. of linear therm. expansion (parallel) | 0.27         | E-4/°C | ASTM D696              |
| Coeff. of linear therm. expansion (normal)   | 0.3          | E-4/°C | ASTM D696              |
| Burning Behav. at 3.0 mm nom. thickn.        | HB / *       | class  | IEC 60695-11-10        |
| Thickness tested                             | 3 / *        | mm     | IEC 60695-11-10        |
| UL recognition                               | Yes / *      | -      | -                      |
| Thermal Index 5000 hrs                       | 188          | °C     | IEC 60216/ISO 527-1/-2 |

## Other properties

dry / cond

|                     |          |                   |                |
|---------------------|----------|-------------------|----------------|
| Humidity absorption | 1.4 / *  | %                 | Sim. to ISO 62 |
| Density             | 1660 / - | kg/m <sup>3</sup> | ISO 1183       |

## Tens. fatigue 8Hz, T, R=0.1 , dry

