

# ForTii® Ace MX54B

## PPA-GF60

60% Glass Reinforced, PA4T, Heat Stabilized, for Structural Parts

ForTii® Ace MX54B is a high Tg PPA combining good toughness at low temperatures and chemical resistance. It is designed to have a dimensional stability close to aluminum. It has a high mechanical performance over a broad temperature range, from -35°C to above 150°C, both in dry as well as conditioned environment.

| Properties                    | Typical Data  | Unit | Test Method  |
|-------------------------------|---------------|------|--------------|
| <b>Rheological properties</b> |               |      |              |
|                               | dry / cond    |      |              |
| Molding shrinkage (parallel)  | 0.4 / *       | %    | ISO 294-4    |
| Molding shrinkage (normal)    | 0.8 / *       | %    | ISO 294-4    |
| <b>Mechanical properties</b>  |               |      |              |
|                               | dry / cond    |      |              |
| Tensile modulus               | 23000 / 23800 | MPa  | ISO 527-1/-2 |
| Tensile modulus (-40°C)       | 25000 / 24000 | MPa  | ISO 527-1/-2 |
| Tensile modulus (40°C)        | 22500 / 23500 | MPa  | ISO 527-1/-2 |
| Tensile modulus (80°C)        | 22000 / 17800 | MPa  | ISO 527-1/-2 |
| Tensile modulus (100°C)       | 21500 / 10900 | MPa  | ISO 527-1/-2 |
| Tensile modulus (120°C)       | 20500 / 9500  | MPa  | ISO 527-1/-2 |
| Tensile modulus (150°C)       | 12500         | MPa  | ISO 527-1/-2 |
| Tensile modulus (160°C)       | 9800          | MPa  | ISO 527-1/-2 |
| Tensile modulus (180°C)       | 8100          | MPa  | ISO 527-1/-2 |
| Tensile modulus (200°C)       | 7400          | MPa  | ISO 527-1/-2 |
| Stress at break               | 270 / 250     | MPa  | ISO 527-1/-2 |
| Stress at break (-40°C)       | 330 / 320     | MPa  | ISO 527-1/-2 |
| Stress at break (40°C)        | 260 / 230     | MPa  | ISO 527-1/-2 |
| Stress at break (80°C)        | 230 / 140     | MPa  | ISO 527-1/-2 |
| Stress at break (100°C)       | 210 / 100     | MPa  | ISO 527-1/-2 |
| Stress at break (120°C)       | 180 / 80      | MPa  | ISO 527-1/-2 |



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| Properties                             | Typical Data  | Unit              | Test Method  |
|----------------------------------------|---------------|-------------------|--------------|
| Stress at break (150°C)                | 115           | MPa               | ISO 527-1/-2 |
| Stress at break (160°C)                | 95            | MPa               | ISO 527-1/-2 |
| Stress at break (180°C)                | 75            | MPa               | ISO 527-1/-2 |
| Stress at break (200°C)                | 65            | MPa               | ISO 527-1/-2 |
| Strain at break                        | 1.8 / 1.85    | %                 | ISO 527-1/-2 |
| Strain at break (-40°C)                | 1.8 / 1.75    | %                 | ISO 527-1/-2 |
| Strain at break (40°C)                 | 1.75 / 1.65   | %                 | ISO 527-1/-2 |
| Strain at break (80°C)                 | 1.8 / 2.6     | %                 | ISO 527-1/-2 |
| Strain at break (100°C)                | 1.8 / 3       | %                 | ISO 527-1/-2 |
| Strain at break (120°C)                | 1.9 / 3.3     | %                 | ISO 527-1/-2 |
| Strain at break (150°C)                | 3.5           | %                 | ISO 527-1/-2 |
| Strain at break (160°C)                | 4             | %                 | ISO 527-1/-2 |
| Strain at break (180°C)                | 4             | %                 | ISO 527-1/-2 |
| Strain at break (200°C)                | 4             | %                 | ISO 527-1/-2 |
| Flexural modulus                       | 23500 / 24000 | MPa               | ISO 178      |
| Flexural strength                      | 420 / 390     | MPa               | ISO 178      |
| Flexural modulus (120°C)               | 20000         | MPa               | ISO 178      |
| Flexural modulus (160°C)               | 12000         | MPa               | ISO 178      |
| Flexural modulus (180°C)               | 9000          | MPa               | ISO 178      |
| Flexural modulus (200°C)               | 8200          | MPa               | ISO 178      |
| Charpy impact strength (+23°C)         | 90 / 75       | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy impact strength (-30°C)         | 75 / 75       | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy notched impact strength (+23°C) | 13 / 11       | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength (-30°C) | 13 / 12       | kJ/m <sup>2</sup> | ISO 179/1eA  |

## Thermal properties

dry / cond

|                                              |          |        |                |
|----------------------------------------------|----------|--------|----------------|
| Melting temperature (10°C/min)               | 330 / *  | °C     | ISO 11357-1/-3 |
| Temp. of deflection under load (1.80 MPa)    | 307 / *  | °C     | ISO 75-1/-2    |
| Coeff. of linear therm. expansion (parallel) | 0.13 / * | E-4/°C | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion (normal)   | 0.41 / * | E-4/°C | ISO 11359-1/-2 |



Property Data (Provisional)

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| Properties                 | Typical Data | Unit              | Test Method            |
|----------------------------|--------------|-------------------|------------------------|
| Thermal Index 5000 hrs     | 176          | °C                | IEC 60216/ISO 527-1/-2 |
| Electrical properties      | dry / cond   |                   |                        |
| Electric strength          | 19 / 19      | kV/mm             | IEC 60243-1            |
| Comparative tracking index | 425 / -      | V                 | IEC 60112              |
| Other properties           | dry / cond   |                   |                        |
| Humidity absorption        | 1.2 / *      | %                 | Sim. to ISO 62         |
| Density                    | 1790 / -     | kg/m <sup>3</sup> | ISO 1183               |

