

# Zytel® HTN54G35HSLR NC010

## HIGH PERFORMANCE POLYAMIDE RESIN

Zytel® HTN high performance polyamide resins feature high retention of properties upon exposure to elevated temperature, to high moisture, and to harsh chemical environments. Polymer families and grades of Zytel® HTN are tailored to optimize performance as well as processability.

Typical applications with Zytel® HTN include demanding applications in the automotive, electrical and electronics, domestic appliances, and construction industries.

Zytel® HTN54G35HSLR NC010 is a 35% glass reinforced, toughened, heat stabilised high performance polyamide resin. It is also a PPA resin.

### Product information

|                      |                                     |           |
|----------------------|-------------------------------------|-----------|
| Resin Identification | PA-IGF35                            | ISO 1043  |
| Part Marking Code    | >PA-IGF35<                          | ISO 11469 |
| Part Marking Code    | >PPA-IGF35<                         | SAE J1344 |
| ISO designation      | ISO 16396-PA-I,GF35,M1GHNRW,S10-100 |           |

### Rheological properties

|                              | dry/cond. |                    |                 |
|------------------------------|-----------|--------------------|-----------------|
| Viscosity number             | 105 / *   | cm <sup>3</sup> /g | ISO 307, 1628   |
| Moulding shrinkage, parallel | 0.2 / -   | %                  | ISO 294-4, 2577 |
| Moulding shrinkage, normal   | 0.6 / -   | %                  | ISO 294-4, 2577 |

### Typical mechanical properties

|                                       | dry/cond. |                   |              |
|---------------------------------------|-----------|-------------------|--------------|
| Tensile modulus                       | 10000 / - | MPa               | ISO 527-1/-2 |
| Tensile stress at break, 5mm/min      | 180 / -   | MPa               | ISO 527-1/-2 |
| Tensile strain at break, 5mm/min      | 3 / -     | %                 | ISO 527-1/-2 |
| Flexural modulus                      | 9000 / -  | MPa               | ISO 178      |
| Tensile creep modulus, 1h             | * / 11000 | MPa               | ISO 899-1    |
| Tensile creep modulus, 1000h          | * / 10000 | MPa               | ISO 899-1    |
| Charpy impact strength, 23°C          | 75 / -    | 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, -40°C | 9 / -     | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Poisson's ratio                       | 0.34 / -  |                   |              |

### Thermal properties

|                                                          | dry/cond. |         |                |
|----------------------------------------------------------|-----------|---------|----------------|
| Melting temperature, 10°C/min                            | 304 / *   | °C      | ISO 11357-1/-3 |
| Glass transition temperature, 10°C/min                   | 120 / 65  | °C      | ISO 11357-1/-3 |
| Temperature of deflection under load, 1.8 MPa            | 255 / *   | °C      | ISO 75-1/-2    |
| Temperature of deflection under load, 0.45 MPa           | 285 / *   | °C      | ISO 75-1/-2    |
| Coeff. of linear therm. expansion, parallel, -40-23°C    | 20 / *    | E-6/K   | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), parallel | 20 / *    | E-6/K   | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal, -40-23°C      | 75 / *    | E-6/K   | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), normal   | 72 / *    | E-6/K   | ISO 11359-1/-2 |
| Thermal conductivity, flow                               | 0.35      | W/(m K) | ISO 22007-2    |

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### Flammability

|             |    |                      |
|-------------|----|----------------------|
| FMVSS Class | SE | ISO 3795 (FMVSS 302) |
|-------------|----|----------------------|

### Electrical properties

|                            |           |       |               |
|----------------------------|-----------|-------|---------------|
|                            | dry/cond. |       |               |
| Surface resistivity        | * / 1E14  | Ohm   | IEC 62631-3-2 |
| Electric strength          | 43 / 42   | kV/mm | IEC 60243-1   |
| Comparative tracking index | 600 / -   |       | IEC 60112     |

### Physical/Other properties

|                          |           |                   |                |
|--------------------------|-----------|-------------------|----------------|
|                          | dry/cond. |                   |                |
| Humidity absorption, 2mm | 1.8 / *   | %                 | Sim. to ISO 62 |
| Density                  | 1420 / -  | kg/m <sup>3</sup> | ISO 1183       |

### Injection

|                                 |         |
|---------------------------------|---------|
| Drying Recommended              | yes     |
| Drying Temperature              | 100 °C  |
| Drying Time, Dehumidified Dryer | 6 - 8 h |
| Processing Moisture Content     | ≤0.1 %  |
| Melt Temperature Optimum        | 325 °C  |
| Min. melt temperature           | 320 °C  |
| Max. melt temperature           | 330 °C  |
| Min. mould temperature          | 90 °C   |
| Max. mould temperature          | 130 °C  |

### Characteristics

|                         |                                                         |
|-------------------------|---------------------------------------------------------|
| Processing              | Injection Moulding                                      |
| Delivery form           | Pellets                                                 |
| Additives               | Release agent                                           |
| Special characteristics | Heat stabilised or stable to heat, Hydrolysis resistant |

### Additional information

|                   |                                                                                                                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Injection molding | During molding, use proper protective equipment and adequate ventilation. Avoid exposure to fumes and limit the holdup time and temperature of the resin in the machine. Purge degraded resin carefully with HDPE. |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Automotive

|                |                    |                        |
|----------------|--------------------|------------------------|
| OEM            | STANDARD           | ADDITIONAL INFORMATION |
| Bosch          | N28 BN05-OX089     |                        |
| Ford           | WSS-M98P14-A3      |                        |
| General Motors | GMW18066P-PPA-GF35 | Natural                |
| Hyundai        | MS211-80 Type B    |                        |