

# Zytel® 74G33W BK196

## NYLON RESIN

Common features of Zytel® nylon resin include mechanical and physical properties such as high mechanical strength, excellent balance of stiffness and toughness, good high temperature performance, good electrical and flammability properties, good abrasion and chemical resistance. In addition, Zytel® nylon resins are available in different modified and reinforced grades to create a wide range of products with tailored properties for specific processes and end-uses. Zytel® nylon resin, including most flame retardant grades, offer the ability to be coloured.

The good melt stability of Zytel® nylon resin normally enables the recycling of properly handled production waste. If recycling is not possible, we recommend, as the preferred option, incineration with energy recovery (-31kJ/g of base polymer) in appropriately equipped installations. For disposal, local regulations have to be observed.

Zytel® nylon resin typically is used in demanding applications in the automotive, furniture, domestic appliances, sporting goods and construction industry.

Zytel® 74G33W BK196 is a high gloss automotive weatherable black 33% glass reinforced, heat stabilised nylon 66 and nylon 6 comelt resin.

### Product information

|                      |                                          |           |
|----------------------|------------------------------------------|-----------|
| Resin Identification | PA66+PA6-GF3<br>3                        | ISO 1043  |
| Part Marking Code    | >PA66+PA6-GF33<                          | ISO 11469 |
| ISO designation      | ISO 16396-(PA66+PA6),GF33,M1CGL1,S14-100 |           |

### Rheological properties

|                              | dry/cond. |   |                 |
|------------------------------|-----------|---|-----------------|
| Moulding shrinkage, parallel | 0.1 / -   | % | ISO 294-4, 2577 |
| Moulding shrinkage, normal   | 0.7 / -   | % | ISO 294-4, 2577 |

### Typical mechanical properties

|                                       | dry/cond.    |                   |              |
|---------------------------------------|--------------|-------------------|--------------|
| Tensile modulus                       | 10000 / 7080 | MPa               | ISO 527-1/-2 |
| Tensile stress at break, 5mm/min      | 185 / 125    | MPa               | ISO 527-1/-2 |
| Tensile strain at break, 5mm/min      | 3 / 6        | %                 | ISO 527-1/-2 |
| Flexural modulus                      | 8900 / -     | MPa               | ISO 178      |
| Charpy impact strength, 23°C          | 80 / 100     | 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 / 18      | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength, -30°C | 10 / 10      | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength, -40°C | 10 / -       | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Izod notched impact strength, 23°C    | 12 / -       | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod notched impact strength, -40°C   | 11.0 / -     | kJ/m <sup>2</sup> | ISO 180/1A   |
| Izod impact strength, 23°C            | 80 / -       | kJ/m <sup>2</sup> | ISO 180/1U   |
| Poisson's ratio                       | 0.34 / 0.35  |                   |              |

### Thermal properties

|                                                          | dry/cond. |       |                |
|----------------------------------------------------------|-----------|-------|----------------|
| Melting temperature, 10°C/min                            | 255 / *   | °C    | ISO 11357-1/-3 |
| Temperature of deflection under load, 1.8 MPa            | 225 / *   | °C    | ISO 75-1/-2    |
| Temperature of deflection under load, 0.45 MPa           | 250 / *   | °C    | ISO 75-1/-2    |
| Coefficient of linear thermal expansion (CLTE), parallel | 14 / *    | E-6/K | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), normal   | 108 / *   | E-6/K | ISO 11359-1/-2 |

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|                         |    |    |         |
|-------------------------|----|----|---------|
| RTI, electrical, 0.75mm | 65 | °C | UL 746B |
| RTI, electrical, 3.0mm  | 65 | °C | UL 746B |
| RTI, impact, 0.75mm     | 65 | °C | UL 746B |
| RTI, impact, 3.0mm      | 65 | °C | UL 746B |
| RTI, strength, 0.75mm   | 65 | °C | UL 746B |
| RTI, strength, 3.0mm    | 65 | °C | UL 746B |

### Flammability

|                               |           |        |                      |
|-------------------------------|-----------|--------|----------------------|
|                               | dry/cond. |        |                      |
| Burning Behav. at thickness h | HB / *    | class  | IEC 60695-11-10      |
| Thickness tested              | 0.75 / *  | mm     | IEC 60695-11-10      |
| UL recognition                | yes / *   |        | UL 94                |
| FMVSS Class                   | B         |        | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 1 mm  | <80       | mm/min | ISO 3795 (FMVSS 302) |

### Electrical properties

|                           |                              |       |               |
|---------------------------|------------------------------|-------|---------------|
|                           | dry/cond.                    |       |               |
| Dissipation factor, 100Hz | 290 / - <sup>[DS]</sup>      | E-4   | IEC 62631-2-1 |
| Dissipation factor, 1MHz  | 250 / - <sup>[DS]</sup>      | E-4   | IEC 62631-2-1 |
| Volume resistivity        | >1E13 / 1E11 <sup>[DS]</sup> | Ohm.m | IEC 62631-3-1 |
| Surface resistivity       | * / 1E12 <sup>[DS]</sup>     | Ohm   | IEC 62631-3-2 |
| Electric strength         | 37 / - <sup>[DS]</sup>       | kV/mm | IEC 60243-1   |

[DS]: Derived from similar grade

### Physical/Other properties

|         |           |                   |          |
|---------|-----------|-------------------|----------|
|         | dry/cond. |                   |          |
| Density | 1390 / -  | kg/m <sup>3</sup> | ISO 1183 |

### VDA Properties

|                           |                    |  |           |
|---------------------------|--------------------|--|-----------|
| Weather stability delta E | 4.7 <sup>[1]</sup> |  | DIN 53236 |
| [1]: Without washing      |                    |  |           |

### Injection

|                                 |              |
|---------------------------------|--------------|
| Drying Recommended              | yes          |
| Drying Temperature              | 80 °C        |
| Drying Time, Dehumidified Dryer | 2 - 4 h      |
| Processing Moisture Content     | ≤0.2 %       |
| Melt Temperature Optimum        | 290 °C       |
| Min. melt temperature           | 280 °C       |
| Max. melt temperature           | 300 °C       |
| Screw tangential speed          | ≤0.2 m/s     |
| Mold Temperature Optimum        | 100 °C       |
| Min. mould temperature          | 70 °C        |
| Max. mould temperature          | 120 °C       |
| Hold pressure range             | 50 - 100 MPa |
| Hold pressure time              | 3 s/mm       |
| Ejection temperature            | 191 °C       |

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### Characteristics

|                         |                                                                                                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------|
| Processing              | Injection Moulding                                                                                           |
| Delivery form           | Pellets                                                                                                      |
| Special characteristics | Light stabilised or stable to light, U.V. stabilised or stable to weather, Heat stabilised or stable to heat |

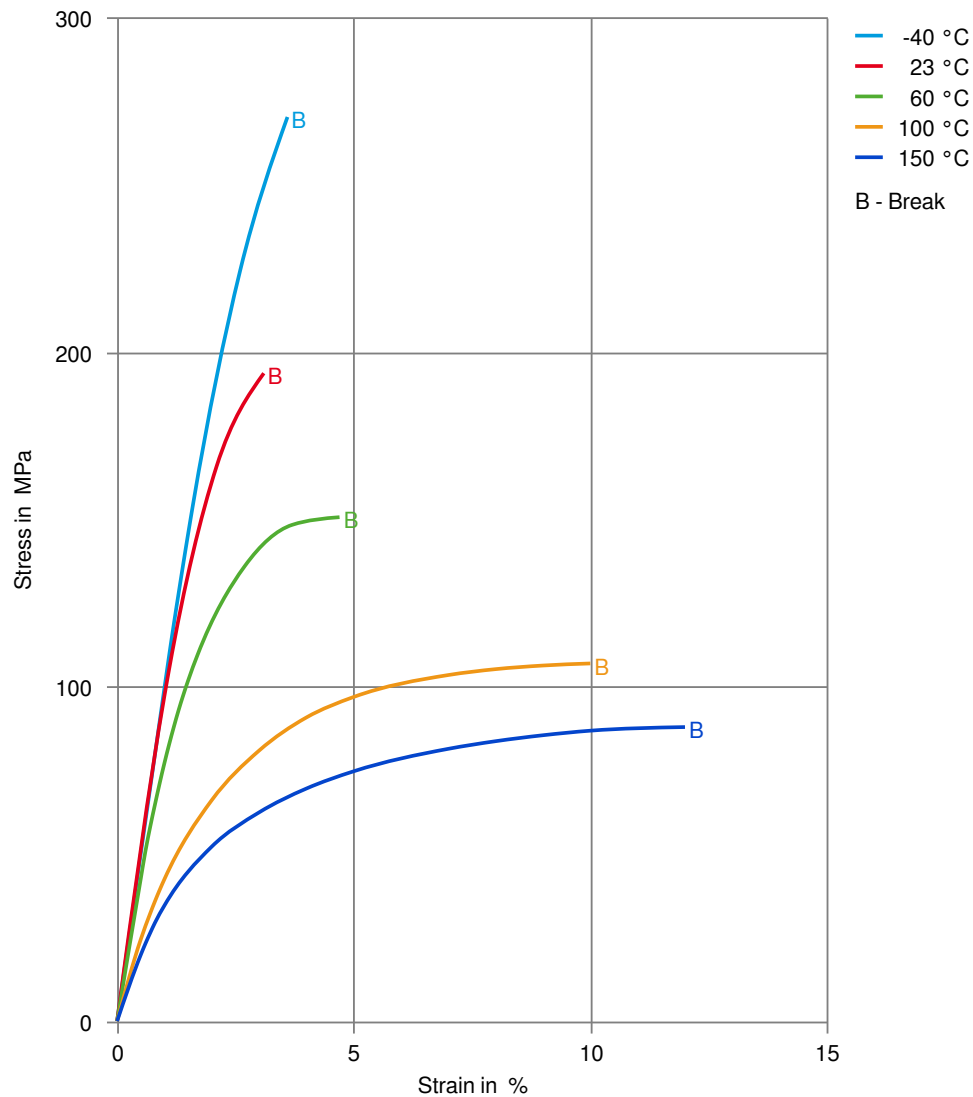
### Automotive

| OEM                   | STANDARD                                                                               | ADDITIONAL INFORMATION |
|-----------------------|----------------------------------------------------------------------------------------|------------------------|
| Ford                  | WSS-M98P13-E                                                                           | ZHE Color              |
| General Motors        | Black; Part Specific Approval, Please Contact Your CE Representative For More Details. |                        |
| Stellantis - Chrysler | MS.50017 / CPN-3266                                                                    | Black                  |

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NYLON RESIN

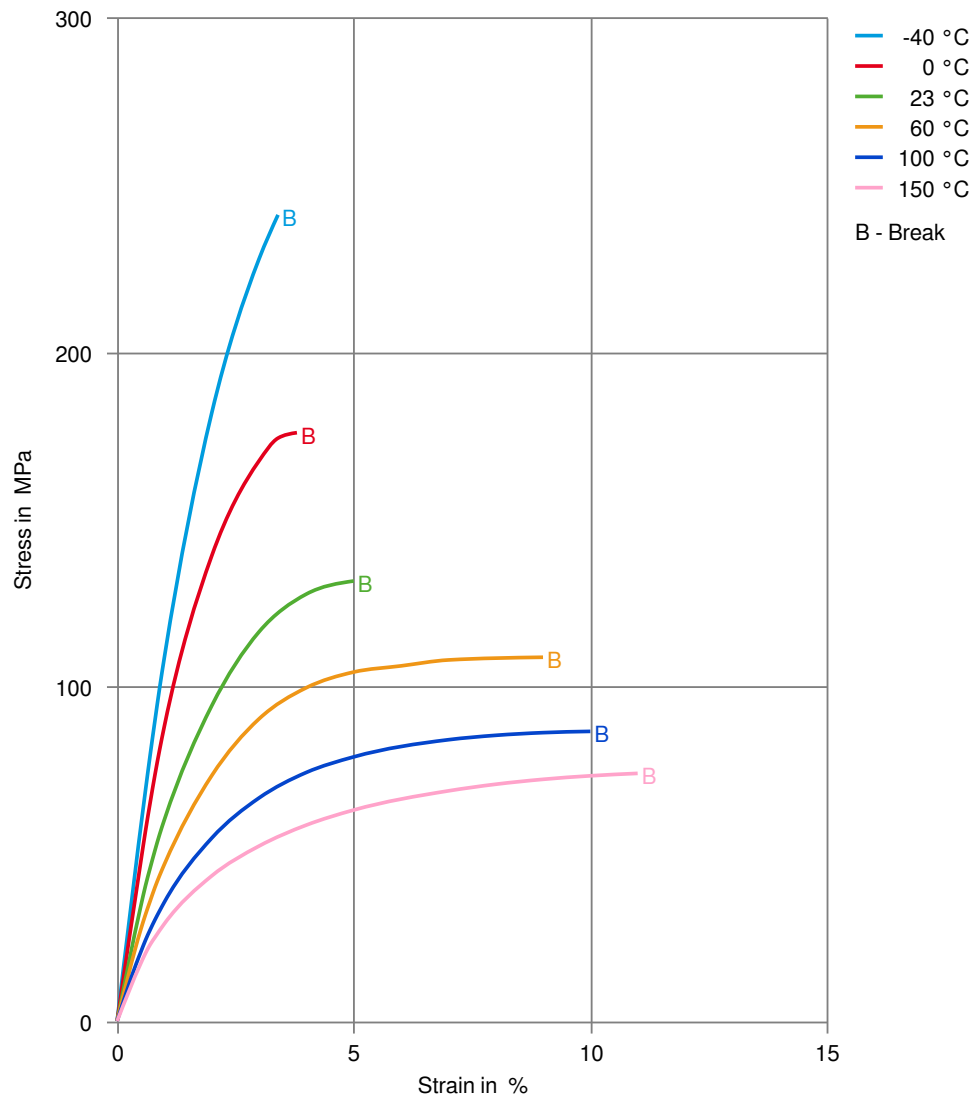
Stress-strain (dry)



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NYLON RESIN

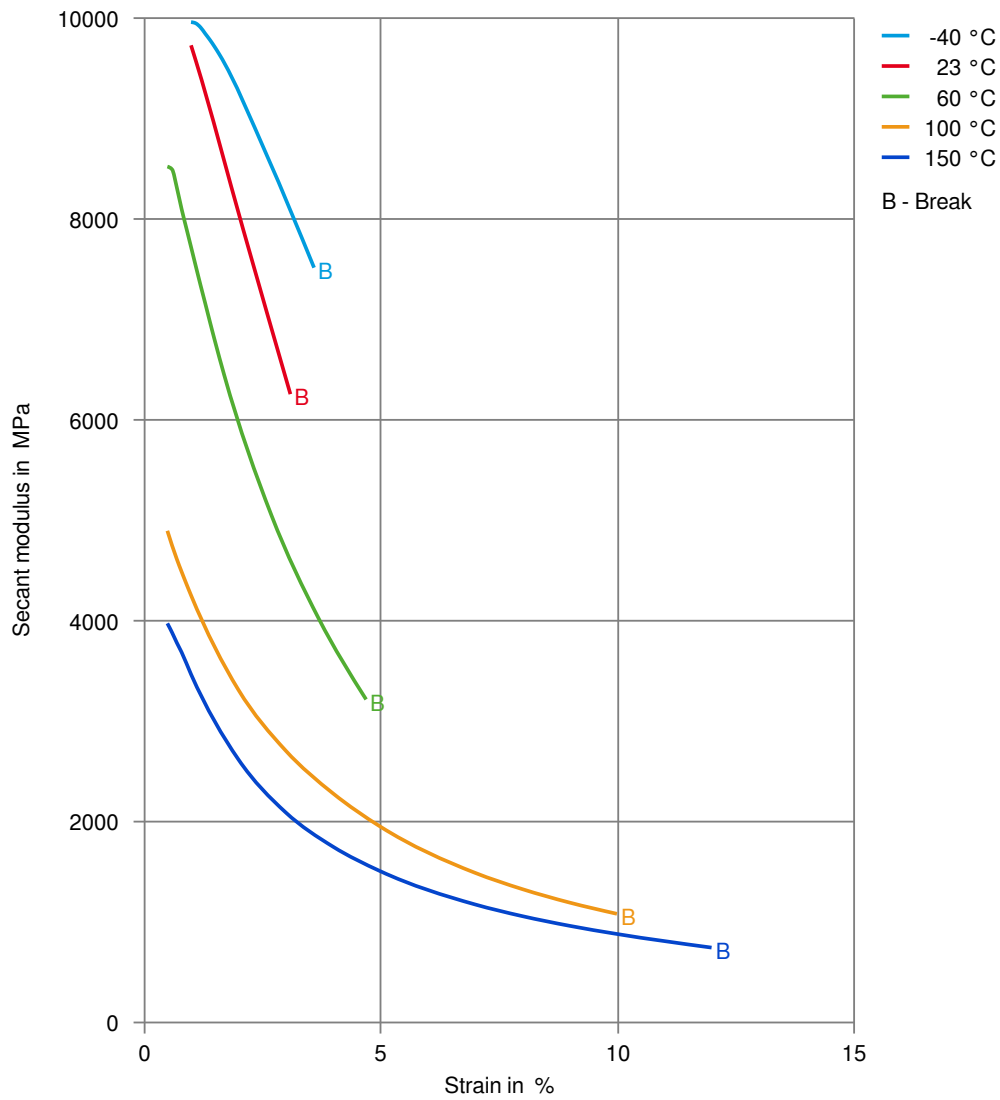
Stress-strain (cond.)



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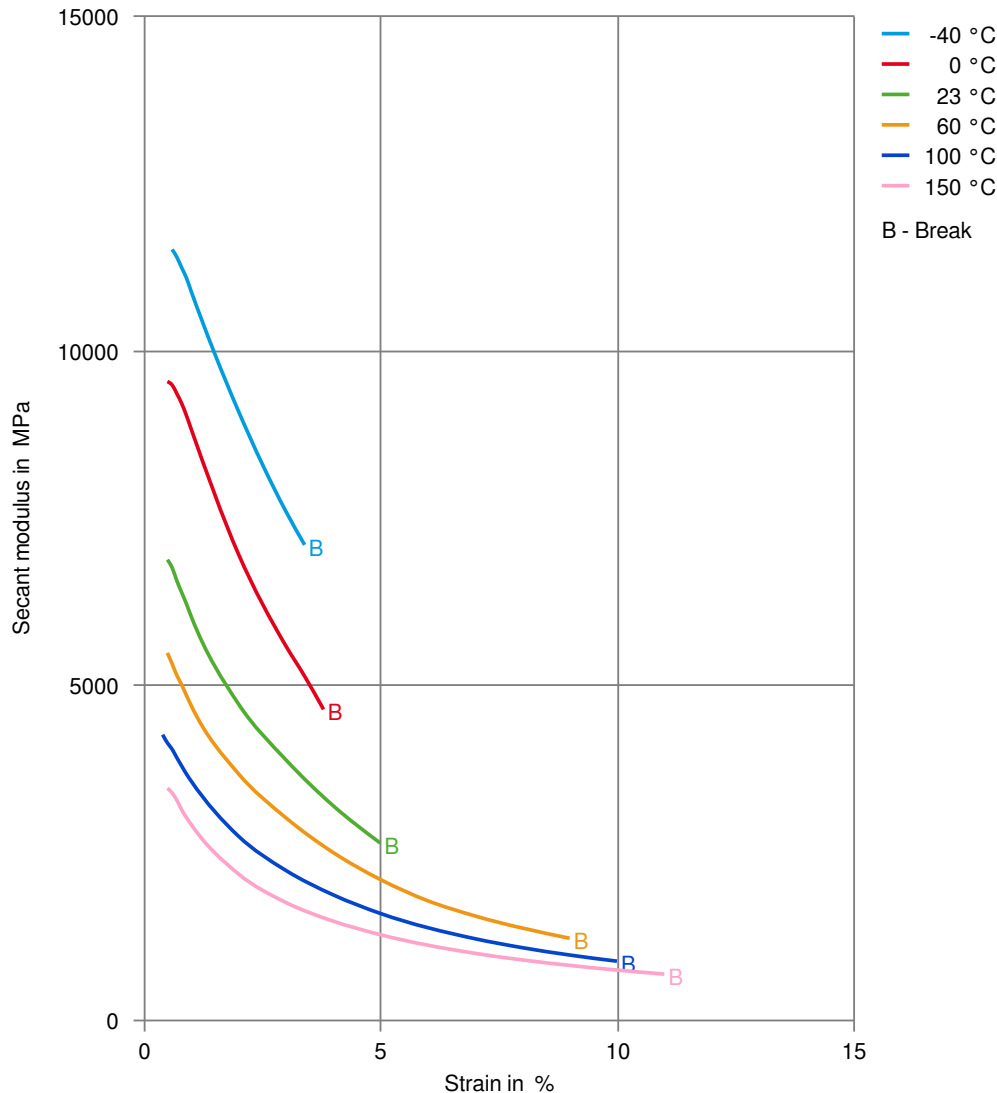
Secant modulus-strain (dry)



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Secant modulus-strain (cond.)



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