# Zytel® ST801HS BK010

NYLON RESIN

Zytel® ST801HS BK010 is an Unreinforced, Super Toughened, Heat Stabilized, Polyamide 66

## Product information

| | | | |
|---|---|---|---|
| Resin Identification | PA66-HI | | ISO 1043 |
| Part Marking Code | >PA66-HI< | | ISO 11469 |
| ISO designation | ISO 16396-PA66-I,,M1CG1HR,S14-020 | | |
| Infrared spectrum | available | | |

## Rheological properties

| | dry/cond. | | |
|---|---|---|---|
| Viscosity number | 4240 / * | in³/lb | ISO 307, 1628 |
| Molding shrinkage, parallel | 1.8 / - | % | ISO 294-4, 2577 |
| Molding shrinkage, normal | 1.4 / - | % | ISO 294-4, 2577 |

## Typical mechanical properties

| | dry/cond. | | |
|---|---|---|---|
| Tensile modulus | 290000 / 116000 | psi | ISO 527-1/-2 |
| Tensile stress at yield, 50mm/min | 7300 / 6200 | psi | ISO 527-1/-2 |
| Tensile strain at yield, 50mm/min | 6 / 40 | % | ISO 527-1/-2 |
| Nominal strain at break | 40 / >50 | % | ISO 527-1/-2 |
| Tensile strain at break, 5mm/min | 50 / * | % | ISO 527-1/-2 |
| Charpy impact strength, 23°C | N / N | ftlb/in² | ISO 179/1eU |
| Charpy impact strength, -30°C | N / - | ftlb/in² | ISO 179/1eU |
| Charpy notched impact strength, 23°C | 33.3 / 47.6 | ftlb/in² | ISO 179/1eA |
| Charpy notched impact strength, -30°C | 9.99 / 6.18 | ftlb/in² | ISO 179/1eA |

## Thermal properties

| | dry/cond. | | |
|---|---|---|---|
| Melting temperature, 10°C/min | 505 / * | °F | ISO 11357-1/-3 |
| Glass transition temperature, 10°C/min | 167 / 68 | °F | ISO 11357-1/-3 |
| Temperature of deflection under load, 1.8 MPa | 142 / * | °F | ISO 75-1/-2 |
| Temperature of deflection under load, 0.45 MPa | 351 / * | °F | ISO 75-1/-2 |
| Coefficient of linear thermal expansion (CLTE), parallel | 0.61 / * | E-4/°F | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), Parallel, 23-55°C(73-130°F) | 0.611 / - | E-4/°F | ASTM E 831 |
| Coefficient of linear thermal expansion (CLTE), normal | 0.667 / * | E-4/°F | ISO 11359-1/-2 |
| Coefficient of linear thermal expansion (CLTE), Normal,23-55°C (73-130°F) | 0.667 / - | E-4/°F | ASTM E 831 |
| RTI, electrical, 0.75mm | 266 | °F | UL 746B |
| RTI, electrical, 1.5mm | 266 | °F | UL 746B |
| RTI, electrical, 3.0mm | 266 | °F | UL 746B |
| RTI, impact, 0.75mm | 149 | °F | UL 746B |
| RTI, impact, 1.5mm | 221 | °F | UL 746B |
| RTI, impact, 3.0mm | 221 | °F | UL 746B |
| RTI, strength, 0.75mm | 203 | °F | UL 746B |

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| RTI, strength, 1.5mm | 221 / * | °F | UL 746B |
| RTI, strength, 3.0mm | 230 | °F | UL 746B |

## Flammability

| | dry/cond. | | |
|---|---|---|---|
| Burning Behav. at 1.5mm nom. thickn. | HB / * | class | IEC 60695-11-10 |
| Thickness tested | 0.0591 / * | in | IEC 60695-11-10 |
| UL recognition | yes / * | | UL 94 |
| Burning Behav. at thickness h | HB / * | class | IEC 60695-11-10 |
| Thickness tested | 0.0295 / * | in | IEC 60695-11-10 |
| UL recognition | yes / * | | UL 94 |
| Oxygen index | 20 / * | % | ISO 4589-1/-2 |
| Glow Wire Flammability Index, 0.4mm | 1380 / - | °F | IEC 60695-2-12 |
| Glow Wire Flammability Index, 0.75mm | 1380 / - | °F | IEC 60695-2-12 |
| Glow Wire Flammability Index, 1.0mm | 1380 / - | °F | IEC 60695-2-12 |
| Glow Wire Flammability Index, 1.5mm | 1380 / - | °F | IEC 60695-2-12 |
| Glow Wire Flammability Index, 2.0mm | 1380 / - | °F | IEC 60695-2-12 |
| Glow Wire Flammability Index, 3.0mm | 1380 / - | °F | IEC 60695-2-12 |
| Glow Wire Ignition Temperature, 0.75mm | 1340 / - | °F | IEC 60695-2-13 |
| Glow Wire Ignition Temperature, 0.4mm | 1340 / - | °F | IEC 60695-2-12 |
| Glow Wire Ignition Temperature, 1.0mm | 1340 / - | °F | IEC 60695-2-13 |
| Glow Wire Ignition Temperature, 1.5mm | 1340 / - | °F | IEC 60695-2-13 |
| Glow Wire Ignition Temperature, 2.0mm | 1340 / - | °F | IEC 60695-2-13 |
| Glow Wire Ignition Temperature, 3.0mm | 1340 / - | °F | IEC 60695-2-13 |
| Glow Wire Temperature, No Flame, 0.75mm | 1290 / - | °F | IEC 60335-1 |
| Glow Wire Temperature, No Flame, 1mm | 1290 / - | °F | IEC 60335-1 |
| Glow Wire Temperature, No Flame, 1.5mm | 1290 / - | °F | IEC 60335-1 |
| Glow Wire Temperature, No Flame, 2mm | 1290 / - | °F | IEC 60335-1 |
| Glow Wire Temperature, No Flame, 3mm | 1290 / - | °F | IEC 60335-1 |
| Hot Wire Ignition, 0.75mm | 9 / * | s | UL 746A |
| Hot Wire Ignition, 1.5mm | 14 / * | s | UL 746A |
| Hot Wire Ignition, 3mm | 18 / * | s | UL 746A |
| FMVSS Class | B | | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 1 mm | <80 | in/min | ISO 3795 (FMVSS 302) |

## Electrical properties

| | dry/cond. | | |
|---|---|---|---|
| Electric strength | 610 / -[DS] | kV/in | IEC 60243-1 |
| Comparative tracking index | 600 / - | | IEC 60112 |
| High Amperage Arc Ignition Resistance, 0.75 mm | 200 / * | arcs | UL 746A |
| High Amperage Arc Ignition Resistance, 1.5 mm | 200 / * | arcs | UL 746A |
| High Amperage Arc Ignition Category, 1.5 mm | 200 / * | class | UL 746A |
| High Voltage Arc Tracking Rate | 7.6 / * | in/min | UL 746A |

[DS]: Derived from similar grade

## Physical/Other properties

| | dry/cond. | | |
|---|---|---|---|
| Humidity absorption, 2mm | 2 / * | % | Sim. to ISO 62 |
| Water absorption, 2mm | 6.5 / * | % | Sim. to ISO 62 |
| Density | 0.0393 / - | lb/in³ | ISO 1183 |

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## Emissions

| | dry/cond. | | |
|---|---|---|---|
| Emission of organic compounds | 12.5 | µgC/g | VDA 277 |
| Odor test | 5 | class | VDA 270 |
| Fogging, G-value (condensate) | 0.1 / * | mg | ISO 6452 |

## Injection

| | | |
|---|---|---|
| Drying Recommended | yes | |
| Drying Temperature | 176 | °F |
| Drying Time, Dehumidified Dryer | 2 - 4 | h |
| Processing Moisture Content | ≤0.2 | % |
| Melt Temperature Optimum | 554 | °F |
| Min. melt temperature | 536 | °F |
| Max. melt temperature | 572 | °F |
| Max. screw tangential speed | ≤0.3 | m/s |
| Mold Temperature Optimum | 176 | °F |
| Min. mold temperature | 122 | °F |
| Max. mold temperature | 212 | °F |
| Hold pressure range | 7250 - 14500 | psi |
| Hold pressure time | 0.102 | s/mil |
| Hold Pressure Time<br>(h is the max. wall thickness of the part in mm) | $h^2$+2 | s |
| Back pressure | as low as possible | psi |
| Ejection temperature | 374 | °F |

## Extrusion

| | | |
|---|---|---|
| Drying Temperature | ≤176 | °F |
| Drying Time, Dehumidified Dryer | 3 - 4 | h |
| Processing Moisture Content | ≤0.06 | % |
| Melt Temperature Optimum | 536 | °F |
| Melt Temperature Range | 527 - 554 | °F |

## Automotive

| OEM | STANDARD | ADDITIONAL INFORMATION |
|---|---|---|
| Stellantis | MS.50017 / PA66.1800F.70I.HS.TG | CPN2565 |
| Stellantis - Chrysler | MS.50017 / CPN-2565 | Black |
| VW Group | VW 50133 PA66-2-A | |

## Characteristics

| | |
|---|---|
| Processing | Injection Molding |
| Additives | Release agent |
| Special characteristics | High impact or impact modified, Heat stabilized or stable to heat |

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## Chemical Media Resistance

### Acids

- ✔ Acetic Acid (5% by mass), 23°C
- ✔ Citric Acid solution (10% by mass), 23°C
- ✔ Lactic Acid (10% by mass), 23°C
- ✘ Hydrochloric Acid (36% by mass), 23°C
- ✘ Nitric Acid (40% by mass), 23°C
- ✘ Sulfuric Acid (38% by mass), 23°C
- ✘ Sulfuric Acid (5% by mass), 23°C
- ✘ Chromic Acid solution (40% by mass), 23°C

### Bases

- ✘ Sodium Hydroxide solution (35% by mass), 23°C
- ✔ Sodium Hydroxide solution (1% by mass), 23°C
- ✔ Ammonium Hydroxide solution (10% by mass), 23°C

### Alcohols

- ✔ Isopropyl alcohol, 23°C
- ✔ Methanol, 23°C
- ✔ Ethanol, 23°C

### Hydrocarbons

- ✔ n-Hexane, 23°C
- ✔ Toluene, 23°C
- ✔ iso-Octane, 23°C

### Ketones

- ✔ Acetone, 23°C

### Ethers

- ✔ Diethyl ether, 23°C

### Mineral oils

- ✔ SAE 10W40 multigrade motor oil, 23°C
- ✔ SAE 10W40 multigrade motor oil, 130°C
- ✔ SAE 80/90 hypoid-gear oil, 130°C
- ✔ Insulating Oil, 23°C
- ✔ Motor oil OS206 304 Ref.Eng.Oil, ISP, 135°C
- ✔ Automatic hypoid-gear oil Shell Donax TX, 135°C
- ✔ Hydraulic oil Pentosin CHF 202, 125°C

### Standard Fuels

- ✔ ISO 1817 Liquid 1 - E5, 60°C
- ✔ ISO 1817 Liquid 2 - M15E4, 60°C
- ✔ ISO 1817 Liquid 3 - M3E7, 60°C
- ✔ ISO 1817 Liquid 4 - M15, 60°C
- ✔ Standard fuel without alcohol (pref. ISO 1817 Liquid C), 23°C
- ✔ Standard fuel with alcohol (pref. ISO 1817 Liquid 4), 23°C
- ✔ Diesel fuel (pref. ISO 1817 Liquid F), 23°C
- ✘ Diesel fuel (pref. ISO 1817 Liquid F), 90°C
- ✘ Diesel fuel (pref. ISO 1817 Liquid F), >90°C

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## Salt solutions

- ✔ Sodium Chloride solution (10% by mass), 23°C
- ✘ Sodium Hypochlorite solution (10% by mass), 23°C
- ✔ Sodium Carbonate solution (20% by mass), 23°C
- ✔ Sodium Carbonate solution (2% by mass), 23°C
- ✘ Zinc Chloride solution (50% by mass), 23°C

## Other

- ✔ Ethyl Acetate, 23°C
- ✘ Hydrogen peroxide, 23°C
- ✘ DOT No. 4 Brake fluid, 130°C
- ✘ Ethylene Glycol (50% by mass) in water, 108°C
- ✔ 1% nonylphenoxy-polyethyleneoxy ethanol in water, 23°C
- ✔ 50% Oleic acid + 50% Olive Oil, 23°C
- ✔ Water, 23°C
- ✔ Water, 90°C
- ✘ Phenol solution (5% by mass), 23°C

**Symbols used:**

✔ possibly resistant
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).

✘ not recommended - see explanation
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).



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