

Vydyne® R543H NT

polyamide 66



Vydyne R543H NT is general-purpose, 43% glass-fiber reinforced PA66 resin. Available in natural, it is an injection-molding grade resin that is lubricated for machine feed, flow and mold release.

Glass-reinforced Vydyne resins provide a higher heat distortion temperature, better resistance to creep, higher impact and better dimensional stability when compared with unreinforced PA66. These products have good chemical resistance to a broad range of chemicals, including many aliphatic and aromatic hydrocarbons found in most solvents, gasoline, hydraulic fluids, greases and machine oils.

Vydyne R543H NT resin has tensile strength and modulus properties just below aluminum and zinc and can replace these

metals in numerous applications due to an excellent balance of properties. Reduction in production costs, energy consumption and part weight are key advantages of Vydyne glass-reinforced PA66 resins over aluminum and/ or zinc die-cast parts.

Vydyne R543H NT is formulated to minimize the oxidative and thermal degradation of the PA66 polymer when exposed to elevated temperatures for extended periods of time. Vydyne R543H NT provides improved retention of physical properties under exposure to long-term heat. The continuous operating use temperature is 275°F, with short-term peak temperatures as high as 475°F.

| General | | | | |
|---------------------------|-------------------------------------|-----------------------------|-------------------------|--|
| Material Status | • Commercial: Active | | | |
| Availability | • Asia Pacific | • Europe | • North America | |
| Filler / Reinforcement | • Glass Fiber, 43% Filler by Weight | | | |
| Additive | • Heat Stabilizer | • Lubricant | | |
| Features | • Chemical Resistant | • Good Mold Release | • High Strength | |
| | • Creep Resistant | • Grease Resistant | • High Tensile Strength | |
| | • Gasoline Resistant | • Heat Stabilized | • Lubricated | |
| | • Good Dimensional Stability | • High Flow | • Oil Resistant | |
| | • Good Impact Resistance | • High Rigidity | • Solvent Resistant | |
| Uses | • Automotive Under the Hood | • Housings | • Power/Other Tools | |
| | • Gears | • Lawn and Garden Equipment | | |
| Agency Ratings | • ASTM D4066 PA012G45 | • EC 1935/2004 | • EU 2023/2006 | |
| | • ASTM D6779 PA012G45 | • EU 10/2011 | • FDA 21 CFR 177.1500 | |
| Automotive Specifications | • FORD ESF-M4D335-A | • GM GMP.PA66.025 | • TOYOTA TSM 5603G-2C | |
| UL File Number | • E70062 | | | |
| Appearance | • Natural Color | | | |
| Forms | • Pellets | | | |
| Processing Method | • Injection Molding | | | |

| Physical | Dry | Conditioned | Unit | Test Method |
|-----------------------------|------|-------------|-------------------|-------------|
| Density | 1.50 | -- | g/cm ³ | ISO 1183 |
| Molding Shrinkage | | | | ISO 294-4 |
| Across Flow : 23°C, 2.00 mm | 0.90 | -- | % | |
| Flow : 23°C, 2.00 mm | 0.40 | -- | % | |
| Water Absorption | | | | ISO 62 |
| 24 hr, 23°C | 0.60 | -- | % | |
| Equilibrium, 23°C, 50% RH | 1.5 | -- | % | |

| Mechanical | Dry | Conditioned | Unit | Test Method |
|----------------------------------|--------|-------------|-------------------|-------------|
| Tensile Modulus (23°C) | 14800 | 11300 | MPa | ISO 527-2 |
| Tensile Stress (Break, 23°C) | 225 | 170 | MPa | ISO 527-2 |
| Tensile Strain (Break, 23°C) | 3.0 | 4.0 | % | ISO 527-2 |
| Flexural Modulus (23°C) | 12500 | 9400 | MPa | ISO 178 |
| Flexural Stress (23°C) | 340 | 250 | MPa | ISO 178 |
| Poisson's Ratio | 0.40 | -- | | ISO 527-2 |
| Impact | Dry | Conditioned | Unit | Test Method |
| Charpy Notched Impact Strength | | | | ISO 179 |
| -30°C | 13 | 14 | kJ/m ² | |
| 23°C | 14 | 20 | kJ/m ² | |
| Charpy Unnotched Impact Strength | | | | ISO 179 |
| -30°C | 87 | 90 | kJ/m ² | |
| 23°C | 92 | 95 | kJ/m ² | |
| Notched Izod Impact Strength | | | | ISO 180 |
| -30°C | 13 | 13 | kJ/m ² | |
| 23°C | 13 | 19 | kJ/m ² | |
| Thermal | Dry | Conditioned | Unit | Test Method |
| Heat Deflection Temperature | | | | |
| 0.45 MPa, Unannealed | 260 | -- | °C | ISO 75-2/B |
| 1.8 MPa, Unannealed | 252 | -- | °C | ISO 75-2/A |
| Melting Temperature | 260 | -- | °C | ISO 11357-3 |
| CLTE | | | | ISO 11359-2 |
| Flow : 23 to 55°C, 2.00 mm | 1.6E-5 | -- | cm/cm/°C | |
| Transverse : 23 to 55°C, 2.00 mm | 1.0E-4 | -- | cm/cm/°C | |
| RTI Elec | | | | UL 746 |
| 0.75 mm | 140 | -- | °C | |
| 1.5 mm | 140 | -- | °C | |
| 3.0 mm | 140 | -- | °C | |
| RTI Imp | | | | UL 746 |
| 0.75 mm | 130 | -- | °C | |
| 1.5 mm | 130 | -- | °C | |
| 3.0 mm | 130 | -- | °C | |
| RTI Str | | | | UL 746 |
| 0.75 mm | 140 | -- | °C | |
| 1.5 mm | 140 | -- | °C | |
| 3.0 mm | 140 | -- | °C | |

| Electrical | Dry | Conditioned | Unit | Test Method |
|---|------------|-------------|---------|----------------|
| Volume Resistivity (0.750 mm) | 1.0E+12 | -- | ohms-cm | IEC 60093 |
| Dielectric Strength (1.00 mm) | 20 | -- | kV/mm | IEC 60243 |
| Arc Resistance (3.00 mm) | PLC 5 | -- | | ASTM D495 |
| Comparative Tracking Index (3.00 mm) | 400 to 599 | -- | V | IEC 60112 |
| High Amp Arc Ignition (HAI) | | | | UL 746 |
| 0.75 mm | PLC 0 | -- | | |
| 1.5 mm | PLC 0 | -- | | |
| 3.0 mm | PLC 0 | -- | | |
| High Voltage Arc Tracking Rate (HVTR) | PLC 1 | -- | | UL 746 |
| Hot-wire Ignition (HWI) | | | | UL 746 |
| 0.75 mm | PLC 4 | -- | | |
| 1.5 mm | PLC 3 | -- | | |
| 3.0 mm | PLC 4 | -- | | |
| Flammability | Dry | Conditioned | Unit | Test Method |
| Flame Rating | | | | UL 94 |
| 0.75 mm | HB | -- | | |
| 1.5 mm | HB | -- | | |
| 3.0 mm | HB | -- | | |
| Glow Wire Flammability Index | | | | IEC 60695-2-12 |
| 0.75 mm | 675 | -- | °C | |
| 1.5 mm | 675 | -- | °C | |
| 3.0 mm | 960 | -- | °C | |
| Glow Wire Ignition Temperature | | | | IEC 60695-2-13 |
| 0.75 mm | 700 | -- | °C | |
| 1.5 mm | 700 | -- | °C | |
| 3.0 mm | 750 | -- | °C | |
| Oxygen Index | 25 | -- | % | ISO 4589-2 |
| Additional Information | Dry | Conditioned | Unit | Test Method |
| Automotive Materials - (thickness d = 1 mm) | + | -- | | FMVSS 302 |

| Injection | Dry Unit |
|------------------------|---------------|
| Drying Temperature | 80 °C |
| Drying Time | 4.0 hr |
| Suggested Max Regrind | 25 % |
| Rear Temperature | 280 to 310 °C |
| Middle Temperature | 280 to 310 °C |
| Front Temperature | 280 to 310 °C |
| Nozzle Temperature | 280 to 310 °C |
| Processing (Melt) Temp | 285 to 305 °C |
| Mold Temperature | 65 to 95 °C |

Notes

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