# Vydyne® R533 NAT

## polyamide 66

Vydyne R533 NAT is a general purpose, 33% glass-filled, high viscosity PA66 based resin designed for injection molding applications. R533 NAT offers standard flow with a natural surface finish and maintains the excellent resistance typical of PA66 in chemicals, machine and motor oils, solvents, and gasoline.

## General

| | | | |
|---|---|---|---|
| Additive | • Lubricant | | |
| Features | • Chemical Resistant<br>• Good Electrical Properties<br>• High Rigidity<br>• Non-Corrosive | • Corrosion Resistant<br>• Good Flow<br>• High Strength | • Good Dimensional Stability<br>• Good Mold Release<br>• Lubricated |
| Agency Rating | • ASTM, D4066 PA011G35<br>• EU, 10/2011<br>• NSF, STD-51 | • ASTM, D6779 PA011G35<br>• EU, 2023/2006 | • EC, 1935/2004<br>• FDA, 21 CFR 177.1500 |
| Automotive Specifications | • Aisin TO20141124 - P-PA66-GF33-003 | • Aptiv M4692V | • Stellantis MS-DB-41 CPN 1853 |
| UL File Number | • E70062 | | |
| Appearance | • Natural Color | | |
| Forms | • Pellets | | |
| Processing Method | • Injection Molding | | |

| Physical | dry | cond. | Unit | Test Standard |
|---|---|---|---|---|
| Density | 1.40 | - | g/cm³ | ISO 1183 |
| Molding Shrinkage | | | | ISO 294-4 |
| Across Flow : 23°C, 2.00 mm | 0.9 | * | % | |
| Flow : 23°C, 2.00 mm | 0.4 | * | % | |
| Water Absorption | | | | ISO 62 |
| 23°C, 24 hr | 0.8 | * | % | |
| Equilibrium, 23°C, 50% RH | 1.7 | * | % | |

| Mechanical | dry | cond. | Unit | Test Standard |
|---|---|---|---|---|
| Tensile Modulus (23°C) | 10600 | 7900 | MPa | ISO 527-2 |
| Tensile Stress (Break, 23°C) | 205 | 145 | MPa | ISO 527-2 |
| Tensile Strain (Break, 23°C) | 3 | 5 | % | ISO 527-2 |
| Flexural Modulus (23°C) | 10200 | 6500 | MPa | ISO 178 |
| Flexural Strength (23°C) | 290 | 200 | MPa | ISO 178 |
| Poisson's Ratio (23°C) | 0.4 | | | ISO 527-2 |

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| Impact | dry | cond. | Unit | Test Standard |
|---|---|---|---|---|
| Charpy Notched Impact Strength | | | | ISO 179/1eA |
| +23°C | 13 | 17 | kJ/m² | |
| -30°C | 11 | 11 | kJ/m² | |
| -40°C | 11 | 11 | kJ/m² | |
| Charpy Unnotched Impact Strength | | | | ISO 179/1eU |
| +23°C | 86 | 100 | kJ/m² | |
| -30°C | 71 | 77 | kJ/m² | |
| -40°C | 69 | 75 | kJ/m² | |
| Notched Izod Impact Strength | | | | ISO 180/1A |
| +23°C | 12 | 16 | kJ/m² | |
| -30°C | 10 | 12 | kJ/m² | |
| -40°C | 10 | 11 | kJ/m² | |

| Thermal | dry | cond. | Unit | Test Standard |
|---|---|---|---|---|
| Heat Deflection Temperature | | | | ISO 75-2/A |
| 1.80 MPa, Unannealed | 250 | - | °C | |
| 0.45 MPa, Unannealed | 260 | - | °C | |
| Melting Temperature | 260 | * | °C | ISO 11357-3 |
| CLTE | | | | ISO 11359-2 |
| Flow : 23 to 55°C, 2.00 mm | 21 | * | E-6/K | |
| Transverse : 23 to 55°C, 2.00 mm | 106 | * | E-6/K | |
| RTI Elec | | | | UL 746 |
| 0.750 mm | 120 | | °C | |
| 1.50 mm | 120 | | °C | |
| 3.00 mm | 120 | | °C | |
| RTI Imp | | | | UL 746 |
| 0.750 mm | 100 | | °C | |
| 1.50mm | 100 | | °C | |
| 3.00 mm | 105 | | °C | |
| RTI Str | | | | UL 746 |
| 0.750 mm | 125 | | °C | |
| 1.50 mm | 125 | | °C | |
| 3.00 mm | 125 | | °C | |

| Electrical | dry | cond. | Unit | Test Standard |
|---|---|---|---|---|
| Volume Resistivity (1.00 mm) | 1E12 | - | Ohm*m | IEC 60093 |
| Dielectric Strength (1.00 mm) | 20 | - | kV/mm | IEC 60243 |
| Arc Resistance (3.00 mm) | 5 | | | ASTM D 495 |

| | | | |
|---|---|---|---|
| Comparative Tracking Index (3.00 mm) | 600 | V | IEC 60112 |
| High Amp Arc Ignition (HAI) | | | UL 746 |
| 0.750 mm | PLC 0 | | |
| 1.50 mm | PLC 0 | | |
| 3.00 mm | PLC 0 | | |
| High Voltage Arc Tracking Rate (HVTR), 3.00 mm | PLC 1 | | UL 746 |
| Hot-wire Ignition (HWI) | | | UL 746 |
| 0.750 mm | PLC 4 | | |
| 1.50 mm | PLC 4 | | |
| 3.00 mm | PLC 3 | | |

| Flammability | Value | Unit | Test Standard |
|---|---|---|---|
| Flammability | | | UL 94 |
| 0.750 mm | HB | | |
| 1.50 mm | HB | | |
| 3.00 mm | HB | | |
| Glow Wire Flammability Index | | | IEC 60695-2-12 |
| 0.750 mm | 750 | °C | |
| 1.50 mm | 725 | °C | |
| 3.00 mm | 800 | °C | |
| Glow Wire Ignition Temperature | | | IEC 60695-2-13 |
| 0.750 mm | 775 | °C | |
| 1.50 mm | 725 | °C | |
| 3.00 mm | 750 | °C | |

| Injection | Value | Unit |
|---|---|---|
| Drying Temperature | 80 | °C |
| Drying Time | 4 | h |
| Rear Temperature | 280 - 310 | °C |
| Middle Temperature | 280 - 310 | °C |
| Front Temperature | 280 - 310 | °C |
| Nozzle temperature | 280 - 310 | °C |
| Processing (Melt) Temperature | 285 - 305 | °C |
| Mold Temperature | 65 - 95 | °C |

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