

Vydyne® 21SPC1

polyamide 66



Vydyne 21SPC1 is a general-purpose, improved-flow, lubricated PA66 resin available in natural color. 21SPC1 offers a balanced combination of properties characterized by high strength, rigidity, good toughness, a high melt point, abrasion resistance with good surface lubricity, and excellent resistance to many chemicals. Vydyne 21SPC1 resin has an external lubricant for improved machine feed and an internal lubricant for improved mold release.

Typical Applications/End Uses:

End uses for Vydyne 21SPC1 include terminal blocks, bearings, bushings, control cams, electrical connectors, housings, cable ties, fasteners, switch components and industrial parts that require chemical resistance, stiffness, wear resistance and rigidity.

| General | | | | |
|---------------------------|--|---|---|--|
| Material Status | • Commercial: Active | | | |
| Availability | • Asia Pacific | • Europe | • North America | |
| Additive | • Lubricant | | | |
| Features | • Abrasion Resistant • Chemical Resistant • Fast Molding Cycle • Gasoline Resistant | • General Purpose • Good Mold Release • Good Toughness • High Rigidity | • High Strength • Lubricated • Oil Resistant • Solvent Resistant | |
| Uses | • Bearings • Bushings | • Cams • Connectors | • Housings • Industrial Applications | |
| Agency Ratings | • ASTM D 4066 PA0111 • ASTM D 6749 PA0111 • EC 1935/2004 | • EU 10/2011 • IT 2023/2006 • FDA 21 CFR 177.1500 | • FED L-P-410A • MIL M-20693B | |
| RoHS Compliance | • RoHS Compliant | | | |
| Automotive Specifications | • FORD WSK-M4D647-A • FORD WSK-M4D647-A Color: Black • GM GMP.PA66.005 | • GM GMP.PA66.005 Color: Black • GM QK 002921 • NISSAN PA66-INX-1 | • SAE J1639 PA0121 Z6 • SAE J1639 PA0121 Z6 Color: Black | |
| UL File Number | • E70062 | | | |
| Appearance | • Natural Color | | | |
| Forms | • Pellets | | | |
| Processing Method | • Injection Molding | | | |

| Physical | Dry | Conditioned | Unit | Test Method |
|--|------|-------------|-------------------|-------------|
| Density | 1.14 | -- | g/cm ³ | ISO 1183 |
| Molding Shrinkage | | | | ISO 294-4 |
| Across Flow : 23°C, 2.00 mm | 1.7 | -- | % | |
| Flow : 23°C, 2.00 mm | 1.8 | -- | % | |
| Water Absorption (23°C, 24 hr) | 1.2 | -- | % | ISO 62 |
| Water Absorption (Equilibrium, 23°C, 50% RH) | 2.4 | -- | % | ISO 62 |
| Outdoor Suitability | f2 | -- | | UL 746C |

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| Mechanical | Dry | Conditioned | Unit | Test Method |
|--|----------|-------------|-------------------|-------------|
| Tensile Modulus (23°C) | 3100 | 1400 | MPa | ISO 527-2 |
| Tensile Stress (Yield, 23°C) | 82.0 | 55.0 | MPa | ISO 527-2 |
| Tensile Stress (Break, 23°C) | 55.0 | 45.0 | MPa | ISO 527-2 |
| Tensile Strain (Yield, 23°C) | 5.0 | 25 | % | ISO 527-2 |
| Nominal Tensile Strain at Break (23°C) | 25 | > 50 | % | ISO 527-2 |
| Flexural Modulus (23°C) | 2900 | 1500 | MPa | ISO 178 |
| Flexural Strength (23°C) | 80.0 | 50.0 | MPa | ISO 178 |
| Poisson's Ratio | 0.40 | -- | | ISO 527 |
| Impact | Dry | Conditioned | Unit | Test Method |
| Charpy Notched Impact Strength | | | | ISO 179/1eA |
| -30°C | 5.0 | 7.0 | kJ/m ² | |
| 23°C | 6.0 | 20 | kJ/m ² | |
| Charpy Unnotched Impact Strength | | | | ISO 179/1eU |
| -30°C | No Break | No Break | | |
| 23°C | No Break | No Break | | |
| Notched Izod Impact Strength | | | | ISO 180 |
| -30°C | 5.0 | 7.0 | kJ/m ² | |
| 23°C | 6.0 | 20 | kJ/m ² | |

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| Thermal | Dry | Conditioned | Unit | Test Method |
|---|---------|-------------|----------|-------------|
| Heat Deflection Temperature 0.45 MPa, Unannealed | 200 | -- | °C | ISO 75-2/B |
| Heat Deflection Temperature 1.8 MPa, Unannealed | 70.0 | -- | °C | ISO 75-2/A |
| Melting Temperature | 260 | -- | °C | ISO 11357-3 |
| CLTE - Flow (23 to 55°C) | 1.0E-4 | -- | cm/cm/°C | ISO 11359-2 |
| CLTE - Transverse (23 to 55°C) | 1.0E-4 | -- | cm/cm/°C | ISO 11359-2 |
| RTI Elec | | | | UL 746 |
| 0.71 mm | 130 | -- | °C | |
| 1.5 mm | 130 | -- | °C | |
| 3.0 mm | 130 | -- | °C | |
| RTI Imp | | | | UL 746 |
| 0.71 mm | 75.0 | -- | °C | |
| 1.5 mm | 75.0 | -- | °C | |
| 3.0 mm | 75.0 | -- | °C | |
| RTI Str | | | | UL 746 |
| 0.71 mm | 85.0 | -- | °C | |
| 1.5 mm | 85.0 | -- | °C | |
| 3.0 mm | 85.0 | -- | °C | |
| Electrical | Dry | Conditioned | Unit | Test Method |
| Volume Resistivity (0.750 mm) | 1.0E+13 | -- | ohms-cm | IEC 60093 |
| Dielectric Strength (1.00 mm) | 26 | -- | kV/mm | IEC 60243 |
| Arc Resistance (3.00 mm) | PLC 5 | -- | | ASTM D495 |
| Comparative Tracking Index (3.00 mm) | 600 | -- | V | IEC 60112 |
| High Amp Arc Ignition (HAI) | | | | UL 746 |
| 0.71 mm | PLC 0 | -- | | |
| 1.5 mm | PLC 0 | -- | | |
| 3.0 mm | PLC 0 | -- | | |
| High Voltage Arc Tracking Rate (HVTR) | PLC 0 | -- | | UL 746 |
| Hot-wire Ignition (HWI) | | | | UL 746 |
| 0.71 mm | PLC 4 | -- | | |
| 1.5 mm | PLC 3 | -- | | |
| 3.0 mm | PLC 2 | -- | | |

| Flammability | Dry | Conditioned | Unit | Test Method |
|--------------------------------|---------------|-------------|------|----------------|
| Flame Rating | | | | UL 94 |
| 0.71 mm | V-2 | -- | | |
| 1.5 mm | V-2 | -- | | |
| 3.0 mm | V-2 | -- | | |
| Glow Wire Flammability Index | | | | IEC 60695-2-12 |
| 0.71 mm | 960 | -- | °C | |
| 1.5 mm | 960 | -- | °C | |
| 3.0 mm | 960 | -- | °C | |
| Glow Wire Ignition Temperature | | | | IEC 60695-2-13 |
| 0.71 mm | 850 | -- | °C | |
| 1.5 mm | 850 | -- | °C | |
| 3.0 mm | 850 | -- | °C | |
| Oxygen Index | 25 | -- | % | ISO 4589-2 |
| Injection | | Dry Unit | | |
| Drying Temperature | < 70 °C | | | |
| Drying Time | 1.0 to 3.0 hr | | | |
| Suggested Max Regrind | 50 % | | | |
| Rear Temperature | 260 to 280 °C | | | |
| Middle Temperature | 270 to 285 °C | | | |
| Front Temperature | 280 to 290 °C | | | |
| Nozzle Temperature | 280 to 300 °C | | | |
| Processing (Melt) Temp | 285 to 300 °C | | | |
| Mold Temperature | 65 to 95 °C | | | |

Notes

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North America

+1 888 927 2363

Europe

+32 10 608 600

Asia

+86 21 6340 3300

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