

## Technical Data

### Product Description

Vydyne 21SPC is a general-purpose, unfilled, lubricated, PA66 resin. Designed principally for injection-molding fabrication, this product offers a combination of engineering properties characterized by high strength; rigidity; good toughness; high melt point; good surface lubricity; abrasion resistance; and resistance to many chemicals, machine and motor oils, solvents and gasoline.

21SPC permits production of molded parts with good initial color plus good property and color retention when using regrind.

21SPC is intended for use in high-productivity applications. In many applications, the molding cycle can be reduced because parts may be removed from the cavity at higher temperatures. In difficult molds where parts have a tendency to stick in the cavity, 21SPC can reduce or eliminate the need for mold release sprays. Critical molded-part dimensions should be checked against specifications before implementing shorter molding cycles on a routine production basis.

### General

|                             |                                                                                              |                                                                                          |                                                                           |
|-----------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Material Status             | • Commercial: Active                                                                         |                                                                                          |                                                                           |
| Literature <sup>1</sup>     | • <a href="#">Technical Datasheet</a>                                                        |                                                                                          |                                                                           |
| UL Yellow Card <sup>2</sup> | • <a href="#">E70062-249058</a>                                                              |                                                                                          |                                                                           |
| Search for UL Yellow Card   | • <a href="#">Ascend Performance Materials Operations LLC</a><br>• <a href="#">Vydyne®</a>   |                                                                                          |                                                                           |
| Availability                | • Asia Pacific                                                                               | • Europe                                                                                 | • North America                                                           |
| Additive                    | • Lubricant                                                                                  |                                                                                          |                                                                           |
| Features                    | • Abrasion Resistant<br>• Chemical Resistant<br>• Fast Molding Cycle<br>• Gasoline Resistant | • General Purpose<br>• Good Mold Release<br>• Good Toughness<br>• High Rigidity          | • High Strength<br>• Lubricated<br>• Oil Resistant<br>• Solvent Resistant |
| Uses                        | • Automotive Applications<br>• Bearings<br>• Bushings<br>• Cams                              | • Connectors<br>• Electrical/Electronic Applications<br>• Fasteners<br>• General Purpose | • Housings<br>• Industrial Applications                                   |
| Agency Ratings              | • ASTM D4066 PA0111<br>• ASTM D6779 PA0111<br>• EC 1935/2004<br>• EU 10/2011                 | • EU 2023/2006<br>• FDA 21 CFR 177.1500<br>• FED L-P-410A<br>• MIL M-20693B              | • NSF STD-51<br>• SAE J1639 PA0121 Z6                                     |
| RoHS Compliance             | • RoHS Compliant                                                                             |                                                                                          |                                                                           |
| UL File Number              | • E70062                                                                                     |                                                                                          |                                                                           |
| Appearance                  | • Natural Color                                                                              |                                                                                          |                                                                           |
| Forms                       | • Pellets                                                                                    |                                                                                          |                                                                           |
| Processing Method           | • Injection Molding                                                                          |                                                                                          |                                                                           |

| Physical                         | Dry  | Conditioned | Unit              | Test Method |
|----------------------------------|------|-------------|-------------------|-------------|
| Density                          | 1.14 | --          | g/cm <sup>3</sup> | 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                 |      |             |                   | ISO 62      |
| 24 hr, 23°C                      | 1.2  | --          | %                 |             |
| Equilibrium, 23°C, 50% RH        | 2.4  | --          | %                 |             |
| Outdoor Suitability (All Colors) | f2   | --          |                   | UL 746C     |



| Mechanical                             | Dry      | Conditioned | Unit     | Test Method |
|----------------------------------------|----------|-------------|----------|-------------|
| Tensile Modulus (23°C)                 | 2800     | 1800        | MPa      | ISO 527-1   |
| Tensile Stress                         |          |             |          | ISO 527-2   |
| Yield, 23°C                            | 86.0     | 56.0        | MPa      |             |
| Break, 23°C                            | 56.0     | 46.0        | MPa      |             |
| Tensile Strain (Yield, 23°C)           | 4.8      | 22          | %        | ISO 527-2   |
| Nominal Tensile Strain at Break (23°C) | 23       | 87          | %        | 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/m²    |             |
| 23°C                                   | 6.0      | 20          | kJ/m²    |             |
| 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/m²    |             |
| 23°C                                   | 6.0      | 20          | kJ/m²    |             |
| Thermal                                | Dry      | Conditioned | Unit     | Test Method |
| Deflection Temperature Under Load      |          |             |          |             |
| 0.45 MPa, Unannealed                   | 200      | --          | °C       | ISO 75-2/B  |
| 1.8 MPa, Unannealed                    | 70.0     | --          | °C       | ISO 75-2/A  |
| Melting Temperature                    | 260      | --          | °C       | ISO 11357-3 |
| CLTE                                   |          |             |          | ISO 11359-2 |
| Flow : 23 to 55°C                      | 1.0E-4   | --          | cm/cm/°C |             |
| Transverse : 23 to 55°C                | 1.0E-4   | --          | cm/cm/°C |             |
| RTI Elec                               |          |             |          | UL 746B     |
| 0.40 mm                                | 130      | --          | °C       |             |
| 0.71 mm                                | 130      | --          | °C       |             |
| 1.5 mm                                 | 130      | --          | °C       |             |
| 3.0 mm                                 | 130      | --          | °C       |             |
| RTI Imp                                |          |             |          | UL 746B     |
| 0.40 mm                                | 75.0     | --          | °C       |             |
| 0.71 mm                                | 75.0     | --          | °C       |             |
| 1.5 mm                                 | 75.0     | --          | °C       |             |
| 3.0 mm                                 | 75.0     | --          | °C       |             |
| RTI Str                                |          |             |          | UL 746B     |
| 0.40 mm                                | 75.0     | --          | °C       |             |
| 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 746A     |
| 0.40 mm                                | PLC 1    | --          |          |             |
| 0.71 mm                                | PLC 0    | --          |          |             |
| 1.5 mm                                 | PLC 0    | --          |          |             |
| 3.0 mm                                 | PLC 0    | --          |          |             |



| Electrical                            | Dry   | Conditioned   | Unit | Test Method    |
|---------------------------------------|-------|---------------|------|----------------|
| High Voltage Arc Tracking Rate (HVTR) | PLC 0 | --            |      | UL 746A        |
| Hot-wire Ignition (HWI)               |       |               |      | UL 746A        |
| 0.40 mm                               | PLC 4 | --            |      |                |
| 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          |
| 0.40 mm                               | V-2   | --            |      |                |
| 0.71 mm                               | V-2   | --            |      |                |
| 1.5 mm                                | V-2   | --            |      |                |
| 3.0 mm                                | V-2   | --            |      |                |
| Glow Wire Flammability Index          |       |               |      | IEC 60695-2-12 |
| 0.40 mm                               | 960   | --            | °C   |                |
| 0.71 mm                               | 960   | --            | °C   |                |
| 1.5 mm                                | 960   | --            | °C   |                |
| 3.0 mm                                | 960   | --            | °C   |                |
| Glow Wire Ignition Temperature        |       |               |      | IEC 60695-2-13 |
| 0.40 mm                               | 825   | --            | °C   |                |
| 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 |      |                |
| 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

<sup>1</sup> These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

<sup>2</sup> A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

<sup>3</sup> Typical properties: these are not to be construed as specifications.



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**Where to Buy**

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**Supplier****Ascend Performance Materials Operations LLC**

Houston, Houston USA

**Telephone:** 888-927-2363**Web:** <http://www.ascendmaterials.com/>

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**Distributor****Channel Prime Alliance****Telephone:** 800-247-8038**Web:** <http://www.channelpa.com/>**Availability:** North America**Chase Plastic Services, Inc.***Chase Plastics Services is a North American distributor with representatives throughout the region. Please find your rep here: <http://www.chaseplastics.com/contact/locations>***Telephone:** 800-232-4273**Web:** <http://www.chaseplastics.com/>**Availability:** North America**Entec Polymers****Telephone:** 833-319-0299**Web:** [https://www.entecpolymers.com/?utm\\_source=ul&utm\\_medium=paid%20association&utm\\_campaign=entec%20%7C%20entec%201&utm\\_term=ul%20%7C%20where%20to%20buy](https://www.entecpolymers.com/?utm_source=ul&utm_medium=paid%20association&utm_campaign=entec%20%7C%20entec%201&utm_term=ul%20%7C%20where%20to%20buy)**Availability:** North America**GAZECHIM PLASTIQUES***GAZECHIM PLASTIQUES is a Pan European distribution company. Contact GAZECHIM PLASTIQUES for availability of individual products by country.***Telephone:** +33-4-67-49-55-37**Web:** <http://www.gazechim.com/>**Availability:** Belgium, Czech Republic, Denmark, Finland, France, Italy, Netherlands, Norway, Poland, Romania, Slovakia, Spain, Sweden, United Kingdom**RESINEX Group***RESINEX is a Pan European distribution company. Contact RESINEX for availability of individual products by country.***Telephone:** +32-14-672511**Web:** <http://www.resinex.com/>**Availability:** Europe