

# Vydyne® 41

Polyamide 66

Ascend Performance Materials Operations LLC

Message:

Vydyne 41 is a general-purpose, impact-modified PA66 resin. Available in natural, it is recognized for all the processing and property advantages inherent to PA66 with the addition of improved impact strength. This resin offers a well balanced combination of engineering properties characterized by high melt point, good surface lubricity, abrasion resistance and resistance to many chemicals, machine and motor oils, solvents and gasoline. Vydyne 41 is designed to meet the critical low-temperature impact requirements called out in many automotive specifications.

| General Information |      |                                    |                   |             |
|---------------------|------|------------------------------------|-------------------|-------------|
| UL YellowCard       |      | E70062-100757207                   |                   |             |
| Additive            |      | Impact Modifier                    |                   |             |
| Features            |      | Gasoline Resistance                |                   |             |
|                     |      | Good Abrasion Resistance           |                   |             |
|                     |      | Good Chemical Resistance           |                   |             |
|                     |      | Good Processability                |                   |             |
|                     |      | High Impact Resistance             |                   |             |
|                     |      | Impact Modified                    |                   |             |
|                     |      | Low Temperature Impact Resistance  |                   |             |
|                     |      | Oil Resistant                      |                   |             |
| Uses                |      | Solvent Resistant                  |                   |             |
|                     |      | Appliances                         |                   |             |
|                     |      | Automotive Applications            |                   |             |
|                     |      | Connectors                         |                   |             |
|                     |      | Consumer Applications              |                   |             |
|                     |      | Electrical/Electronic Applications |                   |             |
|                     |      | Fasteners                          |                   |             |
|                     |      | Gears                              |                   |             |
| Agency Ratings      |      | Industrial Applications            |                   |             |
|                     |      | ASTM D 4066 PA0171                 |                   |             |
|                     |      | ASTM D 6779 PA0171                 |                   |             |
| Appearance          |      | Natural Color                      |                   |             |
| Forms               |      | Pellets                            |                   |             |
| Processing Method   |      | Injection Molding                  |                   |             |
| Physical            | Dry  | Conditioned                        | Unit              | Test Method |
| Density             | 1.08 | --                                 | g/cm <sup>3</sup> | ISO 1183    |
| Molding Shrinkage   |      |                                    |                   | ISO 294-4   |

|                                  |            |                    |                   |                    |
|----------------------------------|------------|--------------------|-------------------|--------------------|
| Across Flow : 23°C, 2.00 mm      | 1.6        | --                 | %                 |                    |
| Flow : 23°C, 2.00 mm             | 1.8        | --                 | %                 |                    |
| Water Absorption                 |            |                    |                   | ISO 62             |
| 23°C, 24 hr                      | 1.0        | --                 | %                 |                    |
| Equilibrium, 23°C, 50% RH        | 2.1        | --                 | %                 |                    |
| <b>Mechanical</b>                | <b>Dry</b> | <b>Conditioned</b> | <b>Unit</b>       | <b>Test Method</b> |
| Tensile Modulus (23°C)           | 1860       | 1390               | MPa               | ISO 527-2          |
| Tensile Stress                   |            |                    |                   | ISO 527-2          |
| Yield, 23°C                      | 50.0       | 35.0               | MPa               |                    |
| Break, 23°C                      | 43.0       | 39.0               | MPa               |                    |
| Tensile Strain (Break, 23°C)     | 50         | 180                | %                 | ISO 527-2          |
| Flexural Modulus (23°C)          | 1750       | 545                | MPa               | ISO 178            |
| Flexural Stress (23°C)           | 53.0       | 17.0               | MPa               | ISO 178            |
| <b>Impact</b>                    | <b>Dry</b> | <b>Conditioned</b> | <b>Unit</b>       | <b>Test Method</b> |
| Charpy Notched Impact Strength   |            |                    |                   | ISO 179            |
| -40°C                            | 20         | 25                 | kJ/m <sup>2</sup> |                    |
| -30°C                            | 35         | 25                 | kJ/m <sup>2</sup> |                    |
| 23°C                             | 76         | 110                | kJ/m <sup>2</sup> |                    |
| Charpy Unnotched Impact Strength |            |                    |                   | ISO 179            |
| -30°C                            | No Break   | No Break           |                   |                    |
| 23°C                             | No Break   | No Break           |                   |                    |
| Notched Izod Impact Strength     |            |                    |                   | ISO 180            |
| -40°C                            | 22         | 25                 | kJ/m <sup>2</sup> |                    |
| -30°C                            | 40         | 29                 | kJ/m <sup>2</sup> |                    |
| 23°C                             | 78         | 88                 | kJ/m <sup>2</sup> |                    |
| <b>Thermal</b>                   | <b>Dry</b> | <b>Conditioned</b> | <b>Unit</b>       | <b>Test Method</b> |
| Heat Deflection Temperature      |            |                    |                   |                    |
| 0.45 MPa, Unannealed             | 145        | --                 | °C                | ISO 75-2/B         |
| 1.8 MPa, Unannealed              | 58.0       | --                 | °C                | ISO 75-2/A         |
| Melting Temperature              | 260        | --                 | °C                | ISO 11357-3        |
| CLTE                             |            |                    |                   | ISO 11359-2        |
| Flow : 23 to 55°C, 2.00 mm       | 1.7E-4     | --                 | cm/cm/°C          |                    |
| Transverse : 23 to 55°C, 2.00 mm | 1.5E-4     | --                 | cm/cm/°C          |                    |
| RTI Elec                         |            |                    |                   | UL 746             |
| 0.750 mm                         | 125        | --                 | °C                |                    |
| 1.50 mm                          | 125        | --                 | °C                |                    |
| 3.00 mm                          | 125        | --                 | °C                |                    |

|                                             |         |             |         |                |
|---------------------------------------------|---------|-------------|---------|----------------|
| RTI Imp                                     |         |             |         | UL 746         |
| 0.750 mm                                    | 75.0    | --          | °C      |                |
| 1.50 mm                                     | 75.0    | --          | °C      |                |
| 3.00 mm                                     | 75.0    | --          | °C      |                |
| RTI Str                                     |         |             |         | UL 746         |
| 0.750 mm                                    | 85.0    | --          | °C      |                |
| 1.50 mm                                     | 85.0    | --          | °C      |                |
| 3.00 mm                                     | 85.0    | --          | °C      |                |
| Electrical                                  | Dry     | Conditioned | Unit    | Test Method    |
| Volume Resistivity (0.750 mm)               | 1.0E+11 | --          | 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         |
| 0.750 mm                                    | PLC 0   | --          |         |                |
| 1.50 mm                                     | PLC 0   | --          |         |                |
| 3.00 mm                                     | PLC 0   | --          |         |                |
| High Voltage Arc Tracking Rate (HVTR)       | PLC 0   | --          |         | UL 746         |
| Hot-wire Ignition (HWI)                     |         |             |         | UL 746         |
| 0.750 mm                                    | PLC 4   | --          |         |                |
| 1.50 mm                                     | PLC 3   | --          |         |                |
| 3.00 mm                                     | PLC 3   | --          |         |                |
| Flammability                                | Dry     | Conditioned | Unit    | Test Method    |
| Flame Rating                                |         |             |         | 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                                     | 700     | --          | °C      |                |
| 3.00 mm                                     | 700     | --          | °C      |                |
| Glow Wire Ignition Temperature              |         |             |         | IEC 60695-2-13 |
| 0.750 mm                                    | 775     | --          | °C      |                |
| 1.50 mm                                     | 725     | --          | °C      |                |
| 3.00 mm                                     | 725     | --          | °C      |                |
| Additional Information                      | Dry     | Conditioned |         | Test Method    |
| Automotive Materials - (thickness d = 1 mm) | +       | --          |         | FMVSS 302      |

| Injection              | Dry          | Unit |
|------------------------|--------------|------|
| Drying Temperature     | 80.0         | °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       | 65.0 to 95.0 | °C   |

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