

# Vydyne® R533H Black

polyamide 66



Vydyne R533H Black is a general purpose, 33% glass-filled, heat-stabilized, high viscosity PA66 based resin designed for injection molding applications. R533H Black offers standard flow with a black surface finish and maintains the excellent resistance typical of PA66 in chemicals, machine and motor oils, solvents, and gasoline.

## General

|                           |                                                                   |                                        |                                               |
|---------------------------|-------------------------------------------------------------------|----------------------------------------|-----------------------------------------------|
| Regional Availability     | • North America                                                   | • Europe                               | • Asia Pacific                                |
| Additive                  | • Heat Stabilizer                                                 | • Lubricant                            |                                               |
| Features                  | • Good Flow<br>• High Rigidity                                    | • Good Mold Release<br>• High Strength | • Heat Stabilized<br>• Lubricated             |
| Agency Rating             | • EC, 1935/2004<br>• ASTM, D6779 PA012G35                         | • EU, 10/2011<br>• EU, 2023/2006       | • ASTM, D4066 PA012G35<br>• SAE, J1639 PA1116 |
| Automotive Specifications | • Chrysler MS-DB-41_CPN 2727<br>• Toyota TSM5603G-2B (compliance) | • Delphi M5543V                        | • Modine GM2055                               |
| UL File Number            | • E70062                                                          |                                        |                                               |
| Appearance                | • Black                                                           |                                        |                                               |
| Forms                     | • Pellets                                                         |                                        |                                               |
| Processing Method         | • Injection Molding                                               |                                        |                                               |

## Physical

|                             | dry  | cond. | Unit              | Test Standard |
|-----------------------------|------|-------|-------------------|---------------|
| Density                     | 1.40 | -     | g/cm <sup>3</sup> | 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  | *     | %                 |               |
| Outdoor Suitability         | f1   |       | -                 | UL 746C       |

## 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                            | 11  | 14    | kJ/m <sup>2</sup> |               |
| -30°C                            | 10  | 12    | kJ/m <sup>2</sup> |               |
| Charpy Unnotched Impact Strength |     |       |                   | ISO 179/1eU   |
| +23°C                            | 80  | 90    | kJ/m <sup>2</sup> |               |
| -30°C                            | 70  | 85    | kJ/m <sup>2</sup> |               |
| Notched Izod Impact Strength     |     |       |                   | ISO 180/1A    |
| +23°C                            | 12  | 14    | kJ/m <sup>2</sup> |               |
| -30°C                            | 10  | 12    | kJ/m <sup>2</sup> |               |

| 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                         | 140 |       | °C    |               |
| 1.50 mm                          | 140 |       | °C    |               |
| 3.00 mm                          | 140 |       | °C    |               |
| RTI Imp                          |     |       |       | UL 746        |
| 0.750 mm                         | 125 |       | °C    |               |
| 1.50mm                           | 125 |       | °C    |               |
| 3.00 mm                          | 125 |       | °C    |               |
| RTI Str                          |     |       |       | UL 746        |
| 0.750 mm                         | 140 |       | °C    |               |
| 1.50 mm                          | 140 |       | °C    |               |
| 3.00 mm                          | 140 |       | °C    |               |

| Electrical                           | dry       | cond. | Unit  | Test Standard |
|--------------------------------------|-----------|-------|-------|---------------|
| Volume Resistivity (1.00 mm)         | 1E11      | -     | Ohm*m | IEC 60093     |
| Dielectric Strength (1.00 mm)        | 20        | -     | kV/mm | IEC 60243     |
| Arc Resistance (3.00 mm)             | 6         |       | -     | ASTM D 495    |
| Comparative Tracking Index (3.00 mm) | 250 - 399 |       | V     | IEC 60112     |
| High Amp Arc Ignition (HAI)          |           |       |       | UL 746        |

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|                                                |       |   |        |
|------------------------------------------------|-------|---|--------|
| 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 3 | - |        |
| 3.00 mm                                        | PLC 4 | - |        |

| 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                       | 725   | °C   |                |
| 1.50 mm                        | 700   | °C   |                |
| 3.00 mm                        | 875   | °C   |                |
| Glow Wire Ignition Temperature |       |      | IEC 60695-2-13 |
| 0.750 mm                       | 750   | °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   |

