

# Durethan® AKV 30 H2.0 901510

Polyamide 66

LANXESS GmbH

## Message:

PA 66, 30 % glass fibers, injection molding, heat-aging stabilized

| General Information                                             |                                                       |             |                   |                        |
|-----------------------------------------------------------------|-------------------------------------------------------|-------------|-------------------|------------------------|
| UL YellowCard                                                   | E245249-473555                                        |             |                   |                        |
| Filler / Reinforcement                                          | Glass fiber reinforced material, 30% filler by weight |             |                   |                        |
| Additive                                                        | heat stabilizer                                       |             |                   |                        |
| Features                                                        | Thermal Stability                                     |             |                   |                        |
| Agency Ratings                                                  | EC 1907/2006 (REACH)                                  |             |                   |                        |
| Processing Method                                               | Injection molding                                     |             |                   |                        |
| Physical                                                        | Dry                                                   | Conditioned | Unit              | Test Method            |
| Specific Gravity                                                |                                                       |             |                   |                        |
| --                                                              | 1.36                                                  | --          | g/cm <sup>3</sup> | ASTM D792              |
| 23°C                                                            | 1.36                                                  | --          | g/cm <sup>3</sup> | ISO 1183               |
| Apparent Density                                                | 0.70                                                  | --          | g/cm <sup>3</sup> | ISO 60                 |
| Molding Shrinkage                                               |                                                       |             |                   | ISO 2577               |
| Vertical flow direction:<br>290°C, 2.00mm <sup>1</sup>          | 0.93                                                  | --          | %                 | ISO 2577               |
| Vertical flow direction:<br>120°C, 4 hours, 2.00mm <sup>2</sup> | 0.13                                                  | --          | %                 | ISO 2577               |
| Flow direction: 290°C,<br>2.00mm <sup>3</sup>                   | 0.39                                                  | --          | %                 | ISO 2577               |
| Flow direction: 120°C, 4<br>hours, 2.00mm <sup>4</sup>          | 0.070                                                 | --          | %                 | ISO 2577               |
| Water Absorption                                                |                                                       |             |                   | ISO 62                 |
| Saturated, 23°C                                                 | 5.5                                                   | --          | %                 | ISO 62                 |
| Equilibrium, 23°C, 50%<br>RH                                    | 2.0                                                   | --          | %                 | ISO 62                 |
| Hardness                                                        | Dry                                                   | Conditioned | Unit              | Test Method            |
| Ball Indentation Hardness                                       | 220                                                   | 120         | MPa               | ISO 2039-1             |
| Mechanical                                                      | Dry                                                   | Conditioned | Unit              | Test Method            |
| Tensile Modulus                                                 |                                                       |             |                   |                        |
| 23°C <sup>5</sup>                                               | 9170                                                  | 6200        | MPa               | ASTM D638              |
| 23°C                                                            | 10000                                                 | 6000        | MPa               | ISO 527-2/1            |
| Tensile Strength                                                |                                                       |             |                   |                        |
| Fracture, 23°C                                                  | 170                                                   | 110         | MPa               | ASTM D638              |
| Fracture, 23°C                                                  | 175                                                   | 110         | MPa               | ISO 527-2/5            |
| Tensile Elongation (Break,<br>23°C)                             | 3.0                                                   | 6.0         | %                 | ASTM D638, ISO 527-2/5 |

|                                                          |                          |             |                   |              |
|----------------------------------------------------------|--------------------------|-------------|-------------------|--------------|
| Nominal Tensile Strain at Break (23°C)                   | 4.4                      | 6.7         | %                 | ISO 527-2/50 |
| Flexural Modulus                                         |                          |             |                   |              |
| 23°C                                                     | 8690                     | 6000        | MPa               | ASTM D790    |
| 23°C <sup>6</sup>                                        | 9200                     | 5700        | MPa               | ISO 178/A    |
| Flexural Strength                                        |                          |             |                   |              |
| 23°C                                                     | 270                      | 170         | MPa               | ASTM D790    |
| 3.5% strain, 23°C                                        | 265                      | 150         | MPa               | ISO 178/A    |
| 23°C <sup>7</sup>                                        | 270                      | 180         | MPa               | ISO 178/A    |
| Flexural Strain at Flexural Strength <sup>8</sup> (23°C) | 4.0                      | 6.0         | %                 | ISO 178/A    |
| Burning Behavior <sup>9</sup> (> 1.00 mm)                | passed                   | --          |                   | ISO 3795     |
| ISO Shortname                                            | PA 66, GHR, 14-100, GF30 | --          |                   | ISO 1874     |
| Residual Moisture Content                                | 0.030 - 0.12             |             | %                 | Karl Fisher  |
| Impact                                                   | Dry                      | Conditioned | Unit              | Test Method  |
| Charpy Notched Impact Strength                           |                          |             |                   | ISO 179/1eA  |
| -40°C                                                    | < 10                     | < 10        | kJ/m <sup>2</sup> | ISO 179/1eA  |
| -30°C                                                    | < 10                     | < 10        | kJ/m <sup>2</sup> | ISO 179/1eA  |
| 23°C                                                     | < 10                     | 14          | kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy Unnotched Impact Strength                         |                          |             |                   | ISO 179/1eU  |
| -30°C                                                    | 60                       | 60          | kJ/m <sup>2</sup> | ISO 179/1eU  |
| 23°C                                                     | 75                       | 85          | kJ/m <sup>2</sup> | ISO 179/1eU  |
| Notched Izod Impact                                      |                          |             |                   |              |
| -40°C, 3.18 mm                                           | --                       | 150         | J/m               | ASTM D256    |
| 23°C, 3.18 mm                                            | 120                      | --          | J/m               | ASTM D256    |
| -40°C                                                    | < 10                     | < 10        | kJ/m <sup>2</sup> | ISO 180/1A   |
| -30°C                                                    | < 10                     | < 10        | kJ/m <sup>2</sup> | ISO 180/1A   |
| Unnotched Izod Impact Strength                           |                          |             |                   | ISO 180/1U   |
| -30°C                                                    | 55                       | --          | kJ/m <sup>2</sup> | ISO 180/1U   |
| 23°C                                                     | 60                       | --          | kJ/m <sup>2</sup> | ISO 180/1U   |
| Multi-Axial Instrumented Impact Energy                   |                          |             |                   | ISO 6603-2   |
| -30°C                                                    | 2.30                     | --          | J                 | ISO 6603-2   |
| 23°C                                                     | 2.80                     | 5.40        | J                 | ISO 6603-2   |
| Multi-Axial Instrumented Impact Peak Force               |                          |             |                   | ISO 6603-2   |
| -30°C                                                    | 800                      | --          | N                 | ISO 6603-2   |
| 23°C                                                     | 900                      | 1160        | N                 | ISO 6603-2   |
| Thermal                                                  | Dry                      | Conditioned | Unit              | Test Method  |
| Deflection Temperature Under Load                        |                          |             |                   |              |

|                                            |         |             |          |                |
|--------------------------------------------|---------|-------------|----------|----------------|
| 0.45 MPa, unannealed,<br>39.9mm            | > 249   | --          | °C       | ASTM D648      |
| 0.45 MPa, not annealed                     | 250     | --          | °C       | ISO 75-2/B     |
| 1.8 MPa, not annealed                      | > 240   | --          | °C       | ISO 75-2/A     |
| 1.8 MPa, annealing,<br>3.99mm              | > 249   | --          | °C       | ASTM D648      |
| Vicat Softening<br>Temperature             |         |             |          |                |
| --                                         | 230     | --          | °C       | ISO 306/B50    |
| --                                         | > 230   | --          | °C       | ISO 306/B120   |
| Ball Pressure Test (253°C)                 | Pass    | --          |          | IEC 60695-10-2 |
| Melting Temperature <sup>10</sup>          | 263     | --          | °C       | ISO 11357-3    |
| Linear thermal expansion<br>coefficient    |         |             |          | ISO 11359-2    |
| Flow: 23 to 55°C                           | 3.0E-5  | --          | cm/cm/°C | ISO 11359-2    |
| Lateral: 23 to 55°C                        | 9.0E-5  | --          | cm/cm/°C | ISO 11359-2    |
| RTI Elec                                   |         |             |          | UL 746         |
| 0.750 mm                                   | 125     | --          | °C       | UL 746         |
| 1.50 mm                                    | 125     | --          | °C       | UL 746         |
| RTI Imp                                    |         |             |          | UL 746         |
| 0.750 mm                                   | 90.0    | --          | °C       | UL 746         |
| 1.50 mm                                    | 105     | --          | °C       | UL 746         |
| RTI                                        |         |             |          | UL 746         |
| 0.750 mm                                   | 110     | --          | °C       | UL 746         |
| 1.50 mm                                    | 115     | --          | °C       | UL 746         |
| Electrical                                 | Dry     | Conditioned | Unit     | Test Method    |
| Surface Resistivity                        | 1.0E+15 | 1.0E+13     | ohms     | IEC 60093      |
| Volume Resistivity (23°C)                  | 1.0E+15 | 1.0E+12     | ohms·cm  | IEC 60093      |
| Dielectric Strength                        |         |             |          | IEC 60243-1    |
| 23°C, 1.00 mm                              | 35      | 30          | kV/mm    | IEC 60243-1    |
| 23°C, 3.00 mm                              | 30      | 35          | kV/mm    | IEC 60243-1    |
| Dielectric Constant                        |         |             |          | IEC 60250      |
| 23°C, 50 Hz <sup>11</sup>                  | 4.00    | 4.00        |          | IEC 60250      |
| 23°C, 1 MHz <sup>12</sup>                  | 4.00    | 12.0        |          | IEC 60250      |
| 23°C, 100 Hz                               | 4.00    | 12.0        |          | IEC 60250      |
| 23°C, 1 MHz                                | 4.00    | 4.00        |          | IEC 60250      |
| Dissipation Factor                         |         |             |          | IEC 60250      |
| 23°C, 50 Hz                                | 0.012   | 0.27        |          | IEC 60250      |
| 23°C, 100 Hz                               | 0.012   | 0.27        |          | IEC 60250      |
|                                            | 0.019   | 0.080       |          |                |
| 23°C, 1 MHz                                | 0.019   | 0.080       |          | IEC 60250      |
| Comparative Tracking<br>Index (Solution A) | 475     | --          | V        | IEC 60112      |

| Flammability                       | Dry                         | Conditioned | Unit        | Test Method    |
|------------------------------------|-----------------------------|-------------|-------------|----------------|
| Flame Rating                       |                             |             |             | UL 94          |
| 0.750 mm                           | HB                          | --          |             | UL 94          |
| 1.50 mm                            | HB                          | --          |             | UL 94          |
| 1.60 mm                            | HB                          | --          |             | UL 94          |
| 3.00 mm                            | HB                          | --          |             | UL 94          |
| 3.20 mm                            | HB                          | --          |             | UL 94          |
| Glow Wire Flammability Index       |                             |             |             | IEC 60695-2-12 |
| 0.800 mm                           | 700                         | --          | °C          | IEC 60695-2-12 |
| 1.60 mm                            | 700                         | --          | °C          | IEC 60695-2-12 |
| 3.00 mm                            | 700                         | --          | °C          | IEC 60695-2-12 |
| Oxygen Index <sup>13</sup>         | 23                          | --          | %           | ISO 4589-2     |
| Injection                          | Dry                         | Unit        | Test Method |                |
| Drying Temperature - Dry Air Dryer | 80.0                        |             | °C          |                |
| Drying Time - Dry Air Dryer        | 2.0 - 6.0                   |             | hr          |                |
| Processing (Melt) Temp             | 280 - 300                   |             | °C          |                |
| Mold Temperature                   | 80.0 - 120                  |             | °C          |                |
| NOTE                               |                             |             |             |                |
| 1.                                 | 60x60x2mm, 80°C MT, 600 bar |             |             |                |
| 2.                                 | 60x60x2mm                   |             |             |                |
| 3.                                 | 60x60x2mm, 80°C MT, 600 bar |             |             |                |
| 4.                                 | 60x60x2mm                   |             |             |                |
| 5.                                 | 1.0 mm/min                  |             |             |                |
| 6.                                 | 2.0 mm/min                  |             |             |                |
| 7.                                 | 2.0 mm/min                  |             |             |                |
| 8.                                 | 2 mm/min                    |             |             |                |
| 9.                                 | US-FMVSS302                 |             |             |                |
| 10.                                | 10°C/min                    |             |             |                |
| 11.                                | Tinfoil Electrodes          |             |             |                |
| 12.                                | Tinfoil Electrodes          |             |             |                |
| 13.                                | Procedure A                 |             |             |                |

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### Susheng Import & Export Trading Co.,Ltd.

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No. 215, Lianhe North Road, Fengxian District, Shanghai, China

