

# Amilan™ CM1017XL3

## Nylon 6

### TECHNICAL DATA

#### Product Description

High cycle, Heat stabilized, Low temperature toughness

#### Uses

- Appliance Components
- Automotive Applications
- Construction Applications
- Electrical/Electronic Applications
- Fasteners
- Fasteners
- Office Automation Equipment
- Sporting Goods
- White Goods & Small Appliances

#### Processing Method

- Injection Molding

#### ISO Designation

- >PA6<

#### Type

- Nylon6/Unreinforced

#### ASTM & ISO Properties

| Physical                                         | Dry          | Water Absorption | Unit              | Test Method     |
|--------------------------------------------------|--------------|------------------|-------------------|-----------------|
| Density (23°C)                                   | 1.13         | --               | g/cm <sup>3</sup> | ISO 1183        |
| Spiral Flow <sup>1</sup>                         | 700          | --               | mm                | Internal Method |
| Molding Shrinkage                                |              |                  |                   | Internal Method |
| 1.00 mm <sup>2</sup>                             | 0.70 to 1.10 | --               | %                 |                 |
| 3.00 mm <sup>3</sup>                             | 1.20 to 1.80 | --               | %                 |                 |
| Water Absorption <sup>4</sup>                    |              |                  |                   | ISO 62          |
| 24 hr, 23°C                                      | 1.8          | --               | %                 |                 |
| Saturation, 23°C                                 | 10.5         | --               | %                 |                 |
| Mechanical                                       | Dry          | Water Absorption | Unit              | Test Method     |
| Tensile Strength                                 |              |                  |                   | ISO 527-2       |
| -40°C                                            | 110          | 100              | MPa               |                 |
| 23°C                                             | 80           | 35               | MPa               |                 |
| 80°C                                             | 25           | 20               | MPa               |                 |
| Tensile Strain                                   |              |                  |                   | ISO 527-2       |
| Yield, 23°C                                      | 1.5          | --               | %                 |                 |
| Break, 23°C                                      | 38           | > 50             | %                 |                 |
| Flexural Modulus                                 |              |                  |                   | ISO 178         |
| -40°C                                            | 3800         | 3600             | MPa               |                 |
| 23°C                                             | 2800         | 800              | MPa               |                 |
| 80°C                                             | 700          | 300              | MPa               |                 |
| Flexural Stress                                  |              |                  |                   | ISO 178         |
| -40°C                                            | 135          | 125              | MPa               |                 |
| 23°C                                             | 110          | 40               | MPa               |                 |
| 80°C                                             | 40           | 25               | MPa               |                 |
| Compressive Stress (23°C)                        | 80           | --               | MPa               | ISO 604         |
| Shear Strength (23°C)                            | 70           | 65               | MPa               | ASTM D732       |
| Taber Abrasion Resistance                        |              |                  |                   | ISO 9352        |
| 1000 Cycles                                      | 3 to 4       | --               | mg                |                 |
| Coefficient of Friction - vs. Metal <sup>5</sup> | 0.15 to 0.20 | --               |                   | Suzuki Method   |



| Impact                                  | Dry                | Water Absorption  | Unit                   | Test Method |
|-----------------------------------------|--------------------|-------------------|------------------------|-------------|
| Charpy Notched Impact Strength          |                    |                   |                        | ISO 179     |
| -40°C                                   | 3.5                | --                | kJ/m <sup>2</sup>      |             |
| 23°C                                    | 5.0                | 31.0              | kJ/m <sup>2</sup>      |             |
| Charpy Unnotched Impact Strength        |                    |                   |                        | ISO 179     |
| -40°C                                   | No Break           | --                |                        |             |
| 23°C                                    | No Break           | --                |                        |             |
| Hardness                                | Dry                | Water Absorption  | Unit                   | Test Method |
| Rockwell Hardness                       |                    |                   |                        | ISO 2039-2  |
| R-Scale, 23°C                           | 119                | 90                |                        |             |
| R-Scale, 80°C                           | 80                 | --                |                        |             |
| Thermal                                 | Dry                | Water Absorption  | Unit                   | Test Method |
| Deflection Temperature Under Load       |                    |                   |                        | ISO 75-2/B  |
| 0.45 MPa, Unannealed                    | 182                | --                | °C                     |             |
| Melting Temperature                     | 225                | --                | °C                     | DSC         |
| Specific Heat                           | 1900               | --                | J/kg/°C                |             |
| Thermal Conductivity                    | 0.25               | --                | W/m/K                  |             |
| Coefficient of Linear Thermal Expansion | 8                  | --                | cm <sup>3</sup> /cm/°C | ISO 11359-2 |
| Electrical                              | Dry                | Water Absorption  | Unit                   | Test Method |
| Volume Resistivity                      | 1.0E+12 to 1.0E+13 | 1.0E+9 to 1.0E+10 | ohms·m                 | IEC 60093   |
| Electric Strength                       | 20                 | --                | kV/mm                  | IEC 60243-1 |
| Dielectric Constant                     |                    |                   |                        | IEC 60250   |
| 23°C, 50 Hz                             | 4.1                | 9.0               |                        |             |
| 23°C, 1 kHz                             | 3.9                | 8.0               |                        |             |
| 23°C, 1 MHz                             | 3.4                | 4.5               |                        |             |
| Dissipation Factor                      |                    |                   |                        | IEC 60250   |
| 23°C, 50 Hz                             | 0.070              | 0.100             |                        |             |
| 23°C, 1 kHz                             | 0.060              | 0.110             |                        |             |
| 23°C, 1 MHz                             | 0.030              | 0.130             |                        |             |
| Arc Resistance                          | 120                | --                | sec                    | UL 746      |
| Comparative Tracking Index (CTI)        | > 600              | --                | V                      | UL 746A     |
| Flammability                            | Dry                | Water Absorption  | Unit                   | Test Method |
| Flame Rating (0.75 mm)                  | V-2                | V-2               |                        | UL 94       |

#### Additional Information

Dry Water Absorption Moisture Content 3.5%

#### Notes

<sup>1</sup> Melt Temperature: 260°C, Injection Pressure: 900 bar, 2.00 mm

<sup>2</sup> 80x80x1mm

<sup>3</sup> 80x80x3mm

<sup>4</sup> in water

<sup>5</sup> Without Lubrication

