

# Make cable ties stronger, longer with INVISTA PA66

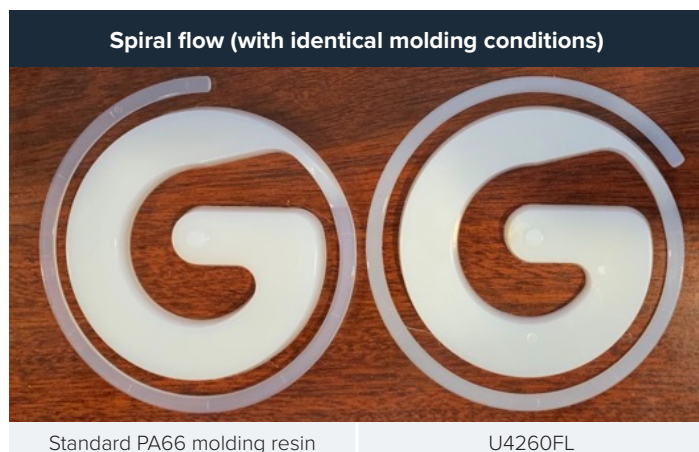
Patented U4260FL PA66 resin provides high flow with stable molecular weight

## U4260FL

This next-gen resin from INVISTA – a market leader in the production of nylon polymer and its intermediates – has been formulated with mild nucleation for **fast, consistent crystallization** in molding processes while retaining **superior ductility and impact resistance**, allowing faster molding cycles and greater productivity.

### Enhanced for cable tie production

With our updated U4260FL PA66 resin formulation, we've improved upon the performance of typical PA66 molding grades, delivering a material with better flow and faster solidification. This allows molding of cable ties and other parts with reduced processing temperatures and shorter cycle times, while maintaining the excellent strength and toughness that customers expect of PA66 resins.



### Product Information and Properties

|                                                   | INVISTA Resins |                  |
|---------------------------------------------------|----------------|------------------|
|                                                   | U4820L         | U4260FL          |
| Nucleation                                        | Non-nucleated  | Mildly nucleated |
| Lubricated                                        | Yes            | Yes              |
| RV in formic acid                                 | 48 RV          | 42 RV            |
| RV in sulfuric acid                               | 2.71 RV        | 2.57 RV          |
| VN in sulfuric acid                               | 150 mL/g       | 140 mL/g         |
| Melting temperature                               | 260°C          | 260°C            |
| Peak crystallization temperature*                 | 210°C          | 218°C            |
| Tensile strength, MPa                             | 82             | 85               |
| Tensile strain at break                           | 35%            | 30%              |
| Tensile modulus, MPa                              | 3200           | 3150             |
| Notched Charpy impact at 23°C, kJ/m <sup>2</sup>  | 5.5            | 5.3              |
| Notched Charpy impact at -40°C, kJ/m <sup>2</sup> | 4.3            | 4.9              |
| Unnotched Charpy impact at 23°C                   | Non-break      | Non-break        |
| Unnotched Charpy impact at -40°C                  | Non-break      | Non-break        |

\*DSC analysis on molded specimen, cooling rate of 50°C/min.

## Benefits for injection molding

U4260FL delivers substantial benefits and advantages for injection molding, including (but not limited to):

- Faster molding cycle times
- Lower barrel temperatures, less polymer degradation, energy savings
- Reduced drooling, bubbling, and vent fouling
- High strength and excellent impact resistance

## Improved flow for 36 cm (14") cable ties

Molding process conditions held constant at 1600 bar peak, 600 bar hold, 310°C (590°F) barrel temperature.



# U4260FL PA66 Resin



## Product Description

INVISTA U4260FL resin uses patented technology to provide high flow with stable molecular weight and is specially designed for unreinforced applications. U4260FL has been formulated with mild nucleation to provide fast and consistent crystallization in molding processes without compromising ductility and impact resistance. Excellent flow characteristics of U4260FL can allow processing temperatures to be reduced, while rapid crystallization enables faster molding cycles for greater productivity.

|            | Properties (dry)                        | Value | Units             | Method           |
|------------|-----------------------------------------|-------|-------------------|------------------|
| Viscosity  | RV in formic acid, nominal              | 42    | —                 | ASTM D789        |
|            | VN at 0.5% in sulfuric acid, nominal    | 140   | mL/g              | ISO 307          |
|            | RV at 1% in sulfuric acid, nominal      | 2.57  | —                 | Modified ISO 307 |
| Physical   | Density                                 | 1.14  | g/cm <sup>3</sup> | ISO 1183         |
|            | Mold shrinkage, 2.0 mm, parallel        | 1.5   | %                 | ISO 294-4        |
|            | Mold shrinkage, 2.0 mm, transverse      | 1.5   | %                 | ISO 294-4        |
|            | Water absorption - 24 hours             | 1.8   | %                 | ISO 62           |
|            | Water absorption - equilibrium @ 50% RH | 2.6   | %                 | ISO 62           |
| Mechanical | Tensile strength at yield               | 85    | MPa               | ISO 527          |
|            | Elongation at yield                     | 4.2   | %                 | ISO 527          |
|            | Elongation at break                     | 30    | %                 | ISO 527          |
|            | Tensile modulus                         | 3150  | MPa               | ISO 527          |
|            | Flexural modulus                        | 2900  | MPa               | ISO 178          |
|            | Flexural strength                       | 95    | MPa               | ISO 178          |
|            | Notched Charpy at 23°C                  | 5.3   | kJ/m <sup>2</sup> | ISO 179          |
|            | Notched Charpy at -30°C                 | 4.9   | kJ/m <sup>2</sup> | ISO 179          |
|            | Unnotched Charpy at 23°C                | NB    | kJ/m <sup>2</sup> | ISO 179          |
|            | Unnotched Charpy at -30°C               | NB    | kJ/m <sup>2</sup> | ISO 179          |
| Thermal    | Notched Izod at 23°C                    | 4.2   | kJ/m <sup>2</sup> | ISO 180          |
|            | Melting temperature, 10°C/min           | 260   | °C                | ISO 11357        |
|            | HDT at 0.45 MPa                         | 215   | °C                | ISO 75           |
|            | HDT at 1.80 MPa                         | 66    | °C                | ISO 75           |

|              | Properties (dry)                      | Value | Units | Method  |
|--------------|---------------------------------------|-------|-------|---------|
| Electrical   | Comparative Tracking Index, 3.0 mm    | ≥600  | volts | UL 746A |
|              | High Voltage Arc Tracking Rate (HVTR) | PLC 0 | —     | UL 746A |
|              | Dielectric Strength, 1.0 mm           | 18    | kV/mm | UL 746A |
| Flammability | Flame Rating at 0.40 mm               | V-2   | —     | UL 94   |
|              | Flame Rating at 0.71 mm               | V-2   | —     | UL 94   |
|              | Flame Rating at 1.5 mm                | V-2   | —     | UL 94   |
|              | Flame Rating at 3.0 mm                | V-2   | —     | UL 94   |

## General Information

### Material Status

Commercial: Active

### Availability

- North America
- South America
- Europe
- Asia

### RoHS

No intentional additives or ingredients used in U4260FL are among those in European directive 2011/65/EC (RoHS), as amended.

For more information about our U4260FL resin or to request sample material for your own trials, visit [nylonpolymer.INVISTA.com](https://nylonpolymer.INVISTA.com).

### Process Guidelines for Molding

|                               |                 |
|-------------------------------|-----------------|
| Drying temperature            | 80°C            |
| Drying time*                  | 3 - 4 hrs       |
| Barrel temperatures           |                 |
| Rear                          | 250 - 270°C     |
| Middle                        | 270 - 290°C     |
| Front                         | 270 - 290°C     |
| Nozzle                        | 270 - 290°C     |
| Processing temperature (melt) | 280 - 295°C     |
| Mold temperature              | 50 - 90°C       |
| Back pressure**               | 5 - 30 bar      |
| Vent depth                    | 0.007 - 0.04 mm |
| Cushion (range)               | 4 - 6mm         |
| Suggested moisture (max)      | 0.20 wt%        |
| Suggested moisture (min)      | 0.10 wt%        |
| Screw speed                   | 50 - 150 rpm    |

\* Initial moisture below 0.25 wt%. Use dehumidified air.

\*\* Melt pressure

#### Product Data Sheet Disclaimer

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