

TECHNICAL DATA SHEET

RILSAN® BESNO TL NB

POLYAMIDE 11 PELLET

RILSAN® BESNO TL NB is a polyamide 11 compound. It is produced from a renewable & sustainable source (castor oil). This natural grade is designed for tube extrusion and does not contain any optical brightener.

Designation : ISO 16396 - PA11, EG1HL, C22-010

TYPE

PA11

MAIN APPLICATIONS

- Winter Sports - Ski
- Hoses & Tubes

DELIVERY FORM

- Pellets

TRANSFORMATION PROCESSES

- Extrusion - General
- Sheet Extrusion
- Tube Extrusion

ADDITIVES

- Heat Stabilized
- Light Stabilized

RHEOLOGICAL PROPERTIES

| PROPERTIES                                                    | VALUE | UNIT      | TEST STANDARD |
|---------------------------------------------------------------|-------|-----------|---------------|
| Melt volume flow rate (MVR), 235°C / 2.16 kg (455°F / 4.4 lb) | 1     | cm³/10min | ISO 1133      |

MECHANICAL PROPERTIES

| PROPERTIES                                      | DRY / COND VALUE* | UNIT  | TEST STANDARD |
|-------------------------------------------------|-------------------|-------|---------------|
| Flexural modulus, 23°C (73°F)                   | - / 1085          | MPa   | ISO 178       |
| Tensile modulus, 23°C (73°F), 1 mm/min          | - / 1280          | MPa   | ISO 527-1/-2  |
| Yield strain, 23°C (73°F), 50 mm/min            | - / 5             | %     | ISO 527-1/-2  |
| Yield stress, 23°C (73°F), 50 mm/min            | - / 38            | MPa   | ISO 527-1/-2  |
| Nominal strain at break, 23°C (73°F), 50 mm/min | - / > 50          | %     | ISO 527-1/-2  |
| Hardness, Shore D, 15 s                         | - / 72            |       | ISO 868       |
| Charpy notched impact strength, 23°C (73°F)     | - / 11            | kJ/m2 | ISO 179 1eA   |
| Charpy notched impact strength, -30°C (-22°F)   | - / 12            | kJ/m2 | ISO 179 1eA   |
| Charpy unnotched impact strength, 23°C (73°F)   | - / No Break      | kJ/m2 | ISO 179 1eU   |
| Charpy unnotched impact strength, -30°C (-22°F) | - / No Break      | kJ/m2 | ISO 179 1eU   |

\*DRY: Dry As Molded (DAM) if pellet / Dry if powder.  
COND: Conditioned.

# RILSAN® BESNO TL NB

## THERMAL PROPERTIES

| PROPERTIES                                 | VALUE | UNIT | TEST STANDARD  |
|--------------------------------------------|-------|------|----------------|
| Vicat softening temperature, 50N at 50°C/h | 160   | °C   | ISO 306        |
| Heat deflection temperature, 0.45 MPa      | 145   | °C   | ISO 75-1/-2    |
| Heat deflection temperature, 1.8 MPa       | 50    | °C   | ISO 75-1/-2    |
| Melting temperature, 10°C/min              | 186   | °C   | ISO 11357-1/-3 |

## ELECTRICAL PROPERTIES

| PROPERTIES                                     | DRY / COND VALUE* | UNIT   | TEST STANDARD |
|------------------------------------------------|-------------------|--------|---------------|
| Surface resistivity, 23°C (73°F)               | - / 1.0E+14       | Ohm/sq | IEC 62631-3-2 |
| Volumic (transversal) resistivity, 23°C (73°F) | - / 1.0E+12       | Ohm.m  | IEC 62631-3-1 |
| Dielectric stress, 23°C (73°F)                 | - / 30            | kV/mm  | IEC 60243-1   |
| Relative permittivity, 100Hz                   | 3 / -             |        | IEC 62631-2-1 |
| Relative permittivity, 1Mhz                    | 3 / -             |        | IEC 62631-2-1 |
| Dissipation factor, 100Hz                      | 308 / -           | E-4    | IEC 62631-2-1 |
| Dissipation factor, 1Mhz                       | 183 / -           | E-4    | IEC 62631-2-1 |
| Comparative tracking index, 23°C (73°F)        | - / 600           |        | IEC 60112     |

\*DRY: Dry As Molded (DAM) if pellet / Dry if powder.  
COND: Conditionned.

## OTHER PROPERTIES

| PROPERTIES                                            | VALUE | UNIT  | TEST STANDARD |
|-------------------------------------------------------|-------|-------|---------------|
| Water absorption, 23°C (73°F), immersion, equilibrium | 1.9   | %     | ISO 62        |
| Bio-based carbon content, Measured                    | 99    | %     | ASTM D6866    |
| Specific gravity, 23°C (73°F)                         | 1.02  | g/cm³ | ISO 1183-1    |

## PACKAGING

- Available packaging:
- 20 kg / 44 lb bags
  - 25 kg / 55 lb bags
  - 550 kg rigid containers

## SHELF LIFE

Two years from the date of delivery, when stored properly (sealed bags, appropriate moisture, UV protection and temperature). For any use above this limit, please refer to our technical services.

## PROCESSING CONDITIONS:

- Typical melt temperature (Min / Recommended / Max) - Injection Molding: 230°C / 250°C / 270°C (445°F / 480°F / 520°F)
- Typical mold temperature - Injection molding: 20-60°C (70-140°F)
- Drying time and temperature: 80-90°C (175-195°F) / 4-6 hours

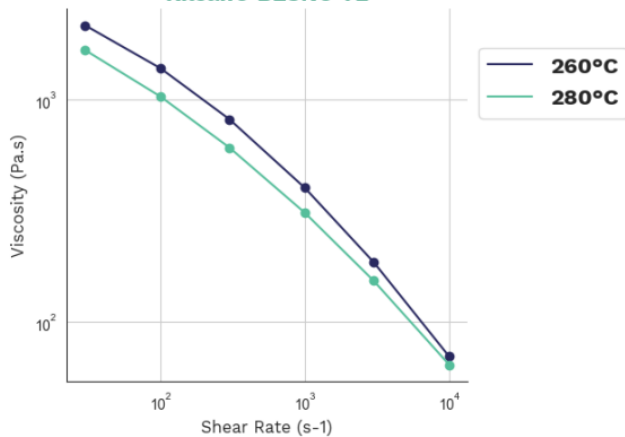
## SPECIAL CHARACTERISTICS

- Bio-based
- Low oligomers

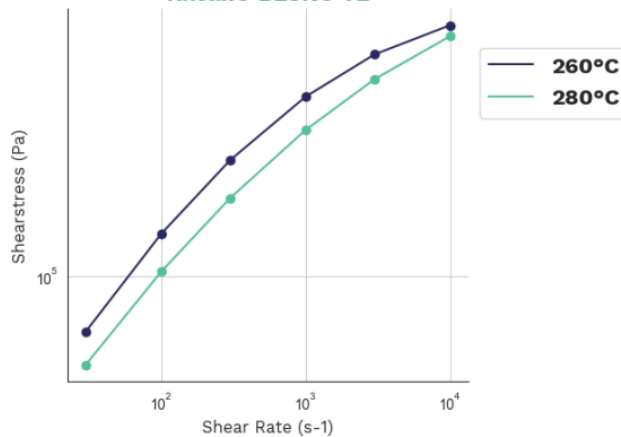
# RILSAN® BESNO TL NB

## DIAGRAMS

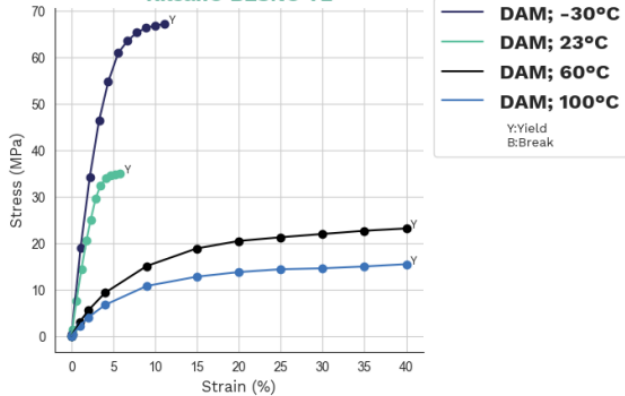
**Viscosity-shear rate**  
Rilsan® BESNO TL



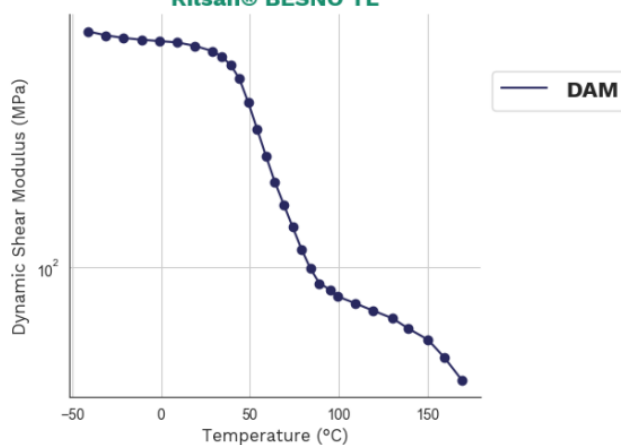
**Shearstress-shear rate**  
Rilsan® BESNO TL



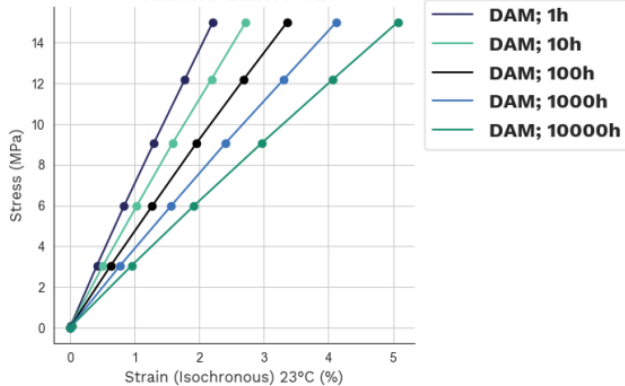
**Stress-strain**  
Rilsan® BESNO TL



**Dynamic Shear modulus-temperature**  
Rilsan® BESNO TL



**Stress-strain (Isochronous) 23°C**  
Rilsan® BESNO TL



**Stress-strain (Isochronous) 80°C**  
Rilsan® BESNO TL

