# Grilon F 40 NL

PA6 EMS-GRIVORY | a unit of EMS-CHEMIE AG

| Mechanical properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Tensile Modulus | **3000 / 750** | MPa | ISO 527-1/-2 |

| Thermal properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Melting temperature (10°C/min) | **222 / -** | °C | ISO 11357-1/-3 |

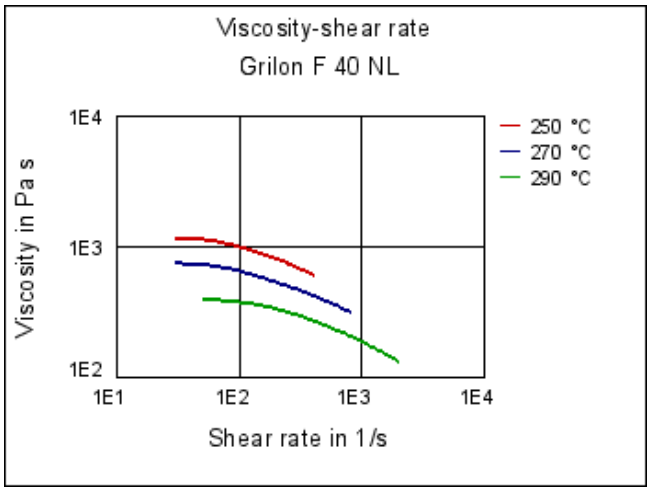
| Other properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Water absorption | **9 / -** | % | Sim. to ISO 62 |
| Humidity absorption | **3 / -** | % | Sim. to ISO 62 |
| Density | **1140 / -** | kg/m³ | ISO 1183 |

| Film Properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Stress at yield (parallel) | **35 / -** | MPa | ISO 527-3 |
| Stress at yield (normal) | **30 / -** | MPa | ISO 527-3 |
| Strain at yield (parallel) | **15 / -** | % | ISO 527-3 |
| Strain at yield (normal) | **15 / -** | % | ISO 527-3 |
| Maximum strain (parallel) | **700 / -** | % | ISO 527-3 |
| Maximum strain (normal) | **700 / -** | % | ISO 527-3 |
| Elmendorf Tear resistance (parallel) | **10 / -** | N | ISO 6383-2 |
| Elmendorf Tear resistance (normal) | **10 / -** | N | ISO 6383-2 |
| Trouser Tear resistance (parallel) | **30 / -** | N/mm | ISO 6383-1 |
| Trouser Tear resistance (normal) | **30 / -** | N/mm | ISO 6383-1 |
| Dynamic coefficient of friction | **0.25 / -** | - | ISO 8295 |
| Gloss, 60° | **100 / -** | - | ISO 2813 |
| WVTR (23°C/85%r.h.) | **15 / -** | g/(m²*d) | ISO 15106-1/-2 |
| Oxygen transmission rate (23°C/0%r.h.) | **25 / -** | cm³/(m²*d*bar) | ISO 15105-1/-2 |
| Oxygen transmission rate (23°C/85%r.h.) | **50 / -** | cm³/(m²*d*bar) | ISO 15105-1/-2 |
| Carbon Dioxide transm. rate (23°C/0%r.h.) | **80 / -** | cm³/(m²*d*bar) | ISO 15105-1/-2 |
| Carbon Dioxide transm. rate (23°C/85%r.h.) | **250 / -** | cm³/(m²*d*bar) | ISO 15105-1/-2 |

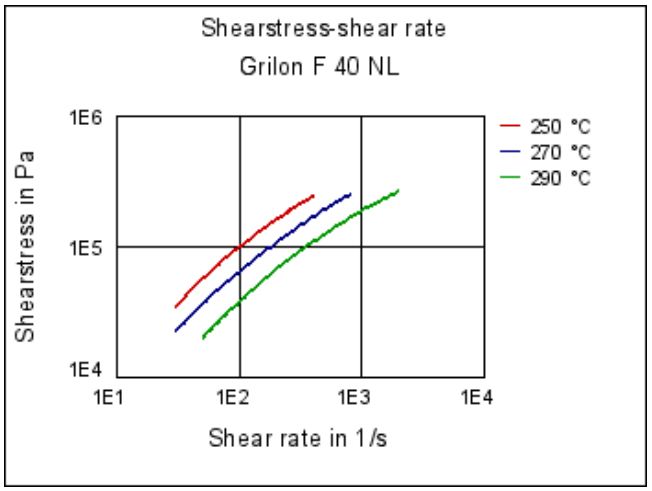
| Rheo/Phys properties | dry / cond | Unit | Test Standard |
|---|---|---|---|
| Melt volume-flow rate (MVR) | **25 / -** | cm³/10min | ISO 1133 |
| Temperature | **275 / -** | °C | ISO 1133 |
| Load | **5 / -** | kg | ISO 1133 |

## Diagrams

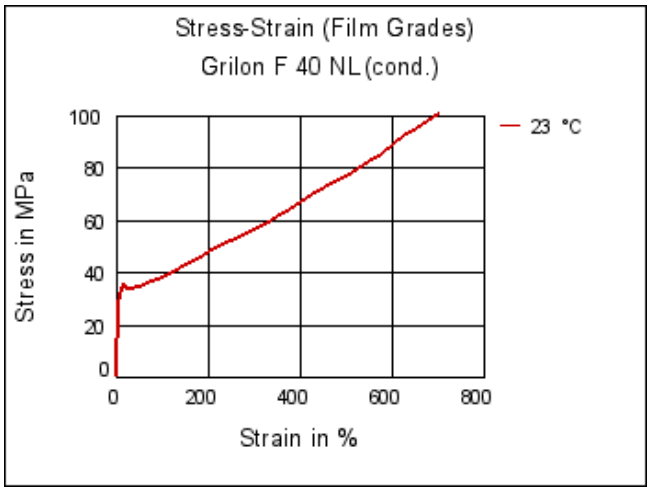
## Viscosity-shear rate




## Shearstress-shear rate




## Stress-Strain (Film Grades)




## Characteristics

### Processing

Extrusion - cast film, Blown Film Extrusion, Other Extrusion

### Product Attributes

Barrier Properties, High viscosity, Nucleated

### Delivery form

Granules

### Packaging

Non oriented film, Oriented film, Paper coating, Tubes

### Special Characteristics

Transparent

### Food Contact

EU Requirements, FDA

### Regional Availability

North America, Europe, Asia Pacific, South and Central America, Near East/Africa

## Chemical Media Resistance

## Acids

- Acetic Acid (5% by mass) (23°C)
- Citric Acid solution (10% by mass) (23°C)
- Lactic Acid (10% by mass) (23°C)
- Hydrochloric Acid (36% by mass) (23°C)
- Nitric Acid (40% by mass) (23°C)
- Sulfuric Acid (38% by mass) (23°C)
- Sulfuric Acid (5% by mass) (23°C)
- Chromic Acid solution (40% by mass) (23°C)

## Bases

- Sodium Hydroxide solution (35% by mass) (23°C)
- Sodium Hydroxide solution (1% by mass) (23°C)
- Ammonium Hydroxide solution (10% by mass) (23°C)

## Alcohols

- Isopropyl alcohol (23°C)
- Methanol (23°C)
- Ethanol (23°C)

## Hydrocarbons

- n-Hexane (23°C)
- Toluene (23°C)
- iso-Octane (23°C)

## Ketones

- Acetone (23°C)

## Ethers

- Diethyl ether (23°C)

## Mineral oils

- SAE 10W40 multigrade motor oil (23°C)
- SAE 10W40 multigrade motor oil (130°C)
- SAE 80/90 hypoid-gear oil (130°C)
- Insulating Oil (23°C)

## Standard Fuels

- ISO 1817 Liquid 1 (60°C)
- ISO 1817 Liquid 2 (60°C)
- ISO 1817 Liquid 3 (60°C)
- ISO 1817 Liquid 4 (60°C)
- Standard fuel without alcohol (pref. ISO 1817 Liquid C) (23°C)
- Standard fuel with alcohol (pref. ISO 1817 Liquid 4) (23°C)
- Diesel fuel (pref. ISO 1817 Liquid F) (23°C)
- Diesel fuel (pref. ISO 1817 Liquid F) (90°C)
- Diesel fuel (pref. ISO 1817 Liquid F) (>90°C)

## Salt solutions

- Sodium Chloride solution (10% by mass) (23°C)
- Sodium Hypochlorite solution (10% by mass) (23°C)
- Sodium Carbonate solution (20% by mass) (23°C)
- Sodium Carbonate solution (2% by mass) (23°C)
- Zinc Chloride solution (50% by mass) (23°C)

## Other

- Ethyl Acetate (23°C)
- Hydrogen peroxide (23°C)
- DOT No. 4 Brake fluid (130°C)
- Ethylene Glycol (50% by mass) in water (108°C)
- 1% nonylphenoxy-polyethyleneoxy ethanol in water (23°C)
- 50% Oleic acid + 50% Olive Oil (23°C)
- Water (23°C)
- Deionized water (90°C)
- Phenol solution (5% by mass) (23°C)