



# Rynite® 408 NC010

## THERMOPLASTIC POLYESTER RESIN

Rynite® 408 NC010 is a 30% Glass Reinforced, Toughened, Polyethylene Terephthalate with Excellent Impact Resistance

### Product information

|                      |             |           |
|----------------------|-------------|-----------|
| Resin Identification | PET-IGF30   | ISO 1043  |
| Part Marking Code    | >PET-IGF30< | ISO 11469 |

### Rheological properties

|   |        |                 |
|---|--------|-----------------|
| Moulding shrinkage, parallel                  | 0.2 %  | ISO 294-4, 2577 |
| Moulding shrinkage, normal                    | 0.8 %  | ISO 294-4, 2577 |
| Postmoulding shrinkage, normal, 48h at 80°C   | 0.25 % | ISO 294-4       |
| Postmoulding shrinkage, parallel, 48h at 80°C | 0.1 %  | ISO 294-4       |

### Typical mechanical properties

|                                       |                      |              |
|---------------------------------------|----------------------|--------------|
| Tensile Modulus                       | 9300 MPa             | ISO 527-1/-2 |
| Stress at break                       | 125 MPa              | ISO 527-1/-2 |
| Strain at break                       | 3.3 %                | ISO 527-1/-2 |
| Flexural Modulus                      | 8300 MPa             | ISO 178      |
| Compressive strength                  | 150 MPa              | ISO 604      |
| Charpy impact strength, 23°C          | 70 kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy impact strength, -30°C         | 86 kJ/m <sup>2</sup> | ISO 179/1eU  |
| Charpy notched impact strength, 23°C  | 14 kJ/m <sup>2</sup> | ISO 179/1eA  |
| Charpy notched impact strength, -30°C | 12 kJ/m <sup>2</sup> | ISO 179/1eA  |
| Hardness, Rockwell, M-scale           | 70 -                 | ISO 2039-2   |
| Hardness, Rockwell, R-scale           | 115 -                | ISO 2039-2   |
| Poisson's ratio                       | 0.34 -               |              |

### Thermal properties

|   |          |                |
|---|----------|----------------|
| Melting temperature, 10°C/min               | 250 °C   | ISO 11357-1/-3 |
| Temp. of deflection under load, 1.8 MPa     | 220 °C   | ISO 75-1/-2    |
| Temp. of deflection under load, 0.45 MPa    | 237 °C   | ISO 75-1/-2    |
| Coeff. of linear therm. expansion, parallel | 15 E-6/K | ISO 11359-1/-2 |
| Coeff. of linear therm. expansion, normal   | 85 E-6/K | ISO 11359-1/-2 |
| RTI, electrical, 0.75mm                     | 140 °C   | UL 746B        |
| RTI, electrical, 1.5mm                      | 140 °C   | UL 746B        |
| RTI, electrical, 3mm                        | 140 °C   | UL 746B        |
| RTI, impact, 0.75mm                         | 140 °C   | UL 746B        |
| RTI, impact, 1.5mm                          | 140 °C   | UL 746B        |
| RTI, impact, 3mm                            | 140 °C   | UL 746B        |
| RTI, strength, 0.75mm                       | 140 °C   | UL 746B        |
| RTI, strength, 1.5mm                        | 140 °C   | UL 746B        |



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RTI, strength, 3mm 140 °C UL 746B

### Flammability

|   |           |                      |
|---|-----------|----------------------|
| Burning Behav. at 1.5mm nom. thickn.    | HB class  | IEC 60695-11-10      |
| Thickness tested                        | 1.5 mm    | IEC 60695-11-10      |
| UL recognition                          | yes -     | UL 94                |
| Burning Behav. at thickness h           | HB class  | IEC 60695-11-10      |
| Thickness tested                        | 0.75 mm   | IEC 60695-11-10      |
| UL recognition                          | yes -     | UL 94                |
| Oxygen index                            | 22 %      | ISO 4589-1/-2        |
| Glow Wire Flammability Index, 0.4mm     | 700 °C    | IEC 60695-2-12       |
| Glow Wire Flammability Index, 0.75mm    | 700 °C    | IEC 60695-2-12       |
| Glow Wire Flammability Index, 1mm       | 700 °C    | IEC 60695-2-12       |
| Glow Wire Flammability Index, 1.5mm     | 700 °C    | IEC 60695-2-12       |
| Glow Wire Flammability Index, 3mm       | 800 °C    | IEC 60695-2-12       |
| Glow Wire Ignition Temperature, 0.75mm  | 700 °C    | IEC 60695-2-13       |
| Glow Wire Ignition Temperature, 0.4mm   | 700 °C    | IEC 60695-2-12       |
| Glow Wire Ignition Temperature, 1mm     | 700 °C    | IEC 60695-2-13       |
| Glow Wire Ignition Temperature, 1.5mm   | 700 °C    | IEC 60695-2-13       |
| Glow Wire Ignition Temperature, 3mm     | 800 °C    | IEC 60695-2-13       |
| Glow Wire Temperature, No Flame, 0.75mm | 700 °C    | IEC 60335-1          |
| Glow Wire Temperature, No Flame, 1mm    | 700 °C    | IEC 60335-1          |
| Glow Wire Temperature, No Flame, 1.5mm  | 700 °C    | IEC 60335-1          |
| Glow Wire Temperature, No Flame, 3mm    | 800 °C    | IEC 60335-1          |
| FMVSS Class                             | B -       | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 1 mm            | 24 mm/min | ISO 3795 (FMVSS 302) |

### Electrical properties

|                             |            |               |
|-----------------------------|------------|---------------|
| Relative permittivity, 1MHz | 3.3 -      | IEC 62631-2-1 |
| Dissipation factor, 1MHz    | 150 E-4    | IEC 62631-2-1 |
| Volume resistivity          | 1E13 Ohm.m | IEC 62631-3-1 |
| Surface resistivity         | 1E14 Ohm   | IEC 62631-3-2 |
| Electric strength           | 43 kV/mm   | IEC 60243-1   |

### Other properties

Density 1490 kg/m<sup>3</sup> ISO 1183

### Injection

|                                 |                        |
|---------------------------------|------------------------|
| Drying Recommended              | yes                    |
| Drying Temperature              | 120 °C                 |
| Drying Time, Dehumidified Dryer | 4 - 6 h                |
| Processing Moisture Content     | ≤0.02 <sup>[1]</sup> % |
| Melt Temperature Optimum        | 285 °C                 |
| Min. melt temperature           | 270 °C                 |



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|                             |                        |
|-----------------------------|------------------------|
| Max. melt temperature       | 290 °C                 |
| Max. screw tangential speed | 0.2 m/s                |
| Mold Temperature Optimum    | 95 °C                  |
| Min. mould temperature      | 75 °C                  |
| Max. mould temperature      | 95 °C                  |
| Hold pressure range         | ≥80 MPa                |
| Hold pressure time          | 4 s/mm                 |
| Back pressure               | As low as possible MPa |
| Ejection temperature        | 170 °C                 |

[1]: At levels above 0.02%, strength and toughness will decrease, even though parts may not exhibit surface defects.

### Characteristics

Additives

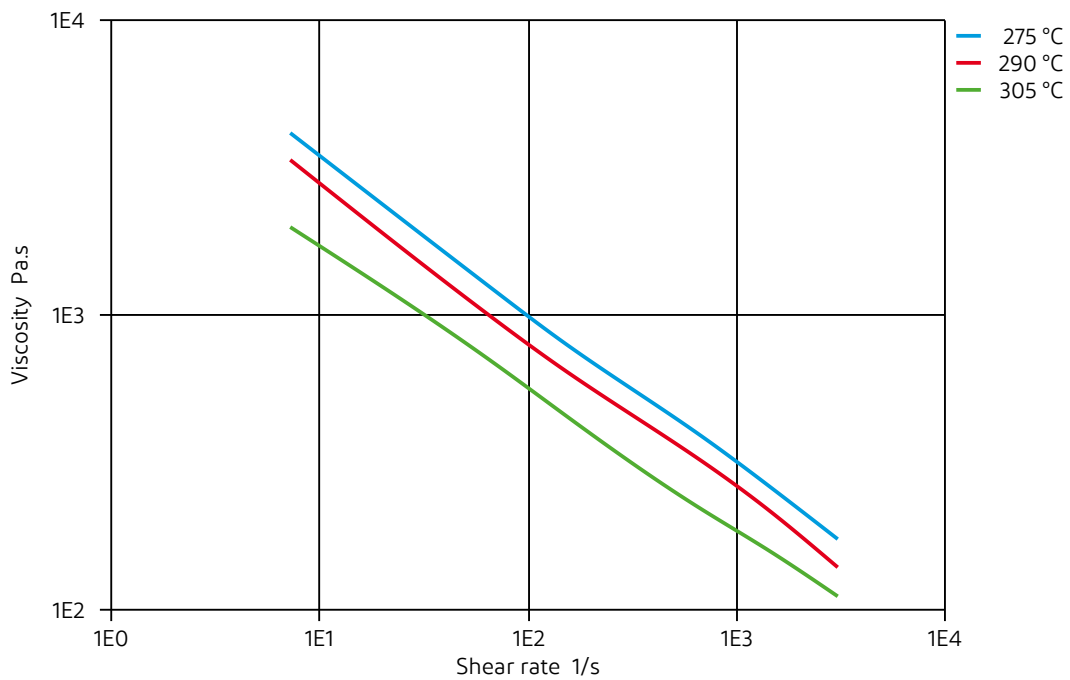
Release agent



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Viscosity-shear rate

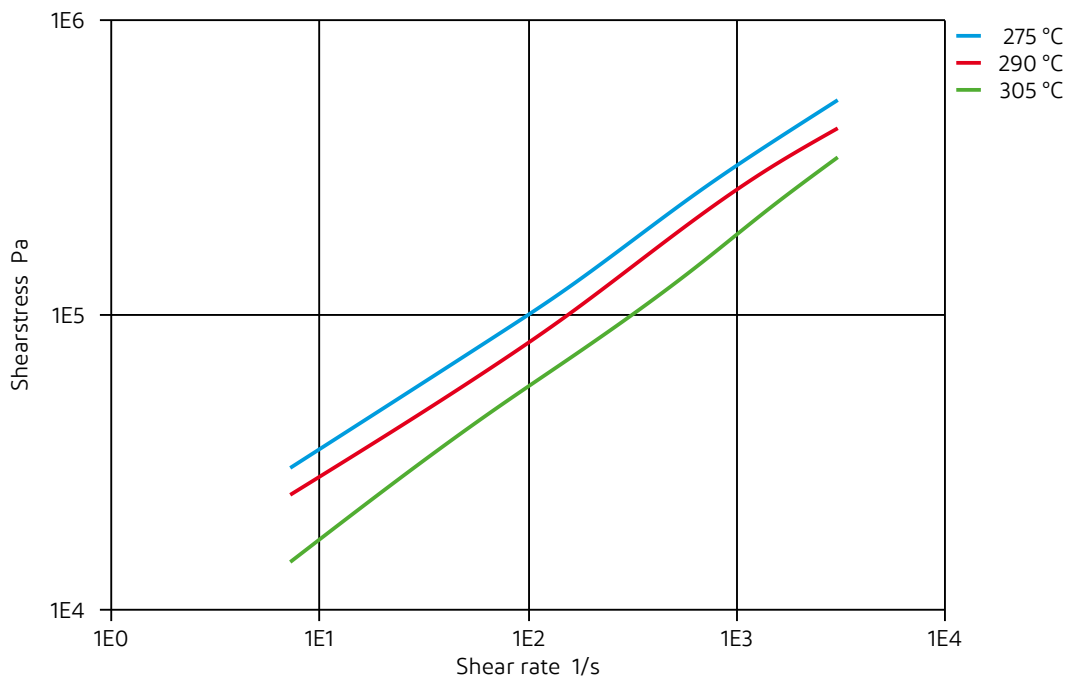




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## Shearstress-shear rate

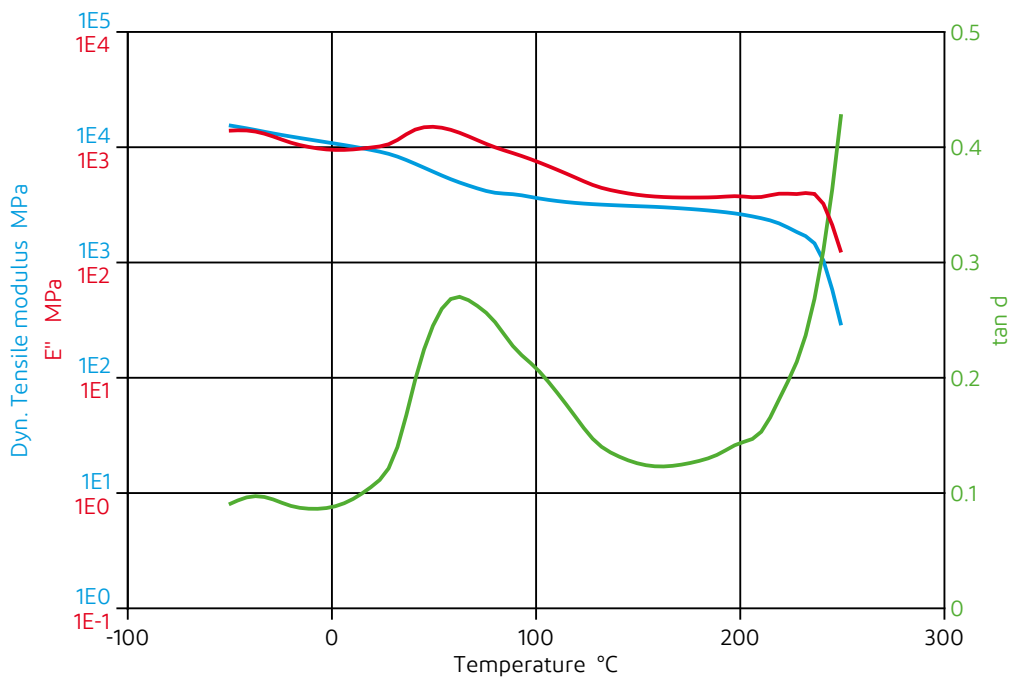




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Dynamic Tensile modulus-temperature

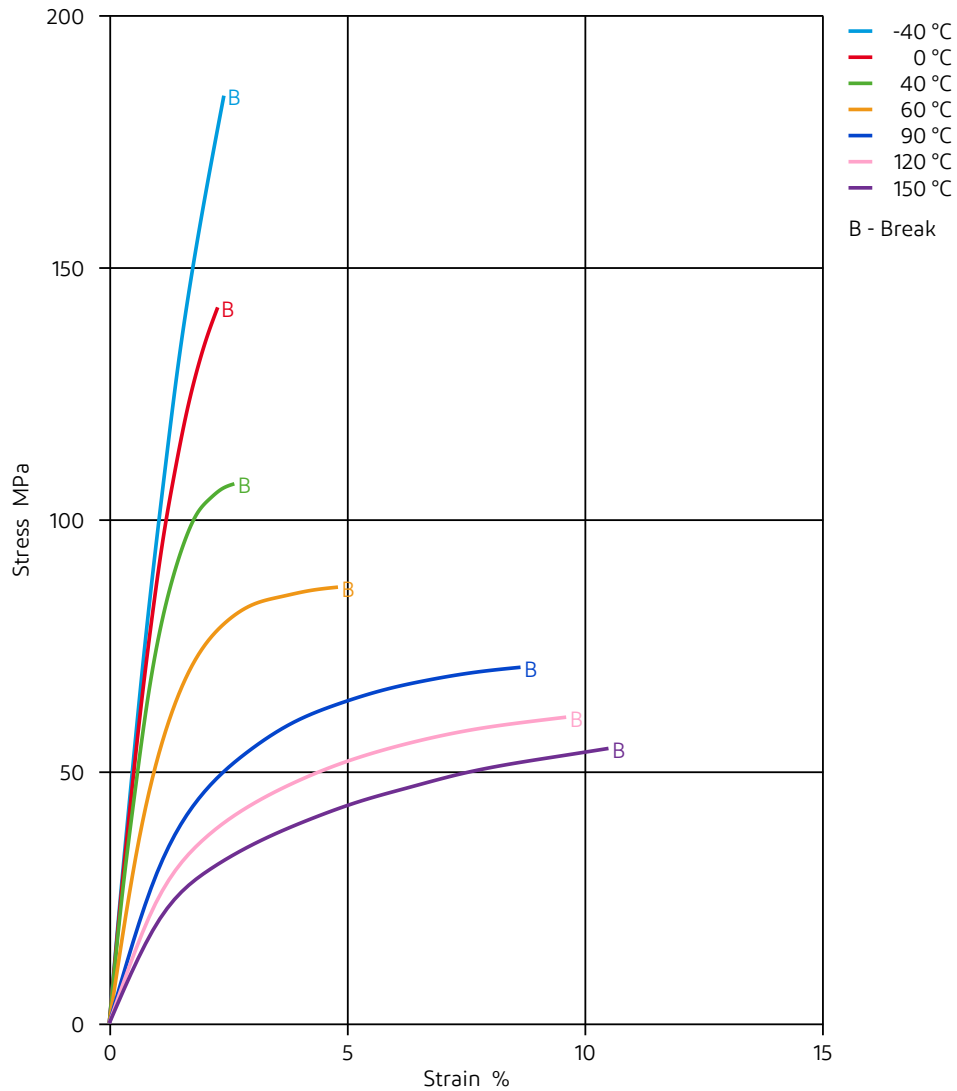




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## Stress-strain

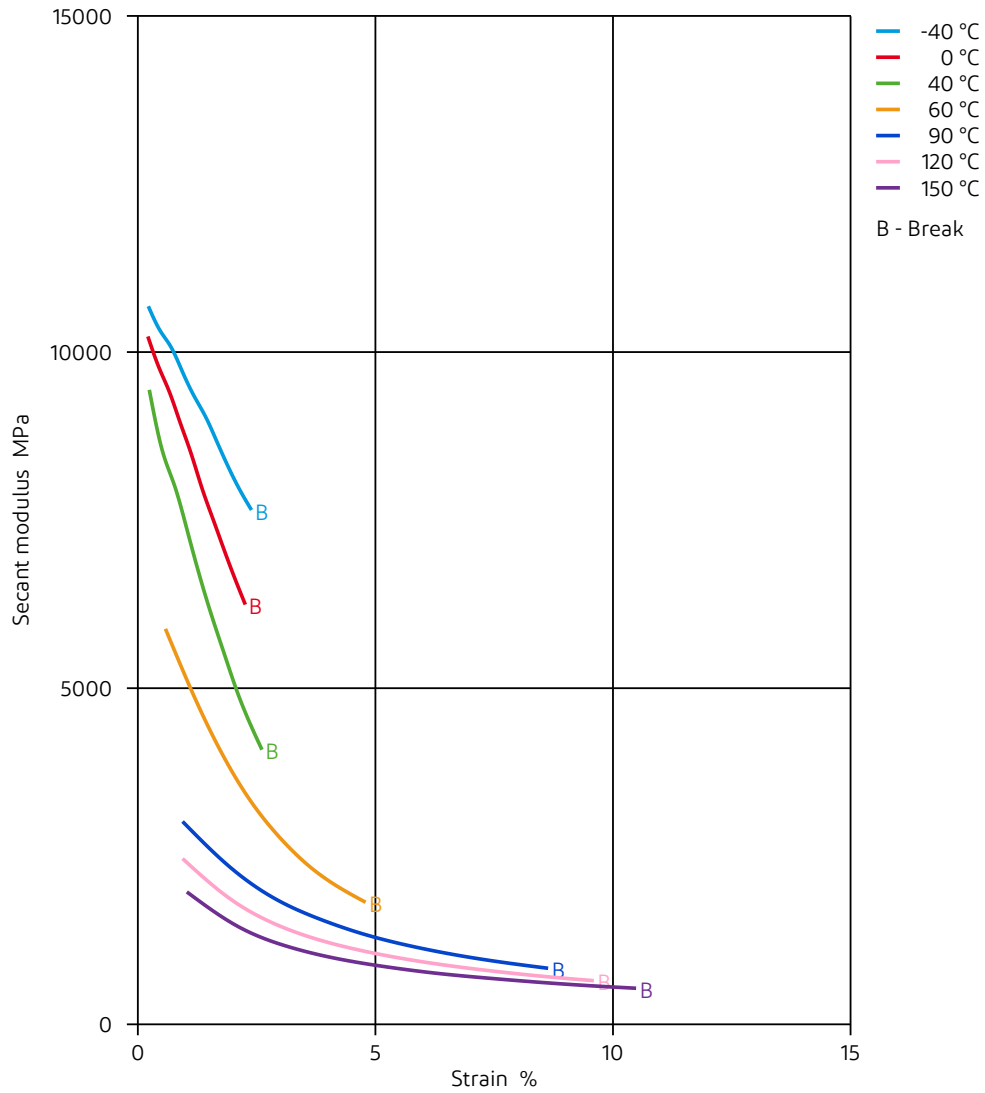




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## Secant modulus-strain





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### 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 - E5, 60°C
- ✓ ISO 1817 Liquid 2 - M15E4, 60°C
- ✓ ISO 1817 Liquid 3 - M3E7, 60°C
- ✓ ISO 1817 Liquid 4 - M15, 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



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### 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
- ✗ Water, 90°C
- ✓ Phenol solution (5% by mass), 23°C

### Symbols used:

- ✓ possibly resistant  
Defined as: Supplier has sufficient indication that contact with chemical can be potentially accepted under the intended use conditions and expected service life. Criteria for assessment have to be indicated (e.g. surface aspect, volume change, property change).
- ✗ not recommended - see explanation  
Defined as: Not recommended for general use. However, short-term exposure under certain restricted conditions could be acceptable (e.g. fast cleaning with thorough rinsing, spills, wiping, vapor exposure).

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