



## NORYL™ Resin FE1410PW

### Americas: COMMERCIAL

Noryl™ FE1410PW resin is a blend of polyphenylene Oxide (PPO) and polystyrene (PS) resin that contains 10% glass reinforcement. The resin is suitable for injection molding. Noryl FE1410PW resin has been developed for fluid engineering applications that require improved hydrolytic stability. Noryl FE1410PW resin has been certified for potable water applications up to 85C in Europe and North America in limited colors.

| TYPICAL PROPERTIES <sup>1</sup>              | TYPICAL VALUE | Unit                | Standard    |
|----------------------------------------------|---------------|---------------------|-------------|
| <b>MECHANICAL</b>                            |               |                     |             |
| Tensile Stress, brk, Type I, 5 mm/min        | 950           | kgf/cm <sup>2</sup> | ASTM D 638  |
| Tensile Strain, brk, Type I, 5 mm/min        | 2.8           | %                   | ASTM D 638  |
| Tensile Modulus, 5 mm/min                    | 48600         | kgf/cm <sup>2</sup> | ASTM D 638  |
| Flexural Stress, brk, 1.3 mm/min, 50 mm span | 1370          | kgf/cm <sup>2</sup> | ASTM D 790  |
| Flexural Modulus, 1.3 mm/min, 50 mm span     | 49500         | kgf/cm <sup>2</sup> | ASTM D 790  |
| Tensile Stress, break, 5 mm/min              | 94            | MPa                 | ISO 527     |
| Tensile Strain, break, 5 mm/min              | 2.7           | %                   | ISO 527     |
| Tensile Modulus, 1 mm/min                    | 4930          | MPa                 | ISO 527     |
| Flexural Stress, break, 2 mm/min             | 135           | MPa                 | ISO 178     |
| Flexural Modulus, 2 mm/min                   | 4880          | MPa                 | ISO 178     |
| <b>IMPACT</b>                                |               |                     |             |
| Izod Impact, unnotched, 23°C                 | 23            | cm-kgf/cm           | ASTM D 4812 |
| Izod Impact, unnotched, -30°C                | 22            | cm-kgf/cm           | ASTM D 4812 |
| Izod Impact, notched, 23°C                   | 3             | cm-kgf/cm           | ASTM D 256  |
| Izod Impact, notched, -30°C                  | 3             | cm-kgf/cm           | ASTM D 256  |
| Izod Impact, unnotched 80*10*4 +23°C         | 13            | kJ/m <sup>2</sup>   | ISO 180/1U  |
| Izod Impact, unnotched 80*10*4 -30°C         | 13            | kJ/m <sup>2</sup>   | ISO 180/1U  |
| Izod Impact, notched 80*10*4 +23°C           | 4             | kJ/m <sup>2</sup>   | ISO 180/1A  |
| Izod Impact, notched 80*10*4 -30°C           | 4             | kJ/m <sup>2</sup>   | ISO 180/1A  |
| Charpy Impact, notched, 23°C                 | 3             | kJ/m <sup>2</sup>   | ISO 179/2C  |
| Charpy 23°C, Unnotch Edgew 80*10*4 sp=62mm   | 14            | kJ/m <sup>2</sup>   | ISO 179/1eU |
| Charpy -30°C, Unnotch Edgew 80*10*4 sp=62mm  | 14            | kJ/m <sup>2</sup>   | ISO 179/1eU |



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|-----------------------------------------|---------------|-------------------------|--------------|
| <b>THERMAL</b>                          |               |                         |              |
| HDT, 1.82 MPa, 3.2mm, unannealed        | 127           | °C                      | ASTM D 648   |
| CTE, -40°C to 40°C, flow                | 3.E-05        | 1/°C                    | ISO 11359-2  |
| CTE, -40°C to 40°C, xflow               | 7.E-05        | 1/°C                    | ISO 11359-2  |
| Vicat Softening Temp, Rate A/50         | 146           | °C                      | ISO 306      |
| Vicat Softening Temp, Rate B/120        | 140           | °C                      | ISO 306      |
| HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm | 135           | °C                      | ISO 75/Be    |
| HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm | 126           | °C                      | ISO 75/Ae    |
| <b>PHYSICAL</b>                         |               |                         |              |
| Water Absorption, 50% RH, equilib       | 0.06          | %                       | ASTM D 570   |
| Mold Shrinkage, flow, 3.2 mm (5)        | 0.2 - 0.4     | %                       | SABIC Method |
| Density                                 | 1.13          | g/cm <sup>3</sup>       | ISO 1183     |
| Water Absorption, (23°C/sat)            | 0.2           | %                       | ISO 62       |
| Melt Volume Rate, MVR at 280°C/10.0 kg  | 32            | cm <sup>3</sup> /10 min | ISO 1133     |



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| PROCESSING PARAMETERS       | TYPICAL VALUE | Unit |
|-----------------------------|---------------|------|
| <b>Injection Molding</b>    |               |      |
| Drying Temperature          | 100 - 120     | °C   |
| Drying Time                 | 2 - 4         | hrs  |
| Maximum Moisture Content    | 0.02          | %    |
| Melt Temperature            | 280 - 300     | °C   |
| Nozzle Temperature          | 280 - 300     | °C   |
| Front - Zone 3 Temperature  | 290 - 310     | °C   |
| Middle - Zone 2 Temperature | 270 - 290     | °C   |
| Rear - Zone 1 Temperature   | 250 - 270     | °C   |
| Hopper Temperature          | 60 - 80       | °C   |
| Mold Temperature            | 80 - 120      | °C   |