



## Piraform® POM FC Natural

### Advanced high-flow injection moulding grade

**Piraform® POM FC Natural** is a high-flow injection moulding grade with mechanical properties which classify it as an engineering thermoplastic.

This grade exhibits very good processability, good impact resistance, high resilience and good creep performance.

**Piraform® POM FC Natural** can also withstand short-term exposure to elevated temperatures.

Moreover This polymer exhibits high resistance to hydrocarbons, solvents, salt solutions, weak acids and weak bases.

**Piraform® POM FC Natural** is a high-flow, low-viscosity polymer that should be considered for mouldings with long flow paths or thin walls. This grade is very easy to process on standard injection moulding equipment.

Cycle times are generally short. Parts show good mould definition with glossy mar-resistant surfaces. Piraform®'s low moisture sensitivity means that no conditioning of parts before assembly or use is necessary.

Applications for **Piraform® POM FC Natural** may be found in the automotive, electrical, electronics, industrial and consumer appliance markets.

**TABLE 1 : TYPICAL MECHANICAL PROPERTIES  
OF Piraform® POM FC Natural – Measured at 23°C**

|  | Test Method & Conditions |         | ASTM Values                | ISO Values  |
|--|--------------------------|---------|----------------------------|---|
|  | ASTM                     | ISO     | SI                         | SI  |
| Tensile strength at yield                                | D638                     | 527-1   | 63 Mpa                     | <b>63 Mpa</b>   |
| Tensile modulus  | D638                     | 527-1   | 1,650 Mpa                  | <b>1,550 Mpa</b>  |
| Tensile elongation at yield                              | D638                     | 527-1   | 20%                        | <b>20%</b>  |
| Tensile elongation at break                              | D638                     | 527-1   | 100%                       | <b>100%</b>   |
| Flexural strength  | D790                     | 178     | 61 MPa                     | <b>61 MPa</b>   |
| Flexural modulus   | D790                     | 178     | 1,550 Mpa                  | <b>1,450 Mpa</b>  |
| Unnotched Charpy impact strength                         | -                        | 179/1eU | -                          | <b>N.B.</b>   |
| Notched Charpy impact strength<br>23°C<br>-10°C<br>-30°C | -                        | 179/1eA | -                          | <b>6 kJ/m<sup>2</sup><br/>2 kJ/m<sup>2</sup><br/>2 kJ/m<sup>2</sup></b> |
| Unnotched Izod impact strength                           | D256                     | 180/U   | N.B.                       | <b>N.B.</b>   |
| Notched Izod impact strength<br>23°C<br>-10°C<br>-30°C   | D256                     | 180/A   | 60 J/m<br>45 J/m<br>30 J/m | <b>6 kJ/m<sup>2</sup><br/>3 kJ/m<sup>2</sup><br/>2 kJ/m<sup>2</sup></b> |
| Falling dart impact strength at 23°C                     | -                        | 6603-2  | -                          | <b>2 J</b>  |

**TABLE 2: TYPICAL PHYSICAL PROPERTIES  
OF Piraform® POM FC Natural – Measured at 23°C**

|  | Test Method & Conditions |      | ASTM Values           | ISO Values            |
|--|--------------------------|------|-----------------------|-----------------------|
|  | ASTM                     | ISO  | SI                    | SI                    |
| Specific gravity                       | D792                     | 1183 | 1.24g/cm <sup>3</sup> | 1.24g/cm <sup>3</sup> |
| Shore D hardness                       | D2240                    | 868  | -                     | 78                    |
| Hardness Rockwell                      | D785                     | -    | 110                   | -                     |
| Water absorption equilibrium at 50% RH | D570                     | 62   | 0.5%                  | 0.5%                  |
| Water absorption at saturation         | D570                     | 62   | 2.1%                  | 2.1%                  |

**TABLE 3: TYPICAL PHYSICAL PROPERTIES  
OF Piraform® POM FC Natural – Measured at 23°C**

|   | Test Method & Conditions |                           | ASTM Values          | ISO Values    |
|---|--------------------------|---------------------------|----------------------|---------------|
|   | ASTM                     | ISO                       | SI                   | SI            |
| Melting temperature                                   | D3418                    | 11357                     | 222°C                | 222°C         |
| Coefficient of linear thermal Expansion, 25°C to 55°C | E831                     | -                         | 1.0*10 <sup>-4</sup> | -             |
| Vicat softening point                                 | D1525<br>5 kg            | 306/B50<br>50 N           | 195°C                | 190°C         |
| Heat deflection temperature                           | D648<br>66psi<br>264psi  | 75<br>0.45 MPA<br>1.8 MPA | 200°C<br>105°C       | 190°C<br>92°C |

Thank you for your Attention!

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**TABLE 4: TYPICAL PROCESS RELATED PROPERTIES  
OF Piraform® POM FC Natural**

|                                 | Test Method<br>& Conditions                          |       | ASTM<br>Values               | ISO<br>Values |
|---------------------------------|--|-------|------------------------------|---------------|
|                                 | ASTM   | ISO   | SI                           | SI            |
| Melting temperature             | D3418  | 11357 | 222°C                        | 222°C         |
| Melt flow index<br>240°C/2.16kg | D1238  | 1133  | 250 g/10 min                 | 244 ml/10 min |
| Mould shrinkage                 | D955<br>MD, 3 mm<br>TD, 3 mm<br>MD, 2 mm<br>TD, 2 mm | -     | 1.8%<br>1.7%<br>1.5%<br>1.4% | -             |

**TABLE 5: TYPICAL ELECTRICAL PROPERTIES  
OF Piraform® POM FC Natural**

|                                    | Test Method<br>& Conditions | ASTM<br>Values          |
|------------------------------------|-----------------------------|-------------------------|
|                                    | ASTM                        | SI                      |
| Dielectric strength,<br>Short term | D149<br>3 mm<br>2 mm        | 15 kV/mm<br>19 kV/mm    |
| Volume resistivity                 | D257                        | 10 <sup>14</sup> ohm cm |
| Surface resistivity                | D257                        | 10 <sup>17</sup> ohm/sq |
| Dielectric constant<br>at 60Hz     | D150                        | 6.0                     |
| Dissipation factor<br>at 60Hz      | D150                        | 0.012                   |

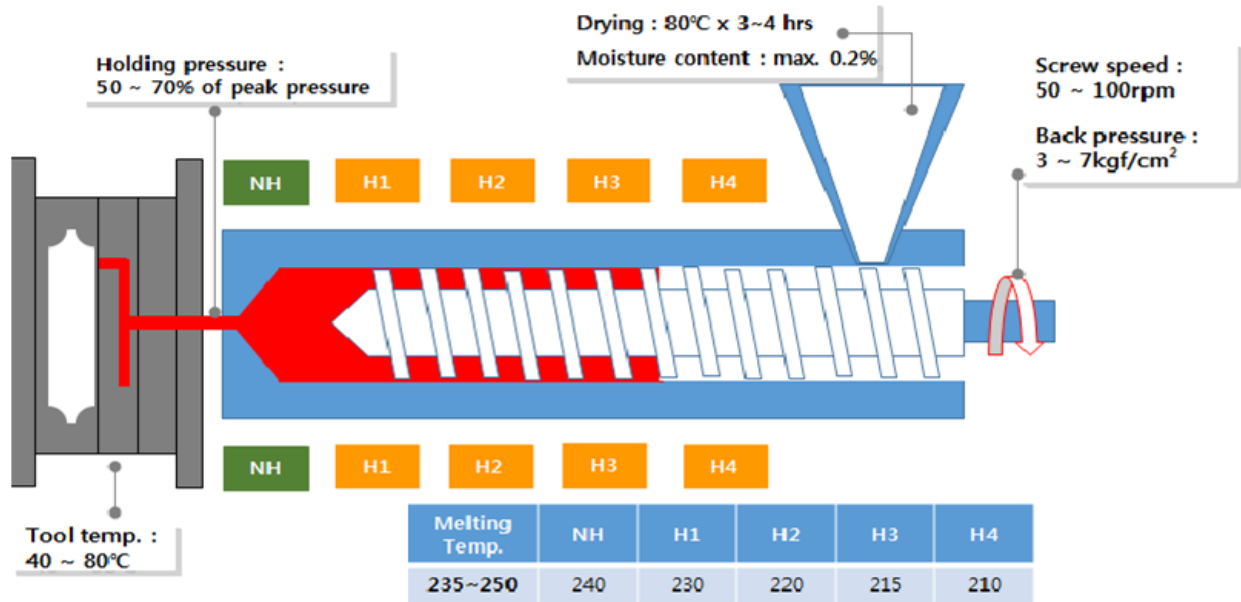
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## Injection Processing Guide



### Setting Temperature

- **Recommended melting temperature:** 235-250°C (460-490°F)
- Do not exceed 265°C (509°F). Long residence times at high end of the temperature range can cause thermal degradation & loss of physical properties.
- **Mold Temperature:** regarding Piraform® POM FC Natural base grade, recommended setting temperature is at 60-80°C. In case of Piraform® POM FC Natural glass-fiber reinforced grades, the temperature should be higher at least over 120°C for better surface quality.

### Cleaning Guide

- Please immediately clean barrels thoroughly after producing Piraform® POM FC Natural products. Recommend high viscosity HDPE, PCTG and PP. Other commercial purging compounds are also available.

### Drying

- Recommend drying Piraform® POM FC Natural pellet at 80°C for about 3~4 hours. Piraform® POM FC Natural should be dried by an oven or hopper drier to prevent surface problem like silver streak, drooling or voids.
- If the drying temperature is too high or the drying time is too long, it would be able to bring about discoloration of pellets.

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