



# **Molding Shrinkage of KEPITAL**

**R&D Center**

The molding shrinkage of plastics is the most important factor in determining the dimensions of the product by injection molding. It is also main factor in causing plastic deformation.

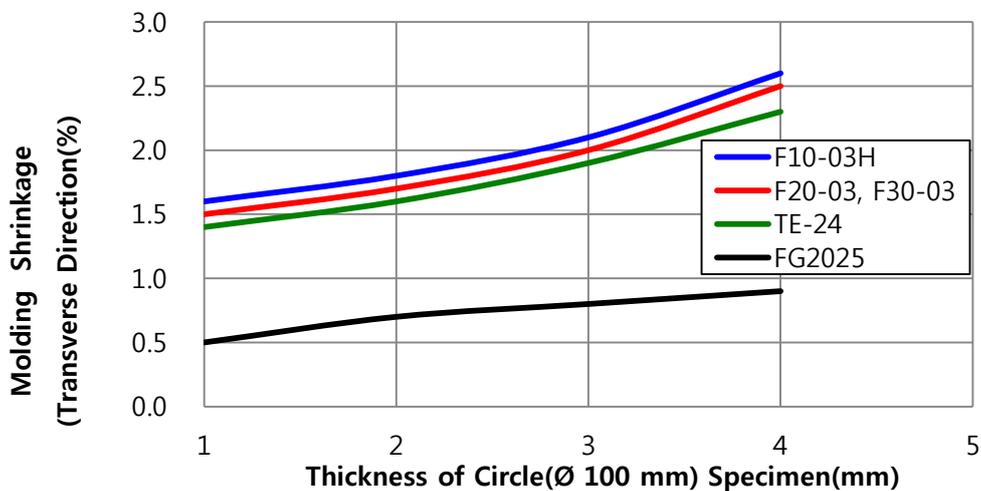
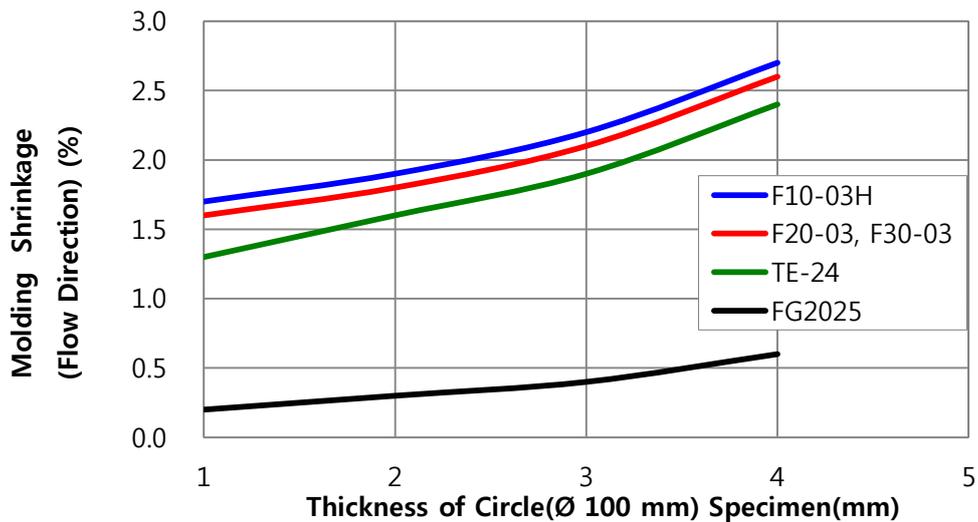
The molding shrinkage of plastics changes by not only the type of plastics but also processing conditions, and product design. To produce the desired form and dimensions of product, we should design the product mold considering the factors above. Beyond that, we must consider the molding shrinkage of plastics.

This article is about the molding shrinkage of KEPITAL.

These are test results that represent the change of molding shrinkage of KEPITAL major grades in connection with the main factors that affect molding shrinkage.(Specimen type, specimen size, injection molding condition etc.)

### 1. Molding Shrinkage of KEPITAL Major Grade in connection with Specimen Type

#### (1) Circle Specimen (Φ 100 mm)



Cf. Injection molding condition depending on the thickness of circle specimen

[Circle Specimen (Φ 100 mm)]

| Classification  | F10-03H |    |    | F20-03 |       | F30-03 |    |     |    | TE-24 |       | FG2025 |    |       |  |  |
|---|---------|----|----|--------|-------|--------|----|-----|----|-------|-------|--------|----|-------|--|--|
|   | 2t      | 3t | 4t | 1t     | 2t~4t | 1t     | 2t | 3t  | 4t | 1t    | 2t~4t | 2t     | 3t | 4t    |  |  |
| Injection Pressure (kgf/cm <sup>2</sup> )   | 1,000   |    |    | 800    |       | 800    |    | 900 |    | 1,000 |       | 800    |    | 1,000 |  |  |
| Injection Speed (mm/s)  | 16      | 44 | 63 | 31     | 16    | 16     |    |     |    | 16    |       | 16     | 16 | 69    |  |  |
| Holding Pressure Time : 15 s, Cooling Time : 12 s, Injection Temperature : 200 °C,<br>Mold Temperature : 80°C |         |    |    |        |       |        |    |     |    |       |       |        |    |       |  |  |

**(2) Square Specimen (60 mm x 60 mm x t 2 mm)**

| Classification        |                      | KEPITAL |        |        |       |        |
|-----------------------|----------------------|---------|--------|--------|-------|--------|
|                       |                      | F10-03H | F20-03 | F30-03 | TE-24 | FG2025 |
| Molding Shrinkage (%) | Flow Direction       | 2.1     | 2.0    | 2.0    | 1.9   | 0.7    |
|                       | Transverse Direction | 1.9     | 1.9    | 1.9    | 2.0   | 1.1    |

Cf. Injection Molding Condition [Square Specimen (60mm x 60mm x t 2mm)]

| Classification   | F10-03H | F20-03 | F30-03 | TE-24 | FG2025 |
|--|---------|--------|--------|-------|--------|
| Injection Pressure(kgf/cm <sup>2</sup> )   | 1,200   | 1,000  | 900    | 800   | 1,200  |
| Injection speed : 16 mm/s, Holding Pressure Time : 15 s, Cooling Time : 12 s<br>Injection Temperature : 200°C, Mold Temperature : 80°C |         |        |        |       |        |

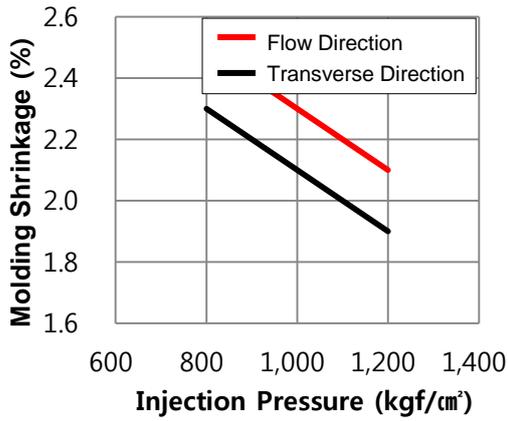
**2. Molding Shrinkage of KEPITAL in connection with Injection Molding Condition**

**(1) Molding Shrinkage depending on Injection Pressure**

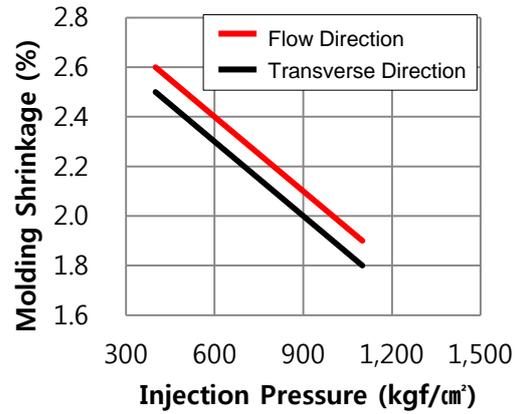
**(Square Specimen: 60 mm x 60 mm x t 2 mm)**

In general, the molding shrinkage of KEPITAL decreases as the injection pressure increases. These graphs display the molding shrinkage of KEPITAL major grades depending on injection pressure.

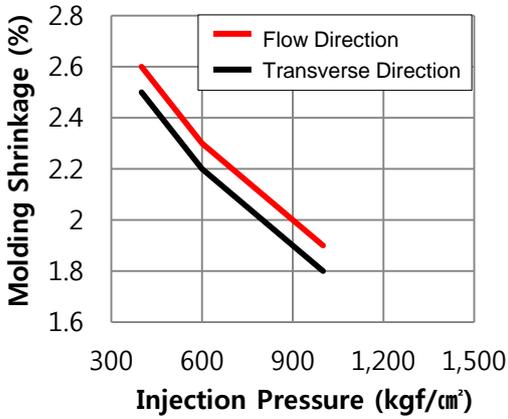
[KEPITAL F10-03H]



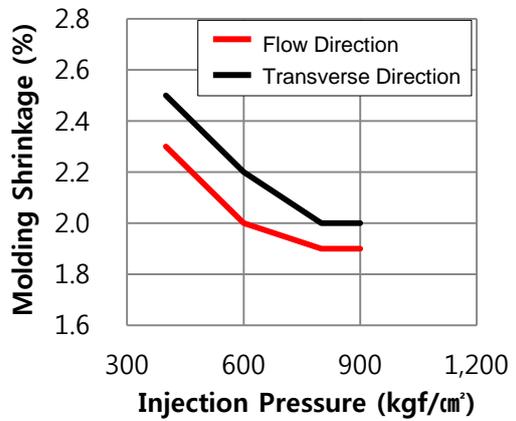
[KEPITAL F20-03]



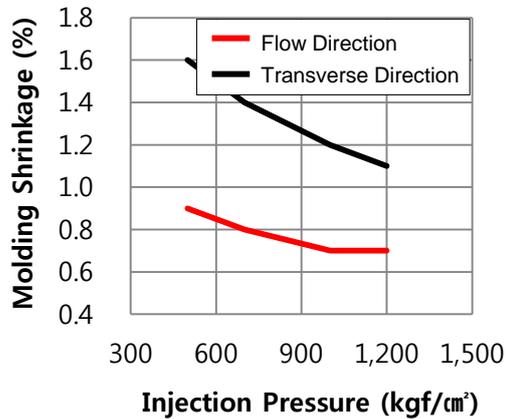
[KEPITAL F30-03]



[KEPITAL TE-24]



[KEPITAL FG2025]

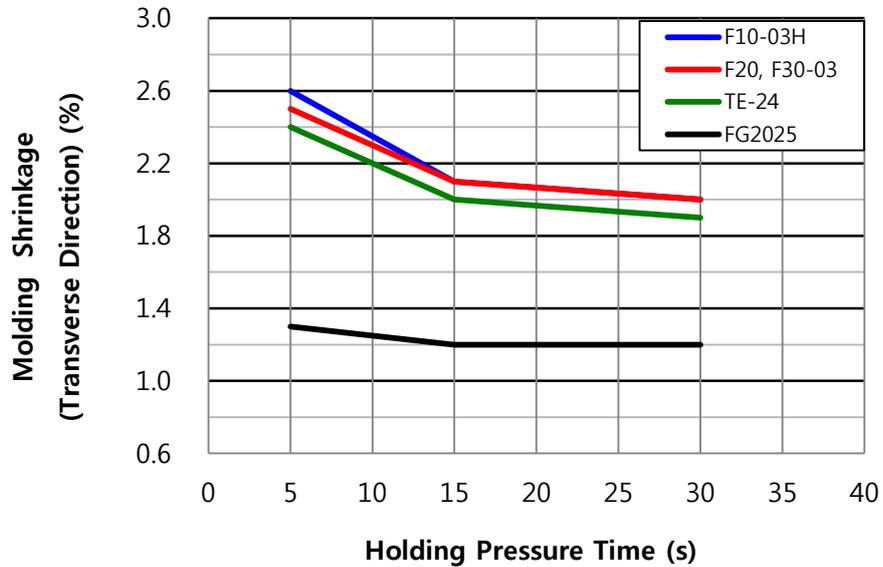
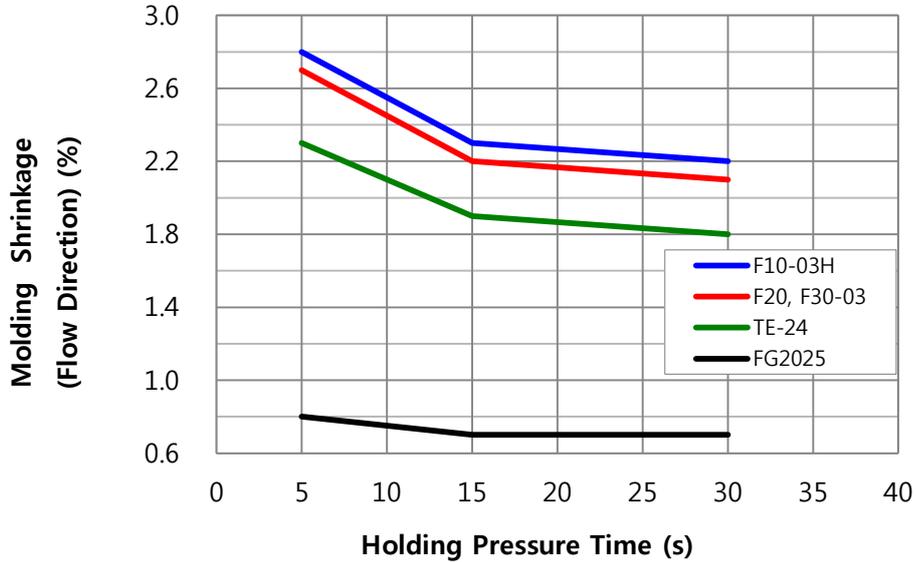


[Injection Condition]  
 Injection Speed: 16 mm/s,  
 Holding Pressure Time: 15 s, Cooling Time: 12 s,  
 Injection Temperature: 200 °C, Mold Temperature: 80 °C

**(2) Molding Shrinkage of KEPITAL in connection with Holding Pressure Time**

**(Square Specimen: 60 mm x 60 mm x t 2 mm)**

In general, the molding shrinkage of KEPITAL decreases as the holding pressure time increases. These graphs display the molding shrinkage of KEPITAL major grades depending on holding pressure time.



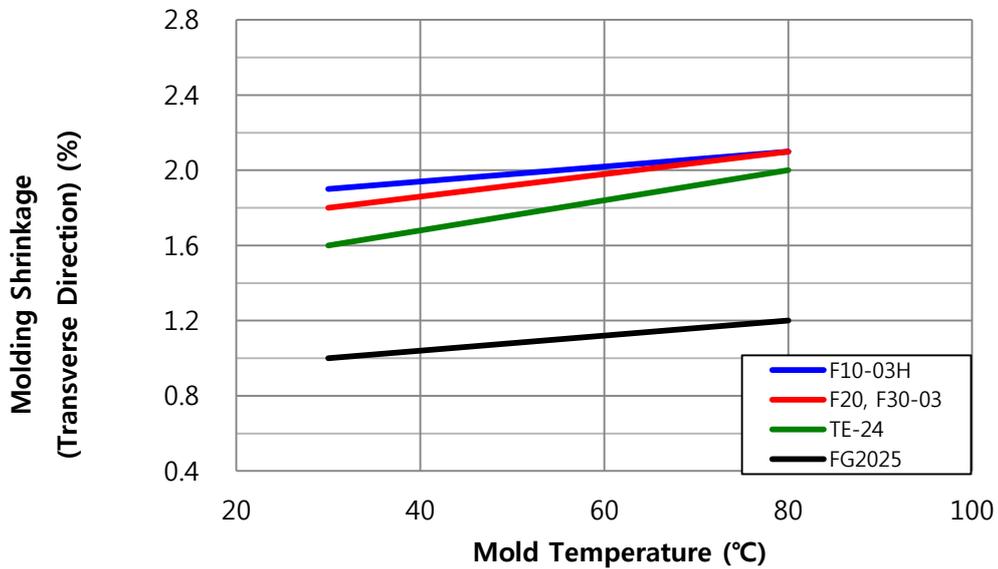
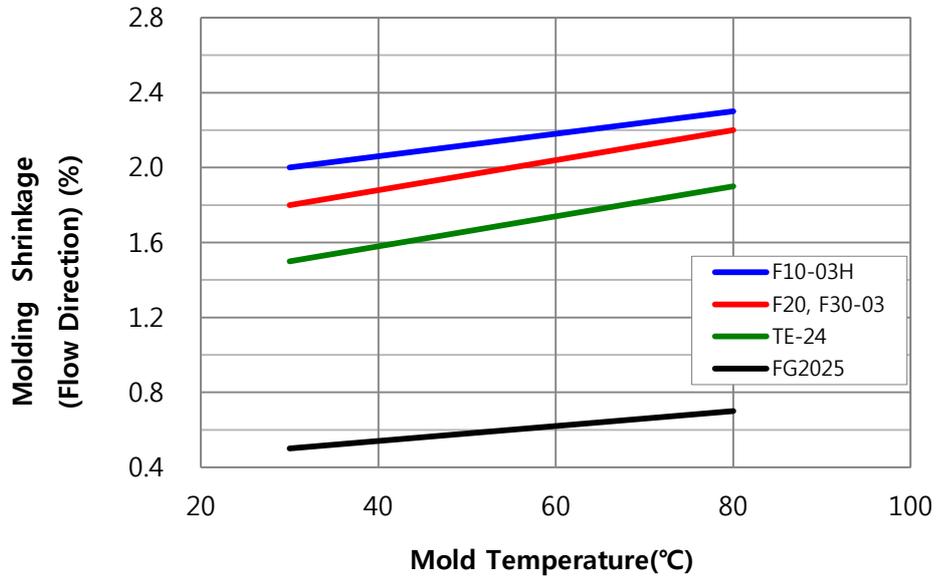
Cf. Injection Molding Condition [Square Specimen (60 mm x 60 mm x t 2 mm)]

| Classification  | F10-03H | F20-03 | F30-03 | TE-24 | FG2025 |
|---|---------|--------|--------|-------|--------|
| Injection Pressure(kgf/cm <sup>2</sup> )  | 1,000   | 1,000  | 700    | 800   | 1,000  |
| Injection Speed : 16 mm/s, Cooling Time : 12 s, Injection Temperature : 200 °C,<br>Mold Temperature : 80 °C |         |        |        |       |        |

**(3) Molding Shrinkage of KEPITAL in connection with Mold Temperature**

**(Square Specimen: 60 mm x 60 mm x t 2 mm)**

In general, the molding shrinkage of KEPITAL increases as the mold temperature increases. These graphs display the molding shrinkage of KEPITAL major grades depending on mold temperature.



Cf. Injection Molding Condition [Square Specimen (60 mm x 60 mm x t 2 mm)]

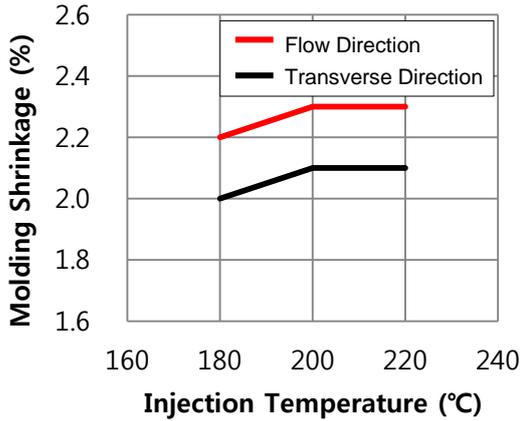
| Classification  | F10-03H | F20-03 | F30-03 | TE-24 | FG2025 |
|---|---------|--------|--------|-------|--------|
| Injection Pressure(kgf/cm <sup>2</sup> )  | 1,000   | 1,000  | 700    | 800   | 1,000  |
| Injection Speed : 16 mm/s, Holding Pressure Time : 15 s, Cooling Time : 12 s,<br>Injection Temperature : 200 °C |         |        |        |       |        |

**(4) Molding Shrinkage of KEPITAL in connection with Injection Temperature**

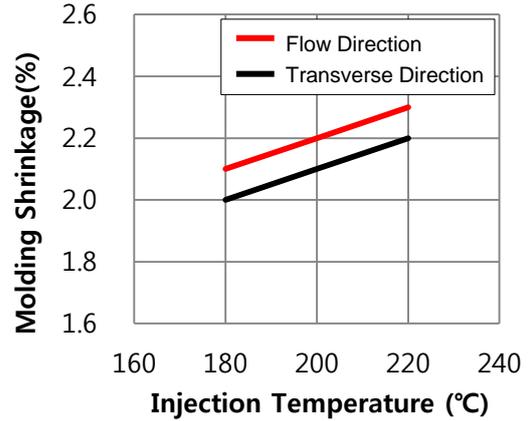
**(Square Specimen: 60 mm x 60 mm x t 2 mm)**

In general, the molding shrinkage of KEPITAL increases as the injection temperature increases. These graphs display the molding shrinkage of KEPITAL major grades depending on injection temperature. Compared with other factors, injection temperature has little effect on molding shrinkage.

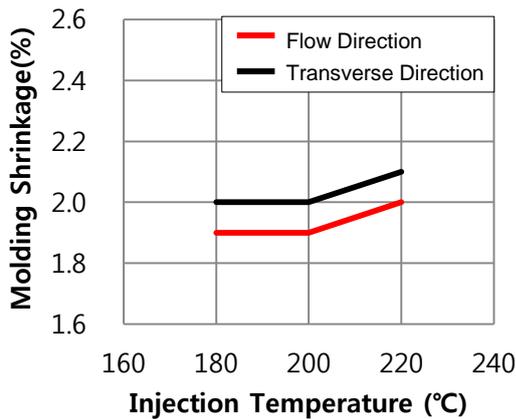
**[KEPITAL F10-03H]**



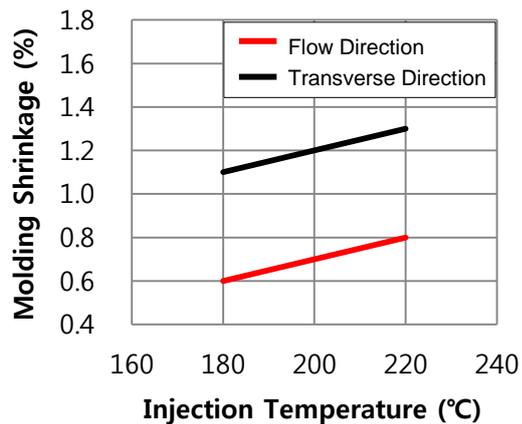
**[KEPITAL F20-03, F30-03]**



**[KEPITAL TE-24]**



**[KEPITAL FG2025]**



Cf. Injection Molding Condition [Square Specimen (60 mm x 60 mm x t 2 mm)]

| Classification   | F10-03H | F20-03 | F30-03 | TE-24 | FG2025 |
|--|---------|--------|--------|-------|--------|
| Injection Pressure(kgf/cm <sup>2</sup> )   | 1,200   | 1,000  | 900    | 800   | 1,200  |
| Injection Speed : 16 mm/s, Holding Pressure Time : 15 s, Cooling Time : 12 s, Mold Temperature : 80 °C |         |        |        |       |        |

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