

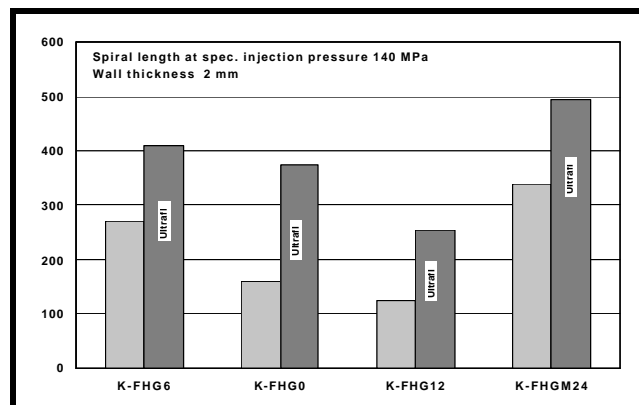
Akulon® Ultraflow PA6

Recommendations for Injection Molding

Akulon Ultraflow

Akulon Ultraflow is a new PA6 product line within the product family Akulon (PA6, PA66) of DSM Engineering Plastics. **Akulon Ultraflow is an extremely easy to process material that offers up to 80% improved flow and up to 40% reduction in injection molding cycle times** in comparison to standard PA6 grades, with no significant loss of mechanical properties.

Spiral flow Akulon Ultraflow vs Standard grade



Cycle time

Due to the lower possible processing temperatures and/or due to the faster crystallisation of Akulon Ultraflow, compared to the standard PA6, **shorter holding and cooling times are possible (up to 40% reduction)**

Drying

Akulon Ultraflow is packed dry (moisture content $\leq 0.15\%$) and does not require pre-drying before processing. Drying is required when the material is exposed to humid air and should be done in air circulation ovens or in dehumidified hopper dryer both with a dew point below -30°C .

Drying conditions dehumidified dryer

Moisture content	Time	Temperature
0.05 - 0.2%	2 - 4 h	80°C
0.2 - 0.5 %	4 - 8 h	80°C

DSM Engineering Plastics - *Technical Guide*

Temperature settings

A Mold Temperature between 40-90°C for good dimensional stability and flow properties is recommended

Injection speed

Due to the excellent flow of the Ultraflow grades the injection speed and level can be reduced. Keep injection speed moderate to high in order to:

- obtain good surface
- obtain maximum glass fibre orientation
- injection pressure up to 30% lower than standard PA GF.

When injection speed is limited due to the appearance of diesel effect, burned spots or splay, improve cavity venting or reduce injection speed.

Ultraflow	From hopper to nozzle °C	Nozzle °C	Melt °C	Mold °C
K-F(H)G6	230-250	250-275	245-270	40-90
K-F(H)G7	230-250	250-275	245-270	40-90
K-F(H)G8	230-260	260-280	245-270	40-90
K-F(H)G9	230-260	260-280	245-270	40-90
K-F(H)G0	230-260	260-280	245-270	40-90
K-F(H)G12	230-270	270-285	250-280	40-90
K-FHGM24	230-260	250-275	250-275	40-90
K220-HGM44	230-270	260-275	250-275	40-90
K-FKGS6	230-250	250-275	250-275	40-90

Holding pressure

Due to the lower required injection pressure the holding pressure and time can be reduced. This means:

- less internal stress
- maximum glass fibre orientation retained
- holding pressure up to 20% lower than the standard PA GF.
- holding time and pressure depend on runner design and shape of molded article.

Cooling phase

Cooling time (faster crystallisation) is short of Akulon Ultraflow grades. Plasticizing time and sprue/runner dimensions can be the limiting factor for the cooling time.

Screw rotation speed

Keep screw rotation speed as low as possible (optimum 0,3 m/sec) in order to:

- minimize thermal load
- maximize homogeneity (color masterbatch)

Minimal screw rotation speed is restricted by the cooling time (plasticizing time).

Back pressure

Recommended back pressure 30-100 bar (effective)

- keep back pressure low in order to prevent long plasticizing times.
- increase backpressure with use of color masterbatch
- depends on cooling time.