MOWIFLEX™ 3D 2000

Technical data sheet

Characteristics

Thermoplastic polyvinyl alcohol; cold water soluble

Recommended Uses

3D printing filament extrusion, water soluble support material for 3d printing

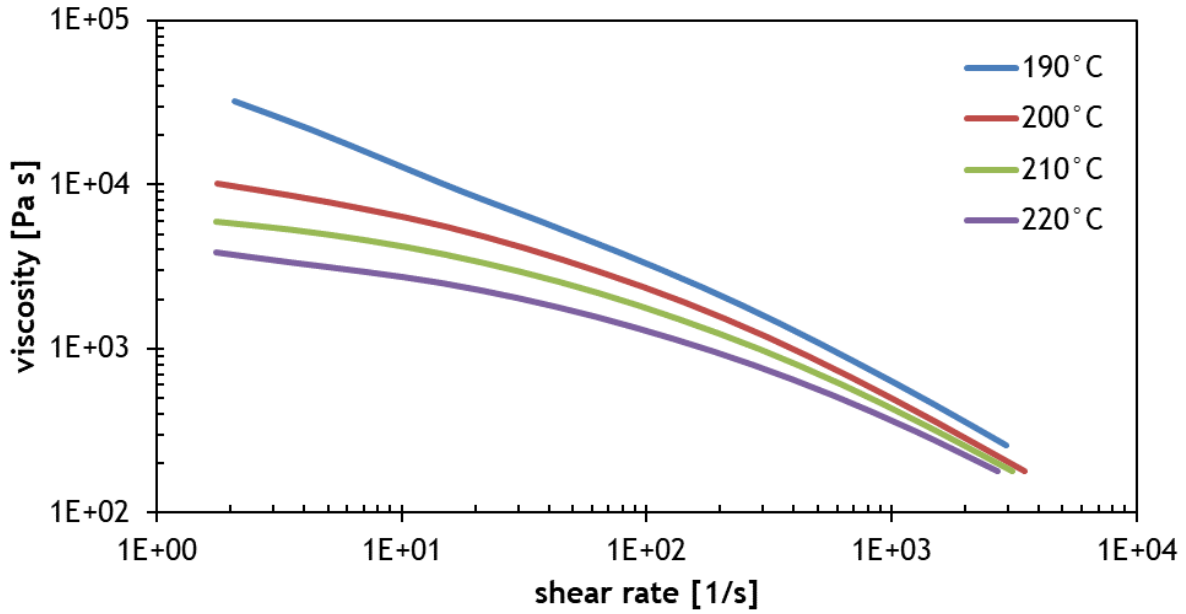
Form supplied

Pellets

Technical data

Melt flow index (200°C) [g/10min]	Melting temperature [°C]	Glass transition temperature [°C]	Bulk density [g/cm³]	Volatiles content [wt.%]	Methanol content [wt.%]
10 kg: 15-25 21.6 kg: 60-90	180-190	60-65	0.6-0.9	<1	<1

Viscosity curves of MOWIFLEX™ 3D 2000 determined by capillary rheometry



Processing

MOWIFLEX™ 3D 2000 should be processed at temperatures between 190 and 210°C. The material absorbs moisture once the packaging is opened and should therefore be processed only from unopened original containers. Otherwise bubbles may occur in the product.
Melt temperature during extrusion should not exceed 220°C because at higher temperatures the material suffers thermal damage, recognizable by yellow discoloration and an increase in melt pressure and torque. Residence time should be held as short as possible, 5 -10 minutes at most. When extruder operation has to be stopped temporarily it is highly recommended to completely purge out MOWIFLEX™ resins from the extruder.

For more detailed information please refer to the MOWIFLEX™ Processing and Application guide, which is available on request.

Material change and extruder cleaning

To remove MOWIFLEX™ from the extruder it should be purged with a polyolefin (e.g. LDPE) of similar or lower melt flow index until all MOWIFLEX™ is removed from the extruder. Depending on the extruder design and if purging is not sufficient, however, this can leave MOWIFLEX™ residues in the barrel and/or die, which can then crosslink or degrade under the influence of heat. In this case it is advisable to dismantle the extruder for cleaning.
Before starting MOWIFLEX™ processing it is recommended to purge the extruder with a high melt flow index polyolefin (e.g. LDPE). Subsequently, the extruder should be purged with MOWIFLEX™ until the polyolefin is completely removed from the extruder.

Storage

MOWIFLEX™ resins are dried after production and packaged in moisture proof bags. This means that no drying is needed when the material is used from fresh bags. The bags should be stored indoors under dry conditions. Open bags should be resealed after use. When exposed to the atmosphere MOWIFLEX™ will absorb moisture, which might result in foam or bubble formation during processing. Damp material can be dried at 60-80°C in conventional circulating air dryers.
To estimate the moisture content of MOWIFLEX™ the volatiles content can be measured with an infrared moisture analyzer at 105°C for 10 minutes. The result of the volatiles content measurement will not perfectly equal the moisture content, due to partial evaporation of plasticizer. Usually a volatiles content of <0.4% will be sufficient.

3D printing filament manufacturing

For the extrusion of 3D printing filaments water cooling should be avoided. It is recommended to use air cooling only. This might require air blowers to increase cooling efficiency and a sufficiently long cooling track.
After winding the filament to the final reels it is recommended to anneal the filament at a temperature of ca. 60°C for 2 hours. Otherwise, especially when the filament is wound on spools at ambient temperature, the strain generated due to the high stiffness of the filament might cause some change in the mechanical properties of the filament (e.g. brittleness).
MOWIFLEX™ 3D 2000 filament should be stored in moisture proof bags and not dried to a moisture content of <0.3 wt.%.

Biodegradability

MOWIFLEX™ 3D 2000 is certified by TÜV Austria as “OK biodegradable water” based on an official biodegradation test according to ISO 14851.

Occupational safety and environmental protection

MOWIFLEX™ 3D 2000 is not a dangerous substance or preparation as defined by German chemical law or dangerous goods regulations or EC regulation 1272/2008 (CLP regulation) in their current versions.
A safety data sheet is available on request.

For further information please contact mowiflex@kuraray.com

Kuraray Europe GmbH
Philipp Reis-Str. 4
D-65795 Hattersheim am Main
Germany
www.kuraray-poval.com

 2019-03-01