

kuraray**Kuraray Poval™**

Mowiflex™ 3D 2000 filament

Technical Data Sheet

Characteristics

Water soluble 3d printing filament.

Recommended Uses

3D printing, fused filament fabrication (FFF), water soluble support material

Form Supplied

Filament

Technical Data

Filament diameter (roundness)	Melt flow Index (190°C, 21,6 kg) [g/10min]	Melting temperature [°C]	Glass transition temperature [°C]	Volatiles content [wt.%]	Methanol content [wt.%]
1.75 ± 0.05mm (≥95%)	20-30	180-190	60-65	<1	<0,3
2.85 ± 0.1 mm (≥95%)					

3D printer settings

Mowiflex™ 3D 2000 is a water soluble material based on polyvinyl alcohol. It is supposed to be used as a water soluble support material for additive manufacturing based on FFF (Fused Filament Fabrication) processes to achieve maximum freedom in object design. Mowiflex™ 3D 2000 was designed to be more temperature resistant (e.g. for use in heated chamber printers) to work well in combination with engineering materials such as polyamide. For best printing results please follow the printing guidelines below. Mowiflex™ 3D 2000 is sensitive to overheating, thus the nozzle temperature should not exceed 225°C and while printing with the main material the temperature of the support material nozzle should be lowered to <170°C. In addition, potential oozing of material from the idle nozzle can be controlled in this way. Printing a prime pillar after each nozzle switch can help to improve print quality.

To guarantee optimum adhesion to the main printing material, a reduced printing speed should be used for the interface layers. Additionally, there should be no gap between support and the main object in z-direction to achieve good adhesion. The distance in xy-direction should be as small as possible, but still high enough to obtain a good surface quality (typically ca. 0.2 mm or less). The optimum printing parameters might vary depending on the printer and software.

Nozzle temperature:	190-225°C	chamber temperature:	<70°C
Nozzle idle temperature:	<170°C	Printing speed:	20-50mm/s
Bed temperature:	25-120°C	Interface printing speed:	10-20mm/s

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Print bed adhesion

Mowiflex™ sticks well to several print bed materials and coatings (e.g. glass or PEI), especially when the print bed is heated. To guarantee best results it is recommended to use a print bed adhesive, which has good adhesion to the main printing material. Mowiflex™ works well with common print bed adhesives such as normal glue stick and Magigoo® adhesives (from Thought3D Ltd).

Handling and storage

Mowiflex™ 3D 2000 is soluble in cold water, which makes it inherently sensitive to moisture. It was designed to be as little moisture sensitive as possible and can be used at a relative humidity of <50 % for several days to weeks without problems. However, if not used it is recommended to store Mowiflex™ 3D 2000 filament in a moisture tight aluminum laminated bag with some desiccant. In case Mowiflex™ 3D 2000 filament absorbed moisture, it can be dried by heating to ca. 50-70°C for a few hours. It is recommended not to dry Mowiflex™ 3D 2000 filament too much, since a small amount of residual moisture (ca. 0.5 wt.%) will improve processability. Mowiflex™ 3D 2000 filament might develop some brittleness during long time storage, which can be eliminated by annealing the filament at 60°C for 2 hours.

Dissolving

To dissolve the support structures in water it is recommended to use an agitated water tank at slightly elevated temperatures (ca. 30-40°C). Mowiflex™ 3D 2000 will also dissolve at room temperature and without agitation, but dissolving will take much longer. Afterwards, the solution can be disposed of conveniently through normal waste water systems due to the biodegradable nature of polyvinyl alcohol. For disposal of large quantities please follow local regulations.

Biodegradability

Mowiflex™ 3D 2000 is certified by TÜV Austria as "OK biodegradable water" (registration number: SO698) based on an official biodegradation test according to ISO 14851.

Occupational safety and environmental protection

It is recommended to print the material in a well ventilated area. Do not ingest the filament, printed objects made of it or the solution of the material. Avoid contact with the eyes. It is recommended to avoid contact of Mowiflex™ 3D 1000 solution with the skin. Keep away from children. The aluminum bag used for packaging of Mowiflex™ filament might have sharp edges, please handle with care. Mowiflex™ 3D 1000 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.

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