Technical Specification

UPM Formi EcoAce WB 08.02.2022

UPM BIOFORE BEYOND FOSSILS

Material UPM Formi EcoAce WB is renewable biocomposite made from 40-60% wood fibers and wood waste derived ISCC certified polypropylene. It is specially designed for injection moulding applications. Very high renewable content is ensured by wood fibres and renewable polypropylene. Wood fibres significantly increase stiffness and strength of polypropylene.

Applications UPM Formi EcoAce biocomposite material can be used in injection moulding applications instead of polypropylene, filled polypropylene or several other plastics.

Environment UPM Formi EcoAce is manufactured from softwood fibers and wood waste derived ISCC-certified polypropylene, which together reduce the usage of fossil based plastics. Material is fully recyclable or can be burned for energy.

Physical and mechanical properties

Property	Test method	WB 40	WB 50	WB 60
Density, g/cm^3	ISO 1183	1.02	1.05	1.08
Tensile strength, 50mm/min, N/mm^2	ISO 527-2	43	46	50
Tensile modulus, 50mm/min, N/mm2	ISO 527-2	3550	3750	4470
Elongation at break, 50mm/min, %	ISO 527-2	2.5	2.0	1.8
Charpy impact strength, unnotched +23 ºC, kJ/m^2	ISO 179-2/1eU	16	16	16
Dielectric constant (Dk)		2.6	2.8	2.9
Loss tangent, tan (δ)		0.017	0.024	0.027
Molding shrinkage (paralell), %	ISO 294-4*	0.9	0.5	0.5
Molding shrinkage (normal), %	ISO 294-4*	1.0	0.5	0.5
Wood fibre content, weight %		40	50	60

*The injection molding shrinkage has been tested according to the DIN EN ISO 294-4 standard (60 x 60 x 2mm plate). The geometry is not supposed to be directly translated into any other part geometry. Moreover, shrinkage is also influenced by process parameter setting and tooling design.

Pretreatment UPM Formi contains natural fibres which may absorb moisture if the package is open. The package should remain closed at all times when not in use. Recommended drying temperature and time is 115 ºC and 3 hours in a desiccant air dryer.

Injection moulding UPM Formi does not need special equipment for processing. Recommended processing parameters for typical injection moulding machine are:

Temperature profile from nozzle	190/185/180/175 ºC
Injection pressure	<1200 bar
Mould temperature	+60 - +120 ºC
Injection speed	As high as possible

Safety Maximum recommended processing temperature is 200 ºC. Overheating may cause risk of thermal degradation. Auto-ignition of UPM Formi material is possible after purging the moulding machine. Recommended to purge into cool water. Product is non-flammable under normal conditions of storage, manipulation and use. In the case of inflammation as a result of improper manipulation, or storage, it is preferable to use polyvalent powder extinguishers (ABC powder) or water, in accordance with fire protection system regulations.

Storage UPM Formi granulates should be protected from UV-light and stored in closed packages in dry conditions at temperature below 50 ºC. Air humidity can increase moisture content of the material and have negative effects on the end product properties.

All information is based on our knowledge and experience. This information has as sole purpose to act as a manual for safe handling, use, processing, transport, storage, removal and release and cannot be used as guarantee or identification of quality. You are required to comply with all rules, regulations, and guidelines applicable to the use of the UPM Formi material. In all cases, you are fully responsible for any claims or liabilities resulting from your handling, use, processing, transport, storage, removal and release of the UPM Formi material.