

Technical Specification

UPM Formi EcoAce SPB

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Material UPM Formi EcoAce SPB is renewable biocomposite made from 30-50% cellulose fibers and wood waste derived ISCC certified polypropylene. It is specially designed for injection moulding applications. Very high renewable content is ensured by cellulose fibres and renewable polypropylene. Cellulose 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 renewable cellulose fibers and ISCC-certified polypropylene, which together reduce the usage of fossil based plastics. Material is fully recyclable or can be burned for energy. All cellulose fibres are from sustainably managed forests.

Physical and mechanical properties	Property	Test method	SPB 30	SPB 40	SPB 50
	Density, g/cm ³	ISO 1183	1.03	1.08	1.13
Tensile strength, 50mm/min, N/mm ²	ISO 527-2	55	62	66	
Tensile modulus, 1mm/min, N/mm ²	ISO 527-2	3500	4600	5500	
Elongation at break, 50mm/min, %	ISO 527-2	6.0	4.5	3.5	
Charpy impact strength, notched +23 °C, kJ/m ²	ISO 179-2/1eA	5.5	6.0	7.0	
Charpy impact strength, unnotched +23 °C, kJ/m ²	ISO 179-2/1eU	35	36	37	
Dielectric constant (Dk)		2.5	2.6	2.8	
Loss Tangent, tan (δ)		0.012	0.015	0.022	
Molding shrinkage (paralell), %	ISO 294-4*	1.0	0.8	0.6	
Molding shrinkage (normal), %	ISO 294-4*	1.2	0.9	0.6	
Cellulose content, weight %		30	40	50	

*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. Package should remain closed at all times when not in use. Recommended drying temperature and time is 115 °C 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 °C
Injection pressure	<1200 bar
Mould temperature	+60 - +120 °C
Injection speed	As high as possible

Safety Maximum recommended processing temperature is 200 °C. Overheating may cause risk for 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 systems regulation.

Storage UPM Formi granulates should be protected from UV-light and stored in closed packages in dry conditions at temperature below 50 °C. 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.