

# Technical Specification

UPM Formi SP

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The Biofore Company



UPM

**Material** UPM Formi is a cellulose fibre reinforced plastic composite with high renewable material content. It is specially designed for injection moulding applications. Principal ingredients are specially selected cellulose fibres and virgin polypropylene. Cellulose fibres significantly increase stiffness and strength of polypropylene.

**Applications** Environmentally sound UPM Formi composite can be used in injection moulding applications instead of polypropylene, filled polypropylene or several other plastics.

**Environment** UPM Formi is manufactured from renewable cellulose fibers which reduce usage of oil based plastics. Material is fully recyclable or can be burned for energy. All cellulose fibres are from sustainably managed forests.

<b>Physical and mechanical properties</b>	<b>Property</b>	<b>Test method</b>	<b>SP 20</b>	<b>SP 30</b>	<b>SP 40</b>	<b>SP 50</b>
	Density, g/cm <sup>3</sup>	ISO 1183	0.99	1.03	1.08	1.13
	Tensile strength, 50mm/min, N/mm <sup>2</sup>	ISO 527-2	45	55	62	66
	Tensile modulus, 1mm/min, N/mm <sup>2</sup>	ISO 527-2	2600	3500	4600	5500
	Elongation at break, 50mm/min, %	ISO 527-2	7.5	6.0	4.5	3.5
	Charpy impact strength, notched +23 °C , kJ/m <sup>2</sup>	ISO 179-2/1eA	5.0	5.5	6.0	7.0
	Charpy impact strength, unnotched +23 °C , kJ/m <sup>2</sup>	ISO 179-2/1eU	34	35	36	37
	Cellulose content, weight %		20	30	40	50

**Pretreatment** UPM Formi granulates are ready to use, but it is highly recommended to dry granulates before injection moulding. 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 injection moulding machine.

**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.