

Material data sheet

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Rp 700

3d-printed by selective laser melting

The Rp700 is a micro-alloyed, thermo-mechanically rolled steel with high yield strength, which is widely used as sheet metal for cold forming.

Its microstructure is low in pearlite, ferritic with fine carbides (and isolated titanium carbonitrides). Bainite is permissible as a second phase. Linearity and a rolling texture determine the arrangement of the phases.

When processed by selective laser melting, a homogeneous microstructure without rolling texture or preferred direction is formed. The microstructure is ferritic martensitic with finest carbides, whereby the martensite portion clearly predominates. In contrast to the cold formed component, there is no work hardening in the printed components.

The printed components are weldable (e.g. laser welding) and coatable (e.g. cathodic dip coating).

Mechanical properties (typical values)

Relative density [%]	> 99
Tensile strength UTS [MPa]	815
Yield strength $R_{p0,2}$ [MPa]	700
Elongation at break E_f [%]	14

Physical and chemical properties

Alloying elements	Element	% Max
	C	< 0,2
	Si	< 0,6
	Mn	< 2,2
	Al	> 0,015
	Ti	< 0,25
	Nb	< 0,09
	V	< 0,2
	Mo	< 1