Material data sheet

confidential

Rp 420
3d-printed by selective laser melting

Rp 420 is a microalloyed, thermomechanically rolled steel with medium yield strength used in sheet form for cold forming.
In coil, its microstructure is low in pearlite, ferritic with fine carbides. A rolling texture determines the arrangement of the phases.

When processed by selective laser melting, a homogeneous microstructure forms without rolling texture or preferred direction. The microstructure becomes increasingly ferritic martensitic with very fine carbides. In contrast to cold-formed components, 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]	450
Yield strength $R_{p0,2}$ [MPa]	420
Elongation at break Ef [%]	16

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