GRÄNGES

DISPAL® S220 AM (AlSi35)

The properties in this material data sheet reflect minimum values that are achieved when printing S220 powder on an industrial Additive Manufacturing (AM) machine. The machine used is a Concept Laser M2, Laser Powder Bed Fusion category.

DISPAL ® S220 AM (AlSi35) is a material characterized by a high stiffness, low thermal expansion, excellent wear and tear behavior, good machinability and a low density. The material is used in a wide range of industries such as linear technology, optical industry and aerospace. Typical applications include housings, moving components and other lightweight applications.

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CHEMICAL COMPOSITION

	Min	Max
Al	Balance	
Si	34.0%	36.0%

PHYSICAL PROPERTIES
(At 20°C)

Property	Unit	Value
Absolute density	g/cm³	2.54 ± 5%
Relative density[1]	[%]	≥ 99.8

THERMAL CONDUCTIVITY

Temperature (°C)	30	100	200	300	400
Value (W/mK)	152.4	144.3	136.8	131.0	123.5

COEFFICIENT OF THERMAL EXPANSION

Property	Unit	Value
CTE-value 20 to 100°C	10^{-6}/K	15,1 ± 0.5
CTE-value 20 to 200°C	10^{-6}/K	16,0 ± 0.5
CTE-value 20 to 300°C	10^{-6}/K	16,8 ± 0.5

MECHANICAL PROPERTIES[2]

HEAT TREATED CONDITION: (minimum values)

Property	Unit	Temperature					
		20°C	100°C	150°C	200°C	250°C	300°C
Tensile strength, R_m	MPa	200					
Yield strength, $R_{p0,2}$	MPa	115					
Elongation at break, A	%	1.5					
Young's modulus, E	GPa	90					
Hardness, HV30							

ROUGHNESS MEASURMENT[4]

Improvement of surface roughness can be achieved based on customer requirements minimum values)

	Unit	Heat treated
		M
Rougness average, Ra	[µm]	8
Mean roughness depth, Rz	[µm]	50

The material properties and mechanical characteristics reflect the current knowledge and experience at the time of publication and do not form a sufficient basis for component design and use on their own. Certain part properties are not guaranteed, and it is the responsibility of the user to qualify the properties and their suitability for specific applications.

[1] Optical density determination at test specimen by light microscopy
[2] Tensile test according to DIN EN Iso 6892-1 Methode B, test samples were turned before the test; values for vertical specimen (Z direction)
[4] Roughness measurement according to DIN EN ISO 16610-21 0.8mm

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