MATERIAL DATA SHEET.

Inconel IN718.

Inconel / IN718	60 µm

Material data sheet for **InconelIN718** parts produced by **Laser Melting** .

Additional information	Unit	As-built	Heat-treated[2]
Layer thickness	µm	60	
Component density[3]	%	≥ 99.5	

Tensile test[4]				M	SD	M	SD
Tensile strength	R_m	MPa	H	1037	20	1467	22
			V	942	15	1369	20
Offset yield strength	$R_{p0,2}$	MPa	H	665	29	1248	24
			V	606	8	1206	12
Elongation at break	A	%	H	38	5	13	5
			V	31	5	15	5
Reduction of area	Z	%	H	35	3	18	4
			V	36	6	22	4
Young's modulus	E	GPa	H	172	48	182	10
			V	154	13	194	7

Hardness test[5]		M	SD	M	SD
Vickers hardness	HV10	292	6	458	9

Tenacity test[5]				M	SD	M	SD
Impact energy	KV	J	H	74	3	22	2
			V	80	12	25	2

Roughness measurement[6]			As-built	
			M	SD
Roughness average	Ra	µm	8	2
Mean roughness depth	Rz	µm	50	8

SPECIAL FEATURES:

[1] Material according to DIN 17744:2002, ASTM B637
[2] Specimens were heated up to 980 °C in a furnace, held for 1 h, followed by air-cooling. Then anew heating up to 720 °C, hold for 8 h, then cool down to 620 °C in furnace with 50 °C/h. Hold at 620 °C for 8 h, then air-cooling.
[3] Optical density determination by light microscopy
[4] Tensile test according to DIN EN ISO 6892-1:2017 B (DIN 50125:2016 – B6x30); orientation: 0° and 90°; heat treatment: none; testing machine: Zwick 1484; load range: 200 kN; testing speed: 0,008 1/s; testing temperature: room temperature; test laboratory: EWIS GmbH. Test samples were turned before tensile test
[5] Hardness testing according to DIN EN ISO 6507-1:2018
[6] Roughness measurement according to DIN EN ISO 4288:1998; λc = 2,5 mm

Indicative figures only. Actual figures may be change depending on part geometry and other factors.

Update. June 2024