

L-PBF PROCESS

Layer thickness	40 µm
Laser power	400 W
Theoretical build-up rate	15,8 cm ³ /h

POWDER MATERIAL

Inconel 718 has a very good yield strength, tensile strength, and creep rupture behavior. It offers exceptional structural strength up to 700°C operating temperature and an excellent oxidation resistance up to 1000°C. For this reason, IN718 is the one of the most widely used materials used in turbines. IN718 is ideal for high temperature applications in the aerospace and automotive industries below 700°C. In addition, Inc718 is a precipitation hardenable alloy, and by applying a heat treatment, the material properties can be tailored to your specific application.

PHYSICAL PROPERTIES

Particle Size	15 µm – 45 µm
Density	8,2 g/cm ³
Thermal conductivity	11,2-11,7 W/mK
Melting range	1260 °C – 1335 °C
Thermal expansion	13,0 x 10 ⁻⁶ K ⁻¹

Aconity3D GmbH | Kaiserstraße 98 | 52134 Herzogenrath
 Tel.: +49 (0) 2407 55292-0 | Fax.: +49 (0) 2407 55292-99 | info@aconity3d.com

Directors: Dr. Yves Hagedorn, Hendrik Blom, Andreas Görres

VAT ID.: DE295160526 | Tax ID: 201/5940/4991
 Local Court Aachen: HRB18970

Account: 1070174691 | Routing: 39050000
 Sparkasse Aachen
 IBAN: DE66 3905 0000 1070 1746 91 | BIC: AACSD33XXX

US-Dollar Account: 107877301 | Routing: 39070024
 Deutsche Bank PGK Aachen
 IBAN: DE36 3907 0024 0107 8773 01 | BIC: DEUTDE33

CHEMICAL COMPOSITION

Element -	Mass fraction
Fe	Balance
Ni	50-55%
Cr	17-21%
Nb	4,75-5,50%
Mo	2,8-3,3%
Ti	0,6-1,2%
Al	0,2-0,8%
Co	1,0%
Etc	max 2,1%

MECHANICAL DATA

As built

Tensile strength	R _m	901,3 MPa ± 13,4 MPa
Yield strength	R _{p0,2}	579,7 MPa ± 55,9 MPa
Elongation at break	A	30,32% ± 0,82%
Young's modulus	E	118,15 GPa ± 19,98 GPa
Vickers Hardness		298 HV 10
Roughness average	R _a	10
Mean roughness depth	R _z	51

All values are subject to natural volatilities depending on applied powder material, process parameters and surrounding conditions.

Aconity3D GmbH | Kaiserstraße 98 | 52134 Herzogenrath
 Tel.: +49 (0) 2407 55292-0 | Fax.: +49 (0) 2407 55292-99 | info@aconity3d.com

Directors: Dr. Yves Hagedorn, Hendrik Blom, Andreas Görres

VAT ID.: DE295160526 | Tax ID: 201/5940/4991
 Local Court Aachen: HRB18970

Account: 1070174691 | Routing: 39050000
 Sparkasse Aachen
 IBAN: DE66 3905 0000 1070 1746 91 | BIC: AACSD33XXX

US-Dollar Account: 107877301 | Routing: 39070024
 Deutsche Bank PGK Aachen
 IBAN: DE36 3907 0024 0107 8773 01 | BIC: DEUTDE33