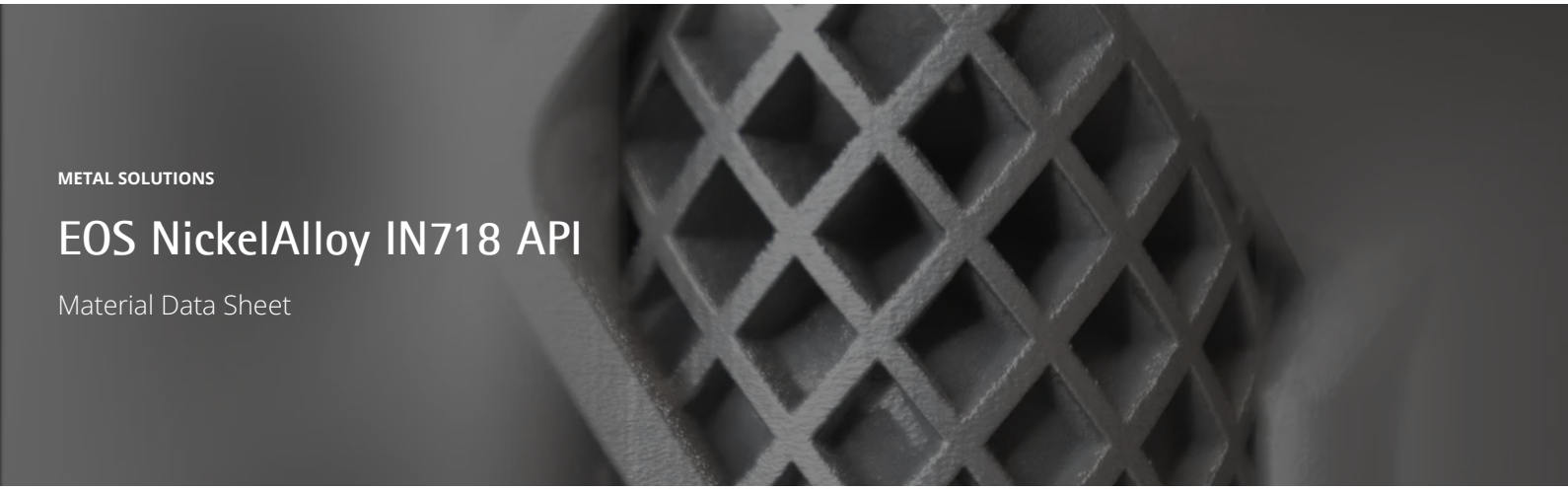


METAL SOLUTIONS

EOS NickelAlloy IN718 API

Material Data Sheet

EOS NICKELALLOY IN718 API

IN718 Alloy According to Oil and Gas Industry Standard

EOS NickelAlloy IN718 API is a nickel-based alloy designed to meet the rigorous standard of the oil and gas industry. Parts printed using this alloy have high tensile ductility and excellent corrosion resistance.

MAIN CHARACTERISTICS

- High impact toughness at low temperatures
- High tensile ductility
- Excellent corrosion resistance in typical oil and gas environments
- Available in 10 kg drum and 500 kg Big Bag packaging

Download Process Data Sheet (PDF)

TYPICAL APPLICATIONS

- Piping, tubing, and manifolds for downhole applications
- Pumping, separation, and injection equipment
- Fixtures and fasteners

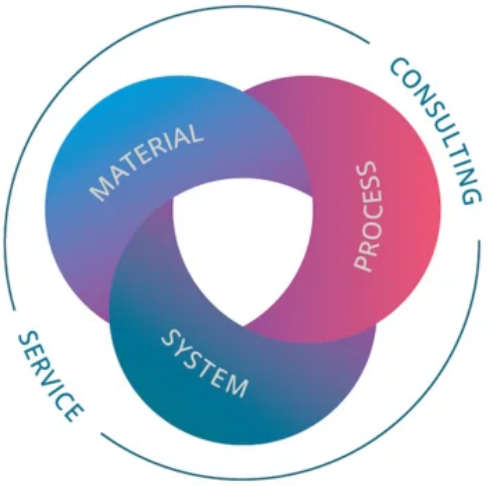
The EOS Quality Triangle

EOS uses an approach that is unique in the AM industry, taking each of the three central technical elements of the production process into account: the system, the material and the process. The data resulting from each combination is assigned a Technology Readiness Level (TRL) which makes the expected performance and production capability of the solution transparent.

EOS incorporates these TRLs into the following two categories:

- → Premium products (TRL 7-9): offer highly validated data, proven capability and reproducible part properties.
- → Core products (TRL 3 and 5): enable early customer access to newest technology still under development and are therefore less mature with less data.

All of the data stated in this material data sheet is produced according to EOS Quality Management System and international standards

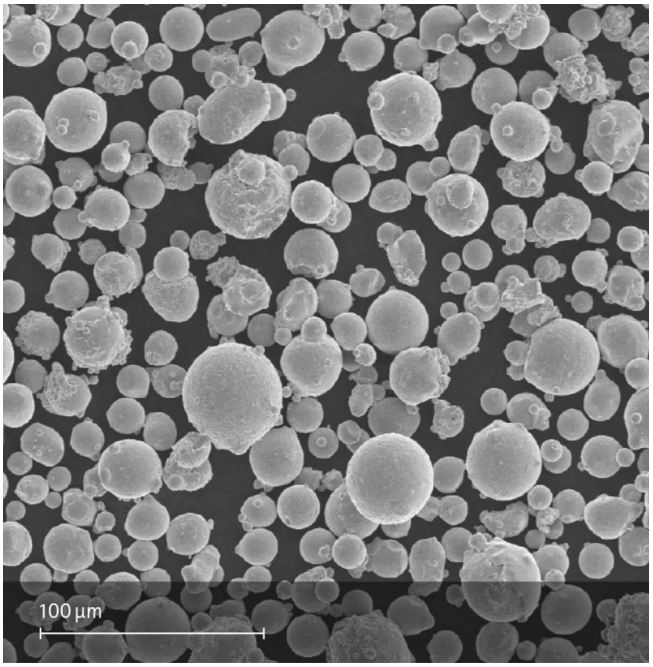


POWDER PROPERTIES

Powder and built part compositions meet the chemical composition requirements of API 6ACRA standard.

Powder Chemical Composition (wt.-%)

Element	Min.	Max.
Fe		Balance
Ni	50	55
Cr	17	21
Nb + Ta	4.87	5.2
Mo	2.8	3.3
Ti	0.8	1.15
Al	0.4	0.6
C	-	0.045
Co	-	1
Mn	-	0.35
Si	-	0.35
P	-	0.01
S	-	0.01
B	-	0.006
Cu	-	0.23
Pb	-	0.001
Se	-	0.0005
Bi	-	0.00005
Ca	-	0.003
Mg	-	0.006



Powder Particle Size

GENERIC PARTICLE SIZE DISTRIBUTION	**20 - 55 µm**

HEAT TREATMENT

Description

Heat treatment includes solution treatment, rapid quenching and aging steps. Developed according to data from: (i) standard "API 6ACRA, Age-hardened Nickel-based Alloys for Oil and Gas Drilling and Production Equipment (Houston, TX: American Petroleum Institute, 2015)", (ii) literature and (iii) test runs made at EOS. Detailed information on the heat treatment is available in the application notes.

Steps

Step 1:

Solution Treatment: 1060 °C ±10 °C, 120 min.
Quenching: forced Ar-gas quenching with rate 130 °C/min (1060-300 °C).

Step 2:

Aging: 815 °C ± 5 °C, 360 min. Forced Ar-gas cooling with rate ~25 °C/min (815-300 °C).

HEADQUARTERS

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