

Material
Data Sheet



EOS Nickel NiCP

Commercially Pure Nickel

EOS Nickel NiCP

Main Characteristics:

- High purity
- High ductility
- Good corrosion resistance

Typical Applications:

- Semiconductor manufacturing parts
- Chemical industry parts

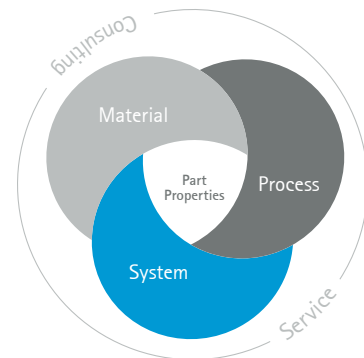
The EOS Quality Triangle

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.

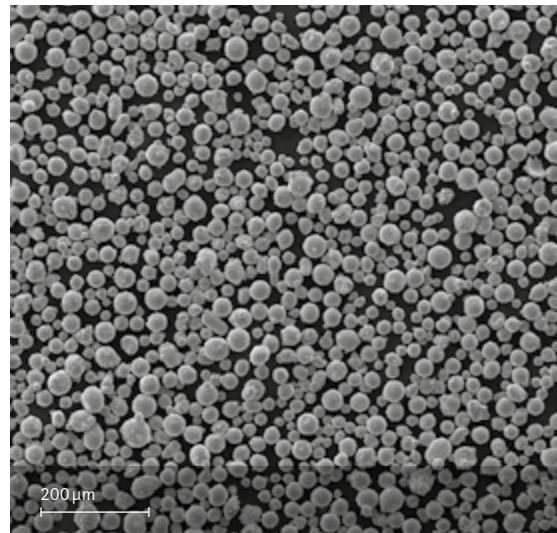


Powder Properties

Powder and built part compositions meet the chemical composition requirements of ASTM B162 and SAE AMS5553.

Powder chemical composition (wt.-%)

Element	Min.	Max.
Ni	99.0	-
C	-	0.02
Mn	-	0.35
Si	-	0.35
S	-	0.010
Fe	-	0.40
Cu	-	0.25



SEM image of powder

Powder particle size

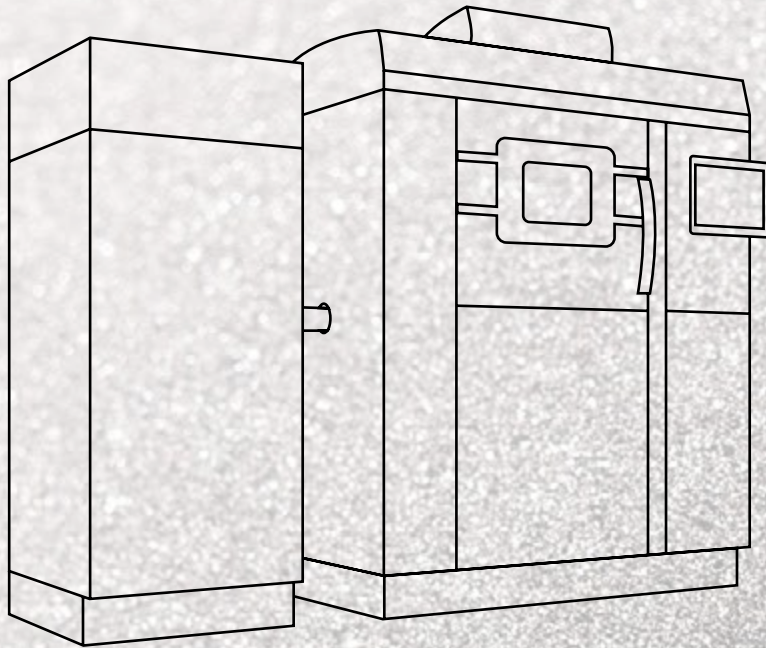
Generic particle size distribution	15-63 μm
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Heat Treatment

Stress relieve: Hold temperature 580 °C, hold time minimum 2 h when thoroughly heated. Air cooling or equivalent cooling rate.

Coefficient of Thermal Expansion ASTM E228

Temperature	25-100 °C	25-200 °C	25-300 °C	25-400 °C
CTE	12.6 *10 ⁻⁶ /K	13.9*10 ⁻⁶ /K	14.5*10 ⁻⁶ /K	15.0*10 ⁻⁶ /K



EOS Nickel NiCP for EOS M 290 | 80 μm

Process Information

Chemical and Physical Part Properties

Heat Treatment

Additional Data

EOS Nickel NiCP for EOS M 290 | 80 µm

Process Information

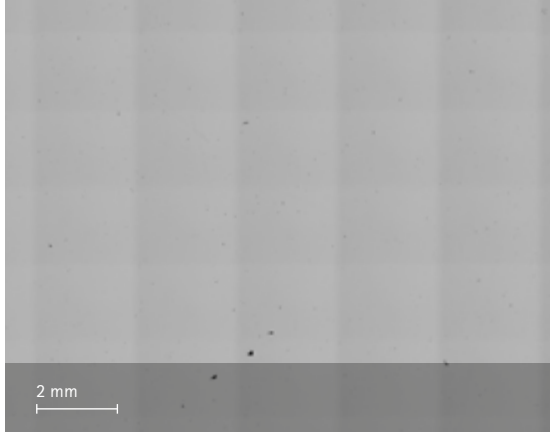
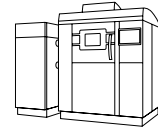


System set-up	EOS M 290
EOSPAR name	NiCP_080_CoreM291_1xx
Software requirements	EOSPRINT 2.15 or newer EOSYSTEM 2.19 or newer
Powder part no.	9020-0015
Recoater blade	Ceramic
Nozzle	Grid
Inert gas	Argon
Sieve	63 µm

Additional information

Layer thickness	80 µm
Volume rate	8.0 mm ³ /s

Chemical and Physical Properties of Parts



Micrograph of polished surface

Defects	Result
Average defect percentage	< 0.1 %
Density, ISO3369	$\geq 8.85 \text{ g/cm}^3$

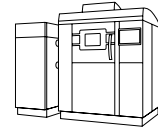
Typical mechanical properties

Heat treated	Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Elongation at break A [%]	Reduction of area Z [%]
Horizontal	220	400	49	81
Vertical	210	370	46	67

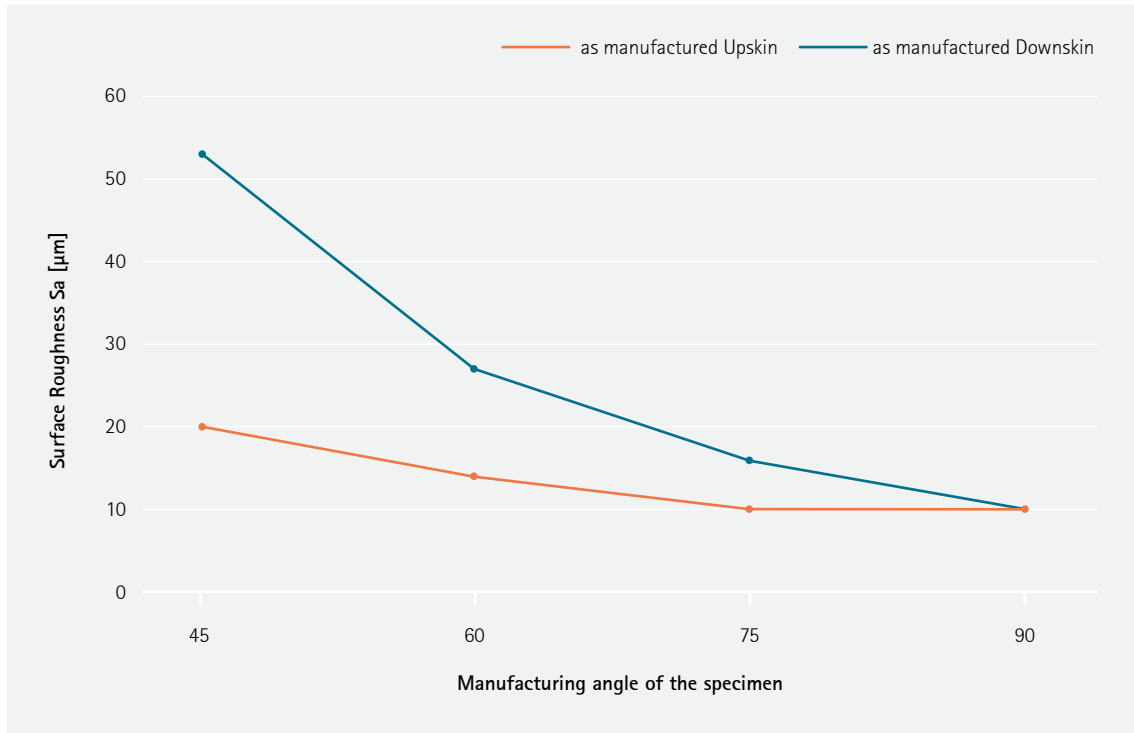
Typical mechanical properties

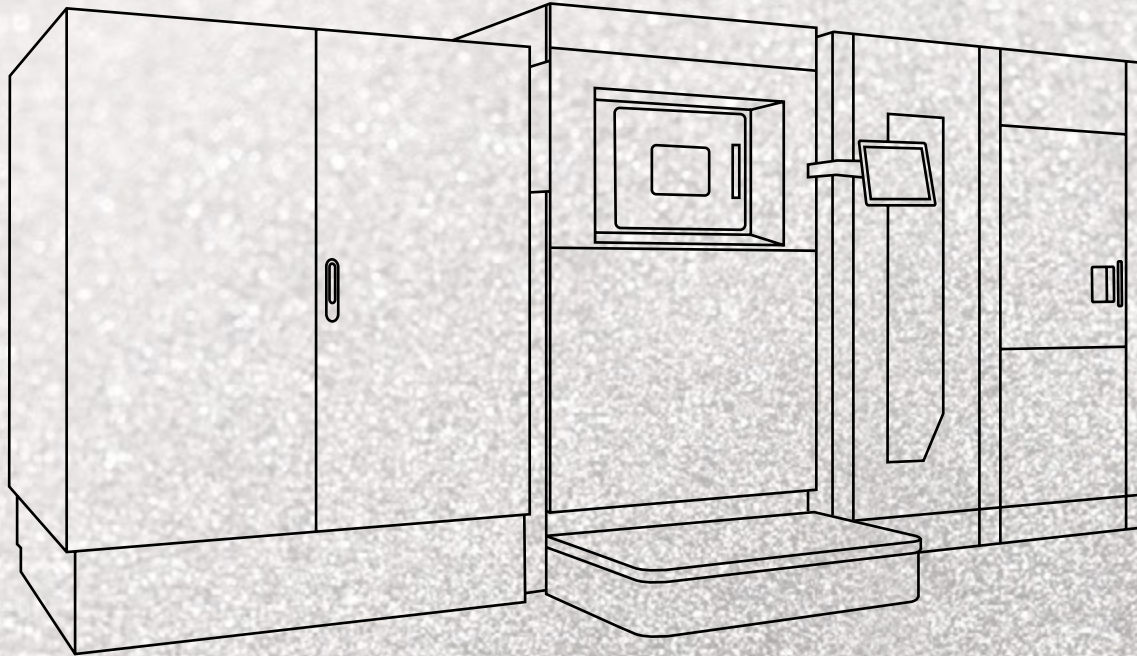
As manufactured	Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Elongation at break A [%]	Reduction of area Z [%]
Horizontal	350	430	39	78
Vertical	310	400	47	79

Additional Data



Surface Roughness





EOS Nickel NiCP for EOS M 400-4 | 80 μm

Process Information

Chemical and Physical Part Properties

Heat Treatment

Additional Data

EOS Nickel NiCP for EOS M 400-4 | 80 µm

Process Information

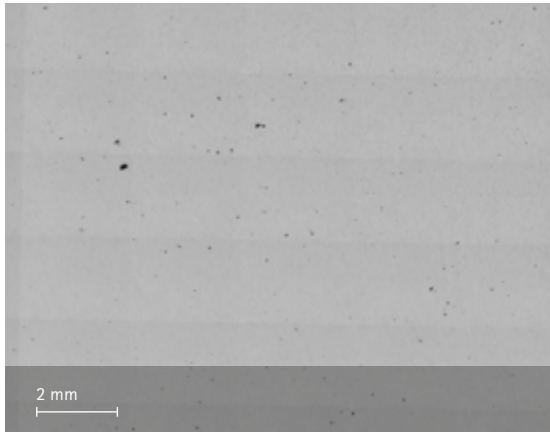
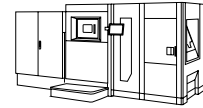


System set-up		EOS M 400-4
EOSPAR name	NiCP_080_CoreM404_1xx	
Software requirements	EOSPRINT 2.15 or newer EOSYSTEM 2.19 or newer	
Powder part no.	9020-0015	
Recoater blade	Ceramic	
Nozzle	Aerospike	
Inert gas	Argon	
Sieve	63 µm	

Additional information

Layer thickness	80 µm
Volume rate	8.0 mm ³ /s

Chemical and Physical Properties of Parts



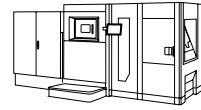
Micrograph of polished surface

Defects	Result
Average defect percentage	< 0.2 %

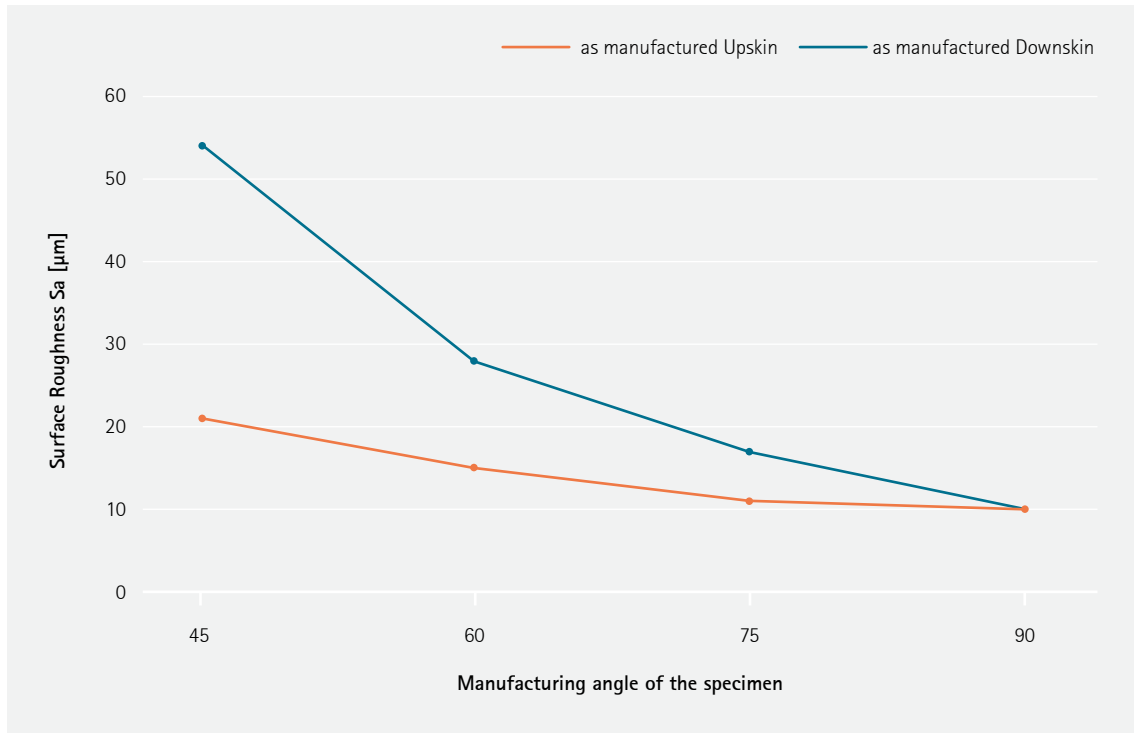
Typical mechanical properties

Heat treated	Yield strength $R_{p0.2}$ [MPa]	Tensile strength R_m [MPa]	Elongation at break A [%]	Reduction of area Z [%]
Horizontal	250	410	46	83
Vertical	240	390	53	85

Additional Data



Surface Roughness



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Status 03/2025

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Cover: This image shows a possible application.

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