

MIMETE® M 316L

FOMAS Group's metal powder plant has been specifically designed to serve the additive manufacturing market. A VIGA, Vacuum Induction melting Inert Gas (argon or nitrogen) Atomization, ensures high purity and spherical powders.

FOMAS Group's guarantees the properties of the standard powder "M 316L" set forth in the datasheet included in this page, which is available on stock.

PRODUCT	MIMETE® M 316L	According to UNS S31603 and EN 1.4404
Non-magnetic, high corrosion resistance alloy, high toughness also at low temperature.		
Production process	Vacuum Inert Gas Atomization	
Packaging	10 kg plastic sealed bottle or 100 kg steel drum, with silica bags	

CHEMICAL PROPERTIES ^{1,2}										
MIMETE® M 316L	C	Cr	Fe	Mn	Mo	N	Ni	P	S	Si
MIN	0	16,50	bal	0	2,00	0	10,00	0	0	0
MAX	0,030	18,00		2,00	2,50	0,10	13,00	0,045	0,015	1,00

¹ Minor element ranges, even if not explicitly listed in the table, comply with both UNS and EN standards.

² MIMETE® powders are supplied to a tighter specification to minimise batch-to-batch variations.

PHYSICAL PROPERTIES ³		Sampling / Analysis Methods
Nominal particle range	20-53 (max 5% over and under size)	ASTM B215 / ASTM B822 / B214

³ Other standard particle ranges (i.e. 0-20, 50-100 and 50-150 µm) available on request.

The production plant has also a testing laboratory accredited by ACCREDIA in compliance with the requirements of the ISO/IEC 17025 international standard.

Unless provided otherwise hereto, terms and conditions ruling the offer of MIMETE® apply.

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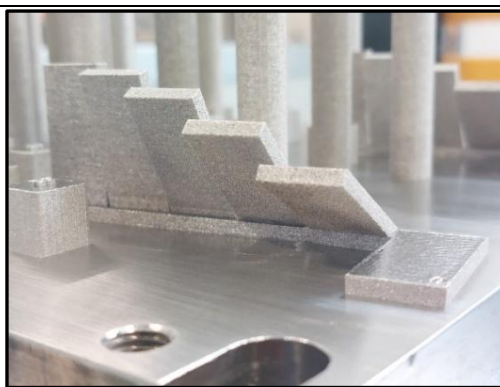
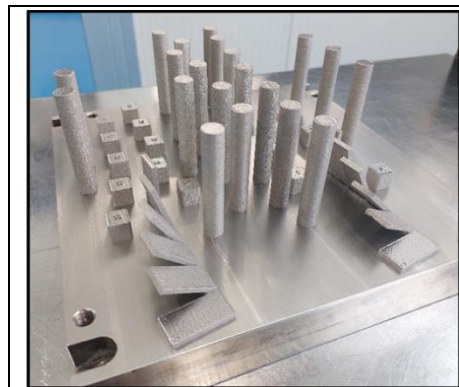
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LEGAL DISCLAIMER

All data included in following pages are for reference purposes only. They are not sufficient for designing or certifying components and no warranties or guarantees are expressed against these results. However, psd and chemical composition of the powder lot 8240407S006 are compliant to allowable limits reported on page 1.

INSPECTION CERTIFICATE TYPE 3.1 ACCORDING TO EN10204.

POWDER LOT	8240407S006
PRINTER - SOFTWARE	EOS M290 - EOSPrint 2.13 (316L_040_FlexM291_1.11)
INERT GAS	Argon
RECOATER BLADE	HSS
LAYER THICKNESS	40 µm
VOLUME RATE	4.2 mm ³ /s (15.2 cm ³ /h)



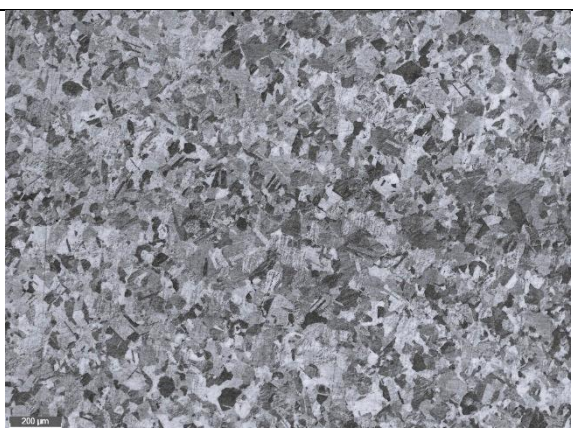
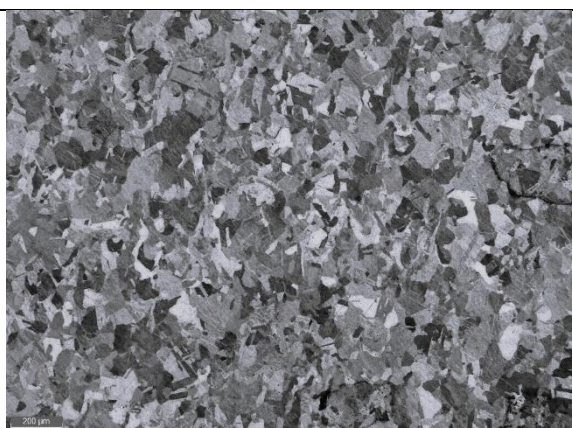
PROPERTIES (as built, AVG)	Test Standard	F3184-16	M 316L
Hardness HRB	UNI EN ISO 6508-1	NA	94
Hardness HBW	UNI EN ISO 6506-1	NA	223
Yield strength (vertical) [MPa]	ISO 6892-1:2019	NA	533
Tensile strength (vertical) [MPa]		NA	627
Elongation at break (vertical) [%]		NA	41,8
Reduction of area (vertical) [%]		NA	78,9

HEAT TREATMENT	According to AMS 2759/4D
Stress relief: at 900°C for min 2h - water quenching. Solution annealing: at 1150°C for min 1,5h - water quenching.	

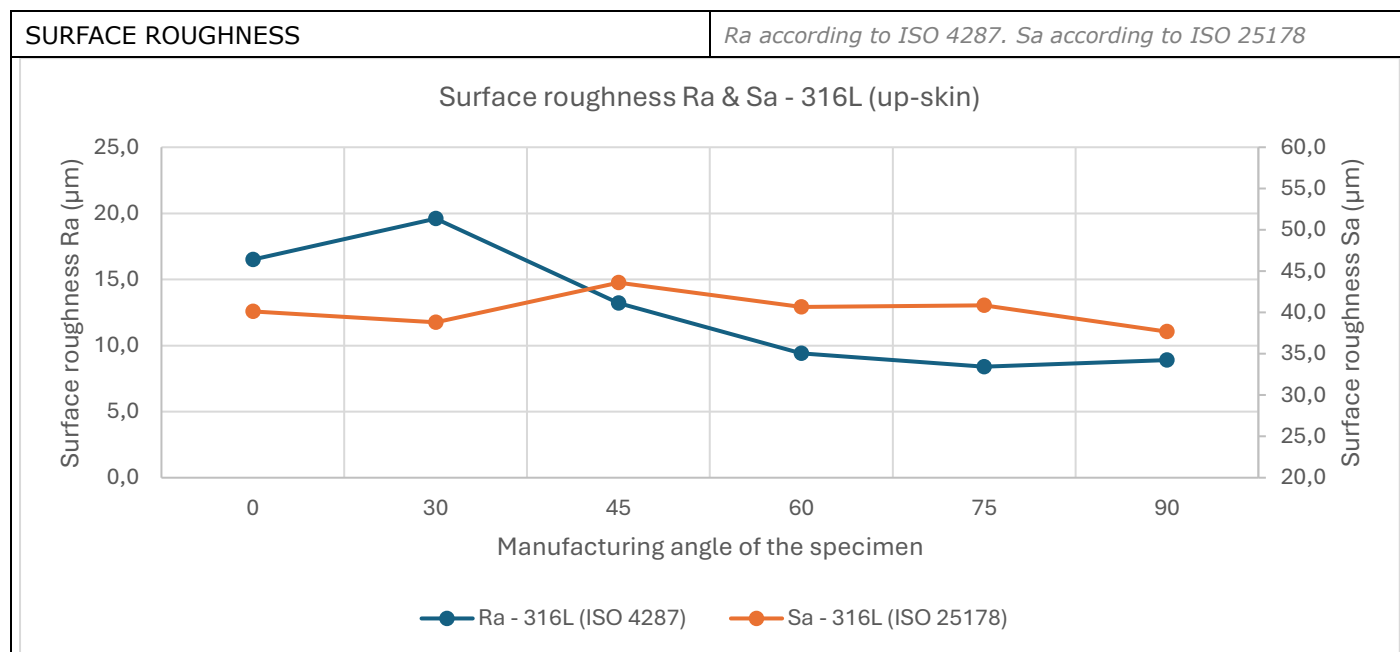
PROPERTIES (heat treated, AVG)	Test Standard	F3184-16	M 316L
Hardness HRB	UNI EN ISO 6508-1	NA	87
Hardness HBW	UNI EN ISO 6506-1	NA	181
Yield strength (vertical) [MPa]	ISO 6892-1:2019	≥ 205	329
Tensile strength (vertical) [MPa]		≥ 515	588
Elongation at break (vertical) [%]		≥ 30	57,0
Reduction of area (vertical) [%]		≥ 30	77,3

ASTM F3184-16: Standard Specification for Additive Manufacturing Stainless Steel Alloy (UNS S31603) with Powder Bed Fusion (Table 3)

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HEAT TREATED MICROSTRUCTURE		Etched according to ASTM E407-23 with Kalling's 2 reagent.	
			
Section_XY_50x		Section_YZ_50x	

PROPERTIES	Test Standard	M 316L
Density [g/cm ³]	UNI EN ISO 3369-2010	7,95
Avg. Defects [%]	ASTM E3-11(2025)	0,01



Manufacturing angle: 0° is the horizontal printing plane.

COEFFICIENT OF THERMAL EXPANSION (avg α_m) (as built)	According to ASTM E228-22 [*10 ⁻⁶ /K]
25-100 °C	16,22
25-200 °C	16,64
25-300 °C	17,18
25-400 °C	17,63
25-500 °C	17,99
25-600 °C	18,38
25-700 °C	18,74