DSM 1.2.10

1.4318 / FGM301L
Fine Grain Stainless Steel for Stencils

General Info:

1.4318 is an austenitic CrNi stainless steel with high nitrogen and relatively low nickel content. Due to its high nitrogen content, 1.4318 has increased mechanical strength and shows a high degree of work hardening on mechanical deformation. As nitrogen-alloying improves corrosion properties.

1.4318 is used in applications where corrosion resistance and a combination of high mechanical strength and good formability are needed. Due to its tendency to work hardening, 1.4318 can absorb an increased amount of energy during deformation. It can be delivered in the temper rolled condition with different strength levels.

The Fine Grain structure of this steel results in significant improvements to edge & thru material definition when using laser cutting processes for stencil apertures.

This grade combines the following characteristics:

- Corrosion resistance similar to 304
- Higher minimum 0.2% PS proof stress compared to 304 – 350 MPa
- Good toughness
- Higher strength and work hardening requires larger forces in forming
- Greater springback than 304

FGM301L is a vendor specific formulation derived from the Japanese Standard SUS301L. Other standards shown are indicative & are nearest equivalents.

ASM (DEK) Applications:

Fine Grain SMT Stencils come in a range of sizes & thicknesses for use with the DEK VectorGuard Frame System.

These values are representative of the material. For critical applications, refer to Vendors Datasheet.

TYPICAL MECHANICAL PROPERTIES @20°C	
DENSITY:	**7930 Kg/m^3**
YOUNGS MODULUS:	**200 GPa**
POISSONS RATIO:	**0.26 – 030**
YIELD STRENGTH	**370 MPa**
TENSILE STRENGTH	**1177 MPa**
Grain Size	**1 – 2µm**
Thickness	**0.080 – 0.250 mm**

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CHEMICAL ANALYSIS	1.4318	FGM301L	BENEFIT
C	**0.03 Max**	**0.03 Max**	Improves hardness & strength.
Si	**1 Max**	**1 Max**	Combined with Chrome, improves tensile strength.
Mn	**2 Max**	**2 Max**	Combines with sulphur: good machining & finish.
Nickel	**6 – 8**	**6.5 – 8**	High strength work hardening, without ductility loss.
P	**0.045 Max**	**0.04 Max**	Increases resistance to corrosion.
S	**0.015 Max**	**0.03 Max**	Good for machining.
Cr	**16.5 – 18.5**	**17 – 18**	Good for corrosion resistance.
N	**0.1 – 0.2**	**0.1 – 0.2**	Provide increased strength.

COUNTRY	MATERIAL STANDARD
BRITISH: BS	1.4318
AMERICAN: SAE	301LN
EUROPEAN STEEL No.	X2CrNiN18-7
JAPANESE GRADE	SUS301L / FGM301L