



unimed

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## INFORMATION SHEET

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<b>MATERIAL</b>	<b>AISI 316LS</b>	<b>FAMILY</b>	Austenitic stainless steel	<b>SHEET #</b>	AISI316LS.FIE
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EQUIVALENCY				
DIN	AFNOR	UNS	SS	ISO
1.4598 1.4404 +S +Cu (X2CrNiMo17-10-2+S+Cu)	Z 3 CND18.12.2+S+Cu	-	-	-

USE			
This material is commonly used for the manufacture of the following product elements:			
<input type="checkbox"/> Cannula (tube)	<input type="checkbox"/> Stylet (wire)	<input checked="" type="checkbox"/> Hub	<input checked="" type="checkbox"/> Handle
<input checked="" type="checkbox"/> Adaptor	<input checked="" type="checkbox"/> Stopcock		

GENERAL CHARACTERISTICS		
Straightness	Circularity	Concentricity (only tube)
2 mm difference for 1'000 mm length	- Tube : Circularity $\cong$ ID tolerance - Wire: Circularity $\cong$ OD tolerance	$\leq$ 10% tube thickness
Outer surface finish	Inner surface finish (only tube)	-
N5 ( $R_{a\max} = 0.4$ )	N7 ( $R_{a\max} = 1.6$ )	-

MANUFACTURING			
Turing, drilling, milling	Grinding	Laser cutting	Electro erosion machining
Good	Not suggested	Good	Good
Sharpening	Polishing	Laser marking	-
Excellent	Good	Excellent	-

ASSEMBLING			
Bonding	Press fit	Soldering	Laser welding / Plasma
Good	Not suggested	Good	Good

CHEMICAL COMPOSITION [%]									
C	Si	Mn	P	S	Cr	Ni	Mo	Cu	-
$\leq 0.03$	$\leq 1.0$	$\leq 2.0$	$\leq 0.045$	0.12-0.18	16.5-18.5	11-14	2.0-2.5	1.0-2.0	-

The reference to the chemical composition is the one from UNS.

The chemical composition from other equivalent standards may be slightly different from that provided in this information sheet.

MECHANICAL PROPRIETIES	
Material state	Tensile strength $R_m$ [MPa]
Hard	600 – 1'000

PHYSICAL PROPRIETIES		
Density $\rho$ [kg/m <sup>3</sup> ]	Electrical resistivity $\rho$ [ $\mu\Omega \times m$ ]	Thermal conductivity $\lambda$ [W/(m $\times$ K)] at 20°C
7'900	0.73	15
Modulus of elasticity E [GPa] at 20°C	Coefficient of linear thermal expansion $\alpha$ [ $10^{-6} / ^\circ C$ ] between 20°C and 100°C	Specific heat capacity $C_p$ [J/(kg $\times$ K)] at 20°C
200	17.0	500

Corrosion resistance
Excellent corrosion resistance

BIOCOMPATIBILITE (ISO 10993-1)
The austenitic stainless steel AISI 316LS is a metallic material derived from AISI 316 stainless steel, material referenced in the American standard of surgical instruments ASTM F899, considered as clinically established and recognized material (state-of-the-art) for devices medical. It may require justifications and/or specific biocompatibility tests. Their needs can be determined in a biological safety analysis of specific medical device. The customer is responsible to verify the compatibility of the material selected from its intended use.

STANDARDS	
ISO 15510	Stainless steels -Chemical composition
ISO 9626	Stainless steel needle tubing for the manufacture of medical devices
ISO 7153-1	Surgical instruments - Metallic materials - Part 1: Stainless steel
ASTM F899	Standard Specification for Wrought Stainless Steels for Surgical Instruments

All this information are for reference only. They have no legal or contractual commitment Unimed SA.

04.08.2022	Page 1/1
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