

STAINLESS STEEL TUBING FOR SURGICAL IMPLANTS

316L Medical Grade, ASTM F 138, Material Data

Chemical Composition

Carbon	max. 0,030 wt.-%
Silicon	max. 0,75 wt.-%
Manganese	max. 2,0 wt.-%
Phosphorus	max. 0,025 wt.-%
Sulfur	max. 0,010 wt.-%
Nitrogen	max. 0,10 wt.-%
Chromium	17,0 - 19,0 wt.-%
Molybdenum	2,25 - 3,0 wt.-%
Nickel	13,0 - 15,0 wt.-%
Copper	max. 0,5 wt.-%
Iron	balance

Physical Properties

Melting point	1750° C
Density	8,0 g/cm ³
Modulus of Elasticity	200 x 10 ³ MPa

Mechanical Properties

	cold-worked	annealed
Ultimate Tensile Strength	min. 860 MPa	min. 490 MPa
Yield Strength	min. 690 MPa	min. 190 MPa
Elongation	min. 7 %	min. 35 %

Microstructure in fully annealed condition

Austenitic Grain Size	7
Absence of delta ferrite	Free of delta ferrite, examined at 100 x magnification

Inclusion content _____
(ISO 4967, Method A, Plate II)

Type of inclusion	Inclusion content reference number	
	thin	thick
A - Sulfide	1,5	1,0
B - Aluminates	1,5	1,0
C - Silicates	1,5	1,0
D - Oxides, globular	1,5	1,0

Comments

Properties strongly depend on processing history and ambient temperature. Mechanical values listed above are typical for uniaxial tension. Upon request, we can also deliver this material with other properties.