

STAINLESS STEEL TUBING FOR SURGICAL DEVICES

304, 304 L, 321, 17,7 ph Material Data

304
1.4301

304 L
1.4306

321
1.4541

17,7 ph
1.4568

Chemical Composition

Carbon	max. 0,08 wt.-%	max. 0,03 wt.-%	max. 0,08 wt.-%	max. 0,09 wt.-%
Silicon	max. 0,75 wt.-%	max. 0,75 wt.-%	max. 0,75 wt.-%	max. 1,00 wt.-%
Manganese	max. 2,0 wt.-%	max. 2,0 wt.-%	max. 2,0 wt.-%	max. 1,00 wt.-%
Phosphorus	max. 0,045 wt.-%	max. 0,045 wt.-%	max. 0,045 wt.-%	max. 0,04 wt.-%
Sulfur	max. 0,03 wt.-%	max. 0,03 wt.-%	max. 0,03 wt.-%	max. 0,03 wt.-%
Nitrogen	max. 0,10 wt.-%	max. 0,10 wt.-%	max. 0,10 wt.-%	-
Chromium	18,0 - 20,0 wt.-%	18,0 - 20,0 wt.-%	17,0 - 19,0 wt.-%	16,0 - 18,0 wt.-%
Molybdenum	-	-	-	-
Nickel	8,0 - 12,0 wt.-%	8,0 - 12,0 wt.-%	9,0 - 12,0 wt.-%	6,5 - 7,75 wt.-%
Titanium	-	-	-	-
Aluminium	-	-	-	0,75 - 1,5 wt.-%
Iron	balance	balance	balance	balance

Physical Properties

Melting Point	1400° C	1400° C	1371° C	1400° C
Density	8,0 g/cm ³	8,0 g/cm ³	9,01 g/cm ³	7,65g/cm ³
Modulus of Elasticity	193 x 10 ³ MPa	193x10 ³ MPa	193x10 ³ MPa	200x10 ³ MPa

Mechanical Properties annealed

Ultimate Tensile Strength	min. 500 MPa	min. 500 MPa	min. 500 MPa	min. 800 MPa
Yield Strength	min. 200 MPa	min. 200 MPa	min. 200 MPa	min. 200 MPa
Elongation	min. 40%	min. 40%	min. 40%	min. 20%

Microstructure in fully annealed condition

Austenitic Grain Size	min. 6	min. 6	min. 8	min. 8
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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.