Datasheet updated 2012-08-02 10:35:17 (supersedes all previous editions)

Sandvik Bioline High-N

(Bar)

Sandvik Bioline High-N is a molybdenum and nitrogen alloyed austenitic stainless steel characterized by:

- A proof strength up to twice that of Sandvik Bioline 316LVM in annealed condition
- Higher corrosion resistance than Sandvik Bioline 316LVM
- High microcleanliness
- High surface finish
- Good forgeability

Sandvik Bioline High-N is used by customers for orthopedic implants and fracture fixation devices.

STANDARDS

- UNS S31675
- BS 7252-9

Product standard
- ASTM F1586
- ISO 5832-9
- BS ISO 5832-9 (replaces BS 7252-9)

CHEMICAL COMPOSITION (NOMINAL) %

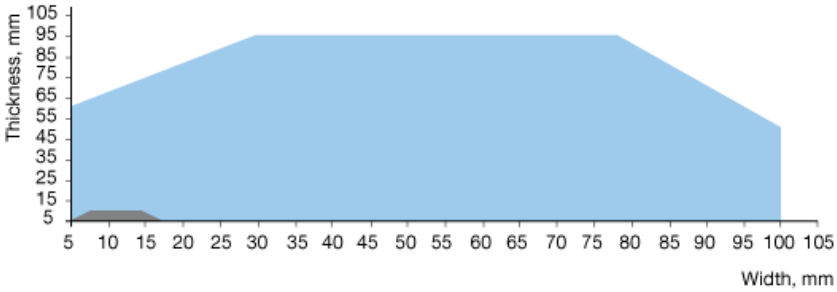
C max	Si max	Mn	P max	S max	Cr	Ni	Mo	Cu max	N	Nb
0.06	0.60	4.0	0.025	0.003	20.5	9.5	2.4	0.20	0.4	0.3

FORMS OF SUPPLY

Round bar
- Annealed, medium tensile, high tensile
- Diameter 5 - 20 mm: ground
- Diameter 21 - 100 mm: ground and peeled

Tolerances
h9: diameter 5 - 20 mm
h11: diameter 21-65 mm

Flat and square bar
- 5 - 100 mm wide/thick in straight lengths
- Annealed / medium tensile depending on grade and size
- Further data on specific width x thickness combinations shall is available on request



Other product forms
Sandvik Bioline High-N can also be supplied as tube and wire.

MECHANICAL PROPERTIES

Product	Condition	Tensile strength	Proof strength	Elongation A,		
		R_m	$R_{p0,2}$	%		
		MPa	ksi	MPa	ksi	
		min	min	min	min	typical
Wire		1500 max	217 max			
Bar	Annealed	740	107	430	62	35
Bar	Medium	1000	145	700	102	20
Bar	Hard	1100	160	1000	145	10
Tube, thick wall	Bright annealed	740	107	430	62	min 35
Tube, thick wall	Cold finished	1200	174	1100	160	min 10

Specific tensile requirements available on request

PHYSICAL PROPERTIES

Property		
Density (20 °C)	8.0 g/cm^3	0.29 lb/in^3
Modulus of elasticity, x10^3 (20°C)	200 MPa	29.0ksi
Specific heat capacity (20°C)	485 J/(kg °C)	0.11Btu/(lb°F)
Thermal conductivity (20°C)	14W /(m°C)	8 Btu/(ft h °F)
Thermal expansion, x10^{-6} (30-100°C)	16.5 per °C	9.5 per °F

CORROSION RESISTANCE

Sandvik Bioline High-N has a very good resistance in physiological environments to:

- General and intergranular corrosion due to high purity and low ferrite content
- Pitting and crevice corrosion due to the high molybdenum content

Sandvik Bioline High-N is capable of passing the Monypenny Strauss corrosion test in accordance with ISO / ASTM requirements.

MACHINING

	Hardness	Cutting speed range	Feed range		
		SFM	**m/min**	**IPR**	**mm/rev**
Turning	250-400	885-145	270-45	0.002-0.024	0.05-0.6
Milling	250-400	855-245	260-75	0.002-0.016	0.05-0.4
Drilling	250-400	115-195	35-60	0.002-0.012	0.05-0.3

DISCLAIMER:
Sandvik is not providing any products or services that are intended or may be construed to be recommending or otherwise advising on, in any manner, the design, suitability, appropriateness or effectiveness, from a medical/biological/safety perspective, of any medical material, instrument and/or medical device.