

STAINLESS STEEL FOR BOAT AND SEA ENGINEERING

**AquaShaft**  
STAINLESS STEEL FOR BOAT SHAFTING

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Precision bars for boat shafting



**ACCIAIERIE VALBRUNA**

**AquaShaft**

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Valbruna founded in 1925 and leader in the production of long products in stainless steel and nickel alloys, presents a selected range of titanium products supported by long experience and highly qualified customer service.

Vicenza plant



Bolzano plant



Fort Wayne, (IN) plant



ITALY: Vicenza  
Bolzano  
Mills  
USA: Fort Wayne

### VALBRUNA... SUCH A GREAT REALITY!

Our vast and strategic distribution network is our corner stone in a global market, granting not only a worldwide commercial presence but also a steadfast feedback with customers.

#### ITALY

Arcore  
Torino  
Milano  
Brescia  
Parma  
Bologna

#### EUROPE

Germany  
France  
England  
Spain  
Ireland  
Denmark  
Switzerland  
Netherlands  
Poland  
Finland  
Sweden

#### AMERICA

Canada  
United States  
Mexico

#### ASIA - OCEANIA

Hong Kong  
Australia  
Malaysia  
UAE



**ACCIAIERIE VALBRUNA**

High quality is our standard



Valbruna, international leader in the production of stainless steel bar products, presents a range of high quality boat shafting material.

TYPE	ASTM	TYPE	WERK.NR	CHEMICAL ANALYSIS %			
				C	Cr	Ni	Others
AQUASHAFT 17	A 564, S17400	630	1.4542	0.07 max	15.0 - 17.0	3.0 - 5.0	Nb+Ta 0.15 - 0.45 Cu 3.00 - 5.00
AQUASHAFT 19	A 276, S30452	304N	-	0.03 max	18.0 - 20.0	8.0 - 10.5	N 0.20 - 0.30
AQUASHAFT 21	A 276, S31803	2205	1.4462	0.03 max	21.0 - 23.0	4.5 - 6.5	Mo 2.50 - 3.50 N 0.08 - 0.20
AQUASHAFT 22 / 22HS	A 276, S20910	XM-19	-	0.06 max	20.5 - 23.5	11.5 - 13.5	Mo 1.00 - 3.00 Mn 4.00 - 6.00 V 0.10 - 0.30

SIZES	1" to 3-3/4" dia ( upon request to 8" dia )		
TOLERANCE on diameter	1" to 1-15/16" incl.	Minus .000"	Plus .0015"
	Over 1-15/16" to 3-1/8" incl.	.000"	.0020"
	Over 3-1/8" to 3-3/4" incl.	.000"	.0025"
	Over 3-3/4"	upon request	
LENGTH	Fixed from 12 ft up to 29 ft ( upon request )		
STRAIGHTNESS	Lengths up to 22': 0.005" for each 3 feet Lengths over 22': 0.006" for each 3 feet		
SURFACE FINISH	Ra 0.8 µm max ( equivalent to RMS 32 µinch. max )		
APPLICATION	Marine shafting for fishing and navy vessels, work and pleasure boats		

	AQUASHAFT 17	AQUASHAFT 19	AQUASHAFT 21	AQUASHAFT 22	AQUASHAFT 22HS
STRENGTH	*****	***	**	****	*****
TOUGHNESS	*	****	**	***	***
CORROSION RESIST.	*	**	***	*****	*****

## Physical and Minimum Mechanical Properties

	AQUASHAFT 17	AQUASHAFT 19	AQUASHAFT 21	AQUASHAFT 22	AQUASHAFT 22HS
<b>Ultimate Tensile Strength</b>					
		115 (to 2" dia)		135 (to 2" dia)	135 (to 2 <sup>1/2</sup> " dia)
Ksi (min)	135	100 (2" < dia < 3") 95 (over 3" dia)	90	115 (2" < dia < 3") 100 (over 3" dia)	130 (2 <sup>1/2</sup> " to 6")
<b>0.2% YS Tension</b>					
		85 (to 2" dia)		105 (to 2" dia)	
Ksi (min)	105	55 (2" < dia < 3") 50 ( over 3" dia )	65	75 (2" < dia < 3") 55 ( over 3" dia )	105
<b>0.2% YS Torsion</b>					
		57 (to 2" dia)		70 (to 2" dia)	
Ksi (min)	70	40 (2" < dia < 3") 35 (over 3" dia)	50	50 (2" < dia < 3") 36 (over 3" dia)	70
<b>Elongation (in 2')</b>					
				20 (to 2 <sup>1/2</sup> " )	
% (min)	16	35	25	25 (2 <sup>1/2</sup> to 3") 30 (over 3)	15
<b>Reduction of area</b>					
% (min)	50	55	60	55	45
<b>Hardness</b>					
Brinell ( typical )	269-311	300	290 max	290 max	300 max
<b>Impact Charpy V-Notch</b>					
ft-lbs (typical)	50	100	110	100	100
<b>Modulus of Elasticity Tension</b>					
1,000,000 psi ( typical )	29.1	29.0	27.4	28.0	28.0
<b>Modulus of Elasticity Torsion</b>					
1,000,000 psi ( typical )	11.3	11.2	10.9	10.4	10.4
<b>Density</b>					
lb/in <sup>3</sup> at 68°F	0.280	0.286	0.282	0.285	0.285
<b>Thermal Conductivity</b>					
Btu/ft/h°F	10.6	9.4	11.0	9.4	9.4
<b>Electrical Resistivity</b>					
μΩ·in at 68° F	2.032	1.830	2.159	2.083	2.063
<b>Specific Heat</b>					
Btu /lb·°F	0.11	0.12	0.10	0.12	0.12





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precision bars for boat shafting

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Aquashaft identifies a series of austenitic stainless steels, precipitation-hardening grades and duplex steels intended for the manufacture of propeller shafts in the shipbuilding industry.

Utilising these types of steel, the designer can reduce the shaft dimensions and hence use smaller supports and seals.

The simultaneous reduction of weight and hydrodynamic resistance, permits better performances and greater efficiency.

A boat with propeller shafts made of high-performance stainless steel can thus give greater speeds with savings in operating costs compared with crafts that use conventional shafts.

Our bars are wrapped up in plastic and supplied in wooden boxes.



Project leader: Ciba-Link

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