

Datasheet: EN 1.4401/316 – Austenite Round Bars - Stainless Steel Alumeco ApS 05-12-2024				Internal alloy name: 1.4401 Alloy type: Acid-resistance Austenite Chemical Symbol: X5CrNiMo17-12-2 EN: EN 1.4401 AISI: 316 UNS: S31600 SS: 2347 JIS: SUS316 GB: S31608																								
Main usage: - Food processing industry. - Brewery, chemical & petrochemical equipment. - Boat fittings, nuts & bolts, springs. - Building and Construction sector - Overland transport tankers			Important norms and literature: General Standards: EN 10088-1: List of stainless Steel Geometric Tolerance: EN 10278: Dimensions & tolerances of bright steel products Product standards: EN 10088-3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes																									
Main properties: - Great weldability - High corrosion resistance to non-oxidising acids and chlorine-containing materials - Good formability, both cold and hot - Higher thermal expansion and lower heat conductivity compared to other carbon steels																												
Chemical composition in %: EN 10088-1 <table><tr><td>C</td><td>Si</td><td>Mn</td><td>P</td><td>S</td><td>Cr</td><td>Mo</td><td>Ni</td><td>Remarks</td><td>Rest</td></tr><tr><td>≤ 0,07</td><td>≤ 1,00</td><td>≤ 2,00</td><td>≤ 0,045</td><td>≤ 0,030*</td><td>16,5-18,5</td><td>2,0-2,5</td><td>10,0-13,5</td><td>N ≤ 0,10</td><td>Fe</td></tr></table> * For machinability, a controlled sulfur content of 0,015%-0,030% is recommended & permitted. For weldability a controlled sulfur content of 0,008%- 0,030% is recommended & permitted. For polishability, a controlled sulfur content of 0,015% is recommended.									C	Si	Mn	P	S	Cr	Mo	Ni	Remarks	Rest	≤ 0,07	≤ 1,00	≤ 2,00	≤ 0,045	≤ 0,030*	16,5-18,5	2,0-2,5	10,0-13,5	N ≤ 0,10	Fe
C	Si	Mn	P	S	Cr	Mo	Ni	Remarks	Rest																			
≤ 0,07	≤ 1,00	≤ 2,00	≤ 0,045	≤ 0,030*	16,5-18,5	2,0-2,5	10,0-13,5	N ≤ 0,10	Fe																			
Mechanical properties: EN 10088-3 <table><tr><td>Dim. Range / Thickness (mm)</td><td>Temper</td><td>Rm MPa</td><td>Rp_{0,2} MPa</td><td>Rp_{1,0} MPa</td><td>Elongation (Longitudinal) A%</td><td>Impact energy (Longitudinal) KV₂</td><td>Hardness* HB</td></tr><tr><td>6 - 300</td><td>Hot rolled</td><td>500 - 700</td><td>Min. 200</td><td>Min. 235</td><td>40</td><td>100</td><td>Max. 215</td></tr></table> * Information values only;									Dim. Range / Thickness (mm)	Temper	Rm MPa	Rp _{0,2} MPa	Rp _{1,0} MPa	Elongation (Longitudinal) A%	Impact energy (Longitudinal) KV ₂	Hardness* HB	6 - 300	Hot rolled	500 - 700	Min. 200	Min. 235	40	100	Max. 215				
Dim. Range / Thickness (mm)	Temper	Rm MPa	Rp _{0,2} MPa	Rp _{1,0} MPa	Elongation (Longitudinal) A%	Impact energy (Longitudinal) KV ₂	Hardness* HB																					
6 - 300	Hot rolled	500 - 700	Min. 200	Min. 235	40	100	Max. 215																					
Physical properties: <table><tr><td>Density g/cm³</td><td>Electrical resistivity Ω mm² / m</td><td>Thermal conductivity W/m K</td><td>Thermal expansion (µm m⁻¹ K⁻¹)</td><td>Specific heat (J kg⁻¹ K⁻¹)</td><td>E - modulus (N / mm²)</td><td>Magnetizable</td><td>PREN (Min.)</td></tr><tr><td>8,0</td><td>0,75</td><td>15</td><td>16,0</td><td>500</td><td>200.000</td><td>No</td><td>16,5</td></tr></table>									Density g/cm ³	Electrical resistivity Ω mm ² / m	Thermal conductivity W/m K	Thermal expansion (µm m ⁻¹ K ⁻¹)	Specific heat (J kg ⁻¹ K ⁻¹)	E - modulus (N / mm ²)	Magnetizable	PREN (Min.)	8,0	0,75	15	16,0	500	200.000	No	16,5				
Density g/cm ³	Electrical resistivity Ω mm ² / m	Thermal conductivity W/m K	Thermal expansion (µm m ⁻¹ K ⁻¹)	Specific heat (J kg ⁻¹ K ⁻¹)	E - modulus (N / mm ²)	Magnetizable	PREN (Min.)																					
8,0	0,75	15	16,0	500	200.000	No	16,5																					
Typical Alumeco products with this alloy Round bars - Dim: 6-300 mm x Length: 3000 mm																												

Tolerances for round bars for EN 1.4401:

Tolerance classes for drawn round bars				
Diameter d (mm)	Tolerance classes to ISO 286-2			
	h9	h10	h11	h12
$6 < d \leq 10$	+0 -0,036	+0 -0,058	+0 -0,090	+0 -0,150
$10 < d \leq 18$	+0 -0,043	+0 -0,070	+0 -0,110	+0 -0,180
$18 < d \leq 30$	+0 -0,052	+0 -0,084	+0 -0,130	+0 -0,210
$30 < d \leq 50$	+0 -0,062	+0 -0,100	+0 -0,160	+0 -0,250
$50 < d \leq 80$	+0 -0,074	+0 -0,120	+0 -0,190	+0 -0,300
$80 < d \leq 120$	+0 -0,087	+0 -0,140	+0 -0,220	+0 -0,350
$120 < d \leq 180$	+0 -0,100	+0 -0,160	+0 -0,250	+0 -0,400
$180 < d \leq 200$	+0 -0,115	+0 -0,185	+0 -0,290	+0 -0,460

* Values are referred from Table 2 of EN 10278:1999

Tolerance deviation k (for shafts)	
Specified length d (mm)	ISO K Tolerances (mm) k11
$25 < d \leq 30$	+0,130 0
$30 < d \leq 50$	+0,160 0
$50 < d \leq 80$	+0,190 0
$80 < d \leq 120$	+0,220 0
$120 < d \leq 180$	+0,250 0
$180 < d \leq 250$	+0,290 0
$250 < d \leq 300$	+0,320 0

Deviation from straightness			
Product form	Steel group	Nominal dimension	Deviation max. (mm)
Rounds	< 0,25% C		1,0
	≥ 0,25% C, alloy steels, quenched and tempered steels		1,5
	Stainless steels, ball and roller bearing steels, tool steels		1,0

* Values are referred from Table 4 of EN 10278:1999

Types of length and length tolerances			
Type of length	Length (mm)	Length tolerances (mm)	To be stated on order
Manufacturing length	$3000 < L \leq 9000$	±500	Length
Stock length	3000 or 6000	0 +200	1,5
Cut to length	< 9000	±5	1,0

* Values are referred from Table 5 of EN 10278:1999