

Forta 316Ti/4571

EN 1.4571, ASTM TYPE 316Ti / UNS S31635

General characteristics

Forta 317Ti/4571 is a titanium-stabilized, molybdenum-alloyed austenitic steel for highly corrosive environments, including applications in elevated temperatures.

Typical applications

- Chimney constructions
- Flue gas applications

Products & dimensions

Cold rolled products, available dimensions (mm)

Surface finish		Coil / Strip		Plate / Sheet	
		Thickness	Width	Thickness	Width
2H	Work hardened	0.05-6.00	3-1530	0.30-6.00	100-1530

Chemical composition

The typical chemical composition for this grade is given in the table below, together with composition limits given for the product according to different standards. The required standard will be fully met as specified on the order.

The chemical composition is given as % by mass.

	C	Mn	Cr	Ni	Mo	N	Other
Typical	0.04		16.8	10.9	2.1		Ti
ASME II A SA-240	≤0.08	≤2.00	16.00-18.00	10.00-14.00	2.00-3.00	≤0.10	
ASTM A240	≤0.08	≤2.00	16.0-18.0	10.0-14.0	2.00-3.00	≤0.10	
EN 10028-7	≤0.08	≤2.00	16.5-18.5	10.5-13.5	2.00-2.50		
EN 10088-2	≤0.08	≤2.0	16.5-18.5	10.5-13.5	2.0-2.5		
EN 10088-3	≤0.08	≤2.00	16.5-18.5	10.5-13.5	2.00-2.50		
EN 10088-4	≤0.08	≤2.0	16.5-18.5	10.5-13.5	2.0-2.5		
IS 6911	≤0.08	≤2.0	16.0-18.0	10.0-14.0	2.00-3.00	≤0.10	
MPS/SF/0005	≤0.08	≤2.00	16.00-18.00	10.00-14.00	2.00-3.00	≤0.10	

Corrosion resistance

Pitting corrosion resistance		Crevice corrosion resistance
PRE	CPT	CCT
24	15±2	<0

Pitting Resistance Equivalent (PRE) is calculated using the following formula: $PRE = \%Cr + 3.3 \times \%Mo + 16 \times \%N$

Corrosion Pitting Temperature (CPT) as measured in the Avesta Cell (ASTM G 150), in a 1M NaCl solution (35,000 ppm or mg/l chloride ions).

Critical Crevice Corrosion Temperature (CCT) is obtained by laboratory tests according to ASTM G 48 Method F

Mechanical properties

Cold rolled coil and sheet	R _{p0.2} MPa	R _{p1.0} MPa	R _m MPa	Impact strength J	Rockwell	HB	HV
Typical (thickness 1 mm)	285	310	615				
ASME II A SA-240	≥ 205		≥ 515			≤ 217	
ASTM A240	≥ 205		≥ 515		≤ 95HRB	≤ 217	
EN 10028-7	≥ 240	≥ 270	540 - 690				
EN 10088-2	≥ 240	≥ 270	540 - 690				
EN 10088-4	≥ 240	≥ 270	540 - 690				
IS 6911	≥ 205		≥ 515		≤ 95HRB	≤ 217	

Hot rolled coil and sheet	R _{p0.2} MPa	R _{p1.0} MPa	R _m MPa	Impact strength J	Rockwell	HB	HV
Typical (thickness 4 mm)	295	345	595			170	
ASME II A SA-240	≥ 205		≥ 515			≤ 217	
ASTM A240	≥ 205		≥ 515			≤ 217	
EN 10028-7	≥ 240	≥ 270	540 - 690				
EN 10088-2	≥ 240	≥ 270	540 - 690				
EN 10088-4	≥ 240	≥ 270	540 - 690				
IS 6911	≥ 205		≥ 515		≤ 95HRB	≤ 217	

Hot rolled quarto plate	R _{p0.2} MPa	R _{p1.0} MPa	R _m MPa	Impact strength J	Rockwell	HB	HV
Typical (thickness 15 mm)	260	300	570				
ASME II A SA-240	≥ 205		≥ 515		≤ 95HRB	≤ 217	
ASTM A240	≥ 205		≥ 515		≤ 95HRB	≤ 217	
EN 10028-7	≥ 220	≥ 260	520 - 670				
EN 10088-2	≥ 220	≥ 260	520 - 670				
EN 10088-4	≥ 220	≥ 260	520 - 670				
IS 6911	≥ 205		≥ 515		≤ 95HRB	≤ 217	
MPS/SF/0005	≥ 205		≥ 515		≤ 95HRB	≤ 217	

¹⁾Elongation according to EN standard:

A₈₀ for thickness below 3 mm.

A for thickness = 3 mm.

Elongation according to ASTM standard A₂¹ or A₅₀.

Physical properties

Physical properties according to EN 10088 are shown below.

Density kg/dm ³	Modulus of elasticity GPa	Thermal exp. at 100 °C 10 ⁻⁶ /°C	Thermal conductivity W/m°C	Thermal capacity J/kg°C	Electrical resistance μΩm	Magnetizable
8.0	200	16,5	15	500	0.75	No

Fabrication

More detailed information concerning welding procedures can be obtained from the Outokumpu Welding Handbook, available from our sales offices.

Standards & approvals

The most commonly used international product standards are given in the table below.

Standard	Designation
ASME SA-240M Code Sect. II. Part A	TYPE 316Ti / UNS S31635
ASTM A240/A240M	TYPE 316Ti / UNS S31635
EN 10028-7, PED 2014/68/EU	1.4571
EN 10088-2	1.4571
EN 10088-3	1.4571
EN 10088-4	1.4571
IS 6911, AMENDMENT NO. 2	ISS 316 Ti
Material Purchase Specification MPS/SF/0005	TYPE 316Ti

Contacts & Enquiries

Contact your nearest sales office

www.outokumpu.com/contacts

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