

Forta 304/4301

EN 1.4301, ASTM TYPE 304 / UNS S30400

General characteristics

Forta 304/4301 is a classic 18% chromium, 8% nickel austenitic stainless steel. Forta 304/4301 is an all-purpose product with good resistance to atmospheric corrosion and to many organic and inorganic chemicals.

Typical applications

- Vehicle chassis
- Containers
- Constructions

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	18-1530

Chemical composition

The typical chemical composition for this grade is given in the table below, together with composition limits given for this 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		18.1	8.1			
ASME II A SA-240	≤0.07	≤2.00	17.5-19.5	8.0-10.5		≤0.10	
ASTM A240	≤0.07	≤2.00	17.5-19.5	8.0-10.5		≤0.10	
ASTM A666	≤0.08	≤2.00	18.0-20.0	8.0-10.5		≤0.10	
EN 10028-7	≤0.07	≤2.00	17.5-19.5	8.0-10.5		≤0.10	
EN 10088-2	≤0.07	≤2.0	17.5-19.5	8.0-10.5		≤0.10	
EN 10088-3	≤0.07	≤2.00	17.5-19.5	8.0-10.5		≤0.10	
EN 10088-4	≤0.07	≤2.0	17.5-19.5	8.0-10.5		≤0.10	

GOST 5632-72	≤0.12	≤2.0	17.0-19.0	8.0-10.0	≤0.35	≤0.10	
GOST 5632-72 Chemical analysis	≤0.12	≤2.0	17.0-19.0	8.0-10.0	≤0.35	≤0.10	
IS 6911	≤0.07	≤2.00	17.5-19.5	8.0-10.5	≤0.70	≤0.10	
IS 6911	≤0.07	≤2.00	17.5-19.5	8.0-10.5	≤0.70	≤0.10	
MSP4002	≤0.07	≤2.00	17.5-19.5	8.0-10.5		≤0.10	

Corrosion resistance

Pitting corrosion resistance		Crevice corrosion resistance
PRE	CPT	CCT
18	<10	<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	315	640				
ASME II A SA-240	≥ 205		≥ 515			≤ 201	
ASTM A240	≥ 205		≥ 515		≤ 92HRB	≤ 201	
EN 10028-7	≥ 230	≥ 260	540 - 750				
EN 10088-2	≥ 230	≥ 260	540 - 750				
EN 10088-4	≥ 230	≥ 260	540 - 750				
GOST 5632-72	≥ 230	≥ 260	540 - 670				
IS 6911	≥ 205		≥ 515		≤ 92HRB	≤ 201	
IS 6911	≥ 205		≥ 515		≤ 92HRB	≤ 201	

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)	285	340	625			175	
ASME II A SA-240	≥ 205		≥ 515			≤ 201	
ASTM A240	≥ 205		≥ 515			≤ 201	
EN 10028-7	≥ 230	≥ 260	520 - 720				
EN 10088-2	≥ 230	≥ 260	520 - 720				
EN 10088-4	≥ 230	≥ 260	520 - 720				
GOST 5632-72	≥ 230	≥ 260	540 - 670				
IS 6911	≥ 205		≥ 515		≤ 92HRB	≤ 201	
IS 6911	≥ 205		≥ 515		≤ 92HRB	≤ 201	

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)	270	300	600				
ASME II A SA-240	≥ 205		≥ 515		≤ 92HRB	≤ 201	
ASTM A240	≥ 205		≥ 515		≤ 92HRB	≤ 201	
EN 10028-7	≥ 210	≥ 250	520 - 720				

EN 10088-2	≥ 210	≥ 250	520 - 720			
EN 10088-4	≥ 210	≥ 250	520 - 720			
IS 6911	≥ 205		≥ 515		≤ 92HRB	≤ 201
IS 6911	≥ 205		≥ 515		≤ 92HRB	≤ 201
MSP4002	≥ 210	≥ 250	520 - 720			

Wire rod	R _{p0.2} MPa	R _{p1.0} MPa	R _m MPa	Impact strength J	Rockwell	HB	HV
Typical	290	330	600				

¹⁾Elongation according to EN standard:

A₈₀ for thickness < 3 mm.

A for thickness ≥ 3 mm.

Elongation according to ASTM standard A₂ or A₅₀.

Physical properties

Physical properties according to EN 10088-1 are given in the table below.

Density	Modulus of elasticity	Thermal exp. at 100 °C	Thermal conductivity	Thermal capacity	Electrical resistance	Magnetizable
kg/dm ³	GPa	10 ⁻⁶ /°C	W/m°C	J/kg°C	μΩm	
7.9	200	16	15	500	0.73	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 304 / UNS S30400
ASTM A240/A240M	TYPE 304 / UNS S30400
ASTM A666	TYPE 304 / UNS S30400
EN 10028-7, PED 2014/68/EU	1.4301
EN 10088-2	1.4301
EN 10088-3	1.4301
EN 10088-4	1.4301
GOST 5632-72	12X18H9
GOST 5632-72 Chemical analysis only	12X18H9
IS 6911, AMENDMENT NO. 2	ISS 304; ISS 304 S1
MAN Cryo MSP4002-M-600310370 Rev.01	1.4301

Contacts & Enquiries

Contact your nearest sales office

www.outokumpu.com/contacts

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