

# Forta 301/4310

EN 1.4310, ASTM TYPE 301 / UNS S30100

## General characteristics

Forta 301/4310 is a lower chromium and nickel variant of Core 304/4301 with high work hardening capacity. Used for items subject to high mechanical loading.

## Typical applications

- Springs
- Press plates
- Conveyor chains
- Mixer blades
- Automotive cylinders and head gaskets

## Products & dimensions

### Cold rolled products, available dimensions (mm)

Surface finish		Coil / Strip		Plate / Sheet	
		Thickness	Width	Thickness	Width
2B	Cold rolled, heat treated, pickled, skin passed	0.33-6.35	12-1550	0.33-6.35	18-1550
2BB	Bright-pickled	0.30-3.50	30-1530	0.30-3.50	600-1530
2C	Cold rolled, heat treated	0.50-6.00	30-1530		
2D	Cold rolled, heat treated, pickled	0.30-6.35	30-1590	0.30-6.35	400-1590
2E	Cold rolled, heat treated, mech. desc. pickled	0.30-6.00	12-1530	0.33-6.00	18-1530
2F	Cold rolled, heat treated, skin passed	0.33-3.58	12-1524	0.33-3.58	18-1524
2G	Ground	0.30-3.58	12-1530	0.30-3.58	18-1530
2H	Work hardened	0.05-22.00	3-1500	0.30-5.00	18-1500
2J	Brushed or dull polished	0.30-3.00	30-1500	0.30-3.00	600-1530
2K	Satin finish	0.53-3.58	12-1524	0.53-3.58	18-1524
2R	Cold rolled, bright annealed	0.05-3.50	3-1500	0.33-3.50	18-1500

### Continuous hot rolled products, available dimensions (mm)

Surface finish		Coil / Strip		Plate / Sheet	
		Thickness	Width	Thickness	Width
1C	Hot rolled, heat treated, not descaled	2.00-10.00	50-1550		
1D	Hot rolled, heat treated, pickled	2.54-9.52	50-1610	2.54-9.52	50-1610

1E	Hot rolled, heat treated, mech. desc.	1.75-4.50	50-1610	1.75-4.50	50-1610
1G	Ground	2.00-3.00	750-1350	2.00-3.00	750-1350
1U	Black hot rolled	2.00-10.00	50-1550		

## 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
<b>Typical</b>	<b>0.10</b>		<b>17.0</b>	<b>7.0</b>			
ASME II A SA-240	≤0.15	≤2.00	16.0-18.0	6.0-8.0		≤0.10	
ASME II A SA-240	≤0.03	≤2.00	16.0-18.0	6.0-8.0		≤0.20	
ASTM A240	≤0.15	≤2.00	16.0-18.0	6.0-8.0		≤0.10	
ASTM A240	≤0.03	≤2.00	16.0-18.0	6.0-8.0		≤0.20	
ASTM A666	≤0.15	≤2.00	16.0-18.0	6.0-8.0		≤0.10	
EN 10088-2	0.05-0.15	≤2.0	16.0-19.0	6.0-9.5	≤0.80	≤0.10	
EN 10088-3	0.05-0.15	≤2.00	16.0-19.0	6.0-9.5	≤0.80	≤0.10	
IS 6911	≤0.15	≤2.00	16.0-18.0	6.0-8.0	≤0.70	≤0.10	
IS 6911	≤0.03	≤2.00	16.0-18.0	6.0-8.0	≤0.70	≤0.20	

## Corrosion resistance

Pitting corrosion resistance		Crevice corrosion resistance
PRE	CPT	CCT
17	<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 <sub>p0.2</sub> MPa	R <sub>p1.0</sub> MPa	R <sub>m</sub> MPa	Elongation <sup>1)</sup> %	Impact strength J	Rockwell	HB	HV
<b>Typical (thickness 1 mm)</b>	<b>300</b>	<b>325</b>	<b>770</b>	<b>65</b>				
ASME II A SA-240	≥ 205		≥ 515				≤ 201	
ASME II A SA-240	≥ 220		≥ 550					
ASTM A240	≥ 205		≥ 515			≤ 95HRB	≤ 201	
ASTM A240	≥ 220		≥ 550					
EN 10088-2	≥ 250	≥ 280	600 - 950	≥ 40				
IS 6911	≥ 205		≥ 515			≤ 95HRB	≤ 217	
IS 6911	≥ 220		≥ 550			≤ 100HRB	≤ 241	

Hot rolled coil and sheet	R <sub>p0.2</sub> MPa	R <sub>p1.0</sub> MPa	R <sub>m</sub> MPa	Elongation <sup>1)</sup> %	Impact strength J	Rockwell	HB	HV
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Typical (thickness 4 mm)	330	365	750	50		90
ASME II A SA-240	≥ 205		≥ 515			≤ 201
ASME II A SA-240	≥ 220		≥ 550			
ASTM A240	≥ 205		≥ 515			≤ 201
ASTM A240	≥ 220		≥ 550			
IS 6911	≥ 205		≥ 515			≤ 95HRB ≤ 217
IS 6911	≥ 220		≥ 550			≤ 100HRB ≤ 241

Hot rolled quarto plate	R <sub>p0.2</sub> MPa	R <sub>p1.0</sub> MPa	R <sub>m</sub> MPa	Elongation <sup>1)</sup> %	Impact strength J	Rockwell	HB	HV
<b>Typical (thickness 15 mm)</b>	<b>285</b>	<b>315</b>	<b>785</b>					
ASME II A SA-240	≥ 205		≥ 515				≤ 201	
ASME II A SA-240	≥ 220		≥ 550					
ASTM A240	≥ 205		≥ 515				≤ 201	
ASTM A240	≥ 220		≥ 550					
IS 6911	≥ 205		≥ 515				≤ 95HRB ≤ 217	
IS 6911	≥ 220		≥ 550				≤ 100HRB ≤ 241	

Wire rod	R <sub>p0.2</sub> MPa	R <sub>p1.0</sub> MPa	R <sub>m</sub> MPa	Elongation <sup>1)</sup> %	Impact strength J	Rockwell	HB	HV
<b>Typical</b>	<b>300</b>	<b>330</b>	<b>800</b>	<b>50</b>				

<sup>1)</sup>Elongation according to EN standard:

A<sub>80</sub> for thickness below 3 mm.

A for thickness = 3 mm.

Elongation according to ASTM standard A<sub>2</sub><sup>+</sup> or A<sub>50</sub>.

## Physical properties

Data according to EN 10088 is shown in the table below.

Density	Modulus of elasticity	Thermal exp. at 100 °C	Thermal conductivity	Thermal capacity	Electrical resistance	Magnetizable
kg/dm <sup>3</sup>	GPa	10 <sup>-6</sup> /°C	W/m°C	J/kg°C	μΩm	
7.9	200	18,0	15	500	0.73	No

## Fabrication

## Standards & approvals

Standard	Designation
ASME SA-240M Code Sect. II. Part A	TYPE 301L / UNS S30103; TYPE 301L / UNS S30103
ASTM A240/A240M	TYPE 301L / UNS S30103; TYPE 301L / UNS S30103
ASTM A666	TYPE 301L / UNS S30103
EN 10088-2	1.4310
EN 10088-3	1.4310
IS 6911, AMENDMENT NO. 2	ISS 301; ISS 301L

# Contacts & Enquiries

Contact your nearest sales office

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