outokumpu
high performance stainless steel

Core 201/4618

EN 1.4618

General characteristics

Core 201/4618 is an austenitic stainless steel, which belongs to the austenitic low-nickel CrMn stainless steel family, in which manganese replaces part of the nickel that is normally alloyed to CrNi standard grades. This variant has low nitrogen content and copper alloying for improved forming properties.

Corrosion resistance of the austenitic CrMn grades is usually slightly below that of the austenitic CrNi standard grades. Core 201/4618 is used in applications where good formability and corrosion resistance are needed.

Typical applications

- Household appliances & consumer goods
- Kitchen utensils
- Tableware
- Cutlery
- Pots & pans
- Sinks & countertops
- Indoor cladding
- Window frames
- Automotive applications

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	0.40-3.00	30-1530	0.40-3.00	600-1530
2BB	Bright-pickled	0.40-3.00	30-1530	0.40-3.00	600-1530
2C	Cold rolled, heat treated	0.80-3.00	30-1530		
2D	Cold rolled, heat treated, pickled	0.40-3.00	30-1530	0.40-3.00	600-1530
2E	Cold rolled, heat treated, mech. desc. pickled	0.40-3.00	30-1530	0.50-3.00	600-1530
2G	Ground	0.50-3.00	30-1530	0.50-3.00	600-1530
2J	Brushed or dull polished	0.50-3.00	30-1530	0.50-3.00	600-1530
2R	Cold rolled, bright annealed	0.05-3.00	3-1530	0.40-3.00	600-1530

Continous hot rolled products, available dimensions (mm)

Surface finish		Coil / Strip		Plate / Sheet	
		Thickness	Width	Thickness	Width
1C	Hot rolled, heat treated, not descaled	2.00-8.00	50-1550		
1D	Hot rolled, heat treated, pickled	2.00-8.00	50-1550	2.00-8.00	750-1530
1G	Ground	2.00-3.00	750-1350	2.00-3.00	750-1350
1U	Black hot rolled	2.00-8.00	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
Typical	**0.06**	**7.9**	**16.6**	**4.6**			**Cu:1.7**
EN 10088-2	≤0.10	5.5-9.5	16.5-18.5	4.5-5.5		≤0.15	Cu:1.00-2.50

Corrosion resistance

Core 201/4618 has excellent corrosion resistance in solutions of many halogen-free organic and inorganic compounds over a wide temperature and concentration range. It can withstand many organic and sufficiently diluted mineral acids depending on the temperature of the solution. Core 201/4618 may suffer from uniform corrosion in mineral acids and hot strong alkaline solutions.

In aqueous solutions containing halogenides, e.g. chlorides or bromides, pitting and crevice corrosion may occur depending on halogenide concentration, temperature, pH-value, concentration of oxidizing compounds, or crevice geometry, if applicable. The resistance against pitting and crevice corrosion of Core 201/4618 is, however, slightly lower than of the basic austenitic CrNi standard grades. For a short period of time, for instance during cooking of food in stainless steel dishes, Core 201/4618 can even tolerate relatively high chloride concentrations. The presence of corrosion inhibiting or accelerating compounds like transition metal ions or organic compounds may influence the corrosion behaviour of Core 201/4618.

Core 201/4618 is prone to chloride-induced stress corrosion cracking at temperatures over about 50 °C depending on the applied stress and the chloride concentration in the environment. Prior cold deformation of the structure under load increases the risk of stress corrosion cracking.

Core 201/4618 can be used for indoor and outdoor applications in rural areas and urban environments where chloride contamination is low. The best material performance is reached usually with the help of adequate design, correct post-weld treatment, and regular cleaning during use (if applicable).

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 x %Mo + 16 x %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

For more information on corrosion resistance, please refer to the Outokumpu Corrosion Handbook or contact the our corrosion experts.

Mechanical properties

Cold rolled coil and sheet	$R_{p0.2}$ MPa	$R_{p1.0}$ MPa	R_m MPa	Elongation[1] %	Impact strength J	Rockwell	HB	HV
Typical (thickness 1 mm)	**310**	**335**	**640**					
EN 10088-2	≥ 230	≥ 250	540 - 850	≥ 45				

Hot rolled coil and sheet	$R_{p0.2}$ MPa	$R_{p1.0}$ MPa	R_m MPa	Elongation[1] %	Impact strength J	Rockwell	HB	HV
EN 10088-2	≥ 230							

Hot rolled quarto plate	$R_{p0.2}$ MPa	$R_{p1.0}$ MPa	R_m MPa	Elongation[1] %	Impact strength J	Rockwell	HB	HV
EN 10088-2	≥ 210	≥ 240	520 - 830	≥ 45				

[1]Elongation according to EN standard:
A_{80} for thickness below 3 mm.
A for thickness = 3 mm.
Elongation according to ASTM standard $A_{2"}$ or A_{50}.

Physical properties

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
7.9	200	16,0	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

Standard	Designation
EN 10088-2	1.4618

Contacts & Enquiries

Contact your nearest sales office

www.outokumpu.com/contacts

Working towards forever.

We work with our customers and partners to create long lasting solutions for the tools of modern life and the world's most critical problems: Clean energy, clean water and efficient infrastructure. Because we believe in a world that lasts forever.

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