

## SPECIFICATIONS

Commercial

200 Series

200 Series stainless steels are not new – In fact they have been around for many years. To date they have traditionally not proved very popular outside the USA. However, since they have a much lower Nickel content than 300 Series Austenitics, the very high Nickel price over recent years has led to significantly more interest. Equally, stainless steel producers have an ongoing programme of development designed to enhance existing grades and produce new grades. These new grades are sometimes developed for specific end uses and sometimes to improve upon an existing grade.

### Features:

- ~ Lower nickel than 300 series – with it being replaced by Manganese
- ~ Thus lower cost than 300 series
- ~ Similar mechanical & physical properties to 300 series
- ~ Similar fabrication performance to 300 series, including deep-drawing
- ~ Corrosion resistance similar to 430 (i.e. not nearly as good as 300 series)
- ~ High carbon may cause stress corrosion cracking, especially after welding thicker material
- ~ Non Magnetic

### Performance Comparison:

- ~ Formability: Similar to 304, better than 430
- ~ Strength: Stronger than 304 (and 430)
- ~ Corrosion Resistance @20 C: Similar to 304, better than 430 but susceptible to stress corrosion cracking / intergranular corrosion especially after welding

## CHEMICAL COMPOSITION

Element	% Present
Chromium (Cr)	16 - 18
Manganese (Mn)	6.8 - 8.5
Nickel (Ni)	2 - 5
Nitrogen (N)	0.25 max
Iron (Fe)	Balance

See attached page for full chemical analysis and mechanical properties

## ALLOY DESIGNATIONS

AISI 201 stainless steel corresponds to the following specifications:

UNS20100 / EN1.4372 / JIS SUS 201

AISI 201L stainless steel corresponds to the following specifications:

UNS20103 / EN1.4371

AISI 202 stainless steel corresponds to the following specifications:

UNS20200 / EN1.4373

AISI 204C stainless steel corresponds to the following specifications:

UNS20400 / EN1.4597

## SUPPLIED FORMS

- Sheet
- Plate

## GENERIC PHYSICAL PROPERTIES

Property	Value
Density	7.80 g/cm <sup>3</sup>
Thermal Expansion	17 x10 <sup>-6</sup> /K
Modulus of Elasticity	200 GPa
Thermal Conductivity	15 W/m.K

## MECHANICAL PROPERTIES

Property	Value
Proof Stress	310 Min MPa
Tensile Strength	655 Min MPa
Elongation A50 mm	40 min %

See attached page for full mechanical properties.

Note that there are some differences in the requirements of AISI 200 series types and the EN standards - The above is taken from AISI. EN 1.4372, the EN equivalent to AISI 201 has a minimum proof of 350 and a tensile range of 750 to 950 whilst minimum elongation is 45%

## WELDABILITY

Reasonable, although sensitive to intergranular corrosion in the heat affected zone where thickness exceeds 6mm.

Post-weld cleaning and passivation is crucial.

### CORROSION RESISTANCE

The 200 series grades perform at a similar level to grades 304 and 301 in low corrosion, mainly indoor applications at room temperature.

Not recommended for use in Chloride environments.

### HEAT RESISTANCE

Oxidation resistance is similar to grade 1.4310 (301) up to 840 Centigrade.

### APPLICATIONS

200 series austenitics are typically used to replace types 304 and 301 as well as Carbon (Chrome-Manganese) Steels mainly for indoor use for low corrosion applications at room temperature

Furniture

Bins

Cookware & Serving Bowls

Window Channel Spacers

Safety Shoes (mid-sole protector)

Deep drawn kitchen equipment – e.g. Cookware &

Sinks

Hose Clamps

Trailer Frames

Industrial Strapping

Railway Rolling Stock

There is also grade 201LN for welded constructions, structural uses and low temperature applications - Examples include sides & roofs of trains, liquified gas storage vessels, structural members/chassis of railway rolling stock, trucks & trailers, coal handling equipment

### PERFORMANCE COMPARISON

The 200 series grades perform at a similar level to grades 304 and 301 in low corrosion, mainly indoor applications at room temperature.

### CONTACT

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### REVISION HISTORY

Datasheet Updated	14 November 2018
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### Typical Chemical Composition

%	201/201L	202	204C
<b>C Max</b>	0.15/0.03	0.15	0.15
<b>Cr</b>	17	18	16
<b>Mn</b>	6	8.5	7
<b>Ni</b>	4.5	5	2
<b>N</b>	0.25 Max	0.25 Max	0.15

### Mechanical Properties

Grade	201	201L	201LN	202	204C
Tensile Strength (KSi)	75 Min	95 Min	95 Min		
Proof Stress 0.2% (KSi)	38 Min	38 Min	45 Min		
Elongation % (Min)	40 Min	40 Min	40 Min		

### Extract from BS EN 10088-2: Chemical Compositions

Designation	Chemical composition % by mass max unless stated										
	EN	C	Si	Mn	P	S	N	Cr	Mo	Ni	Others
<b>201</b>	1.4372	0.15	1.00	5.5/7.5	0.045	0.015	0.05/0.25	16.0/18.0	-	3.5/5.5	-
<b>201L</b>	1.4371	0.030	1.00	6.0/8.0	0.045	0.015	0.15/0.20	16.0/17.0	-	3.5/5.5	-
<b>202</b>	1.4373	0.15	1.00	7.5/10.5	0.045	0.015	0.05/0.25	17.0/19.0	-	4.0/6.0	-
<b>204C</b>	1.4597	0.10	2.00	6.5/8.5	0.040	0.030	0.15/0.30	16.0/18.0	1.00	2.00	B: 0.0005/ 0.0050 Cu: 2.00/ 3.5

### Extract from BS EN 10088-2: Mechanical Properties

Steel name	Steel number	Product		Proof strength		Tensile strength $R_m$ N/mm <sup>2</sup>	Elongation %
		Form	Max thickness mm	$R_{p0.2}$ N/mm <sup>2</sup>	$R_{p1.0}$ N/mm <sup>2</sup>		
<b>201</b>	1.4372	C	8	350	380	750/950	45
		H	13.5	330	370	750/950	45
		P	75	330	370	750/950	40
<b>201L</b>	1.4371	C	8	300	330	650/850	45
		H	13.5	280	320	650/850	45
		P	75	280	320	630/830	35
<b>202</b>	1.4373	C	8	340	370	680/880	45
		H	13.5	320	360	680/880	45
		P	75	320	360	600/800	35
<b>204C</b>	1.4597	C	8	300	330	580/780	40
		H	13.5	300	330	580/780	40