

Stainless Steel – 200 Series

(Low Nickel Austenitic Stainless Steels)

Introduction

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

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

Applications/Industries

- ◆ To replace types 304 and 301 as well as Carbon (Chrome-Manganese) Steels
- ◆ Indoor use for low corrosion applications mainly 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

Typical Chemical Composition

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

Performance Comparison

Property	Comments
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



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All Data is indicative only and must not be seen as a substitute for the full specification from which it is drawn. In particular, the mechanical property requirements vary widely with product form and product dimensions. For more complete details please refer to the relevant specification – The BS EN Specifications for Stainless Steel are listed on a separate Datasheet.

Mechanical Properties

Grade	201	201L	201LN	202	204C
Tensile Strength (MPa)	75 Min	95 Min	95 Min		
Proof Stress 0.2% (MPa)	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
201	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	-
201L	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	-
202	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	-
204C	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 ²	Elongation %
		Form	Max thickness mm	$R_{p0.2}$ N/mm ²	$R_{p1.0}$ N/mm ²		
201	1.4372	C	8	350	380	750/950	45
		H	13.5	330	370	750/950	45
		P	75	330	370	750/950	40
201L	1.4371	C	8	300	330	650/850	45
		H	13.5	280	320	650/850	45
		P	75	280	320	630/830	35
202	1.4373	C	8	340	370	680/880	45
		H	13.5	320	360	680/880	45
		P	75	320	360	600/800	35
204C	1.4597	C	8	300	330	580/780	40
		H	13.5	300	330	580/780	40

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