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INFORMATION SHEET

GRADES OF STAINLESS STEEL

Grades of stainless Steel

The following table shows some properties and applications of example stainless steel grades. These are listed in UNS number order.

AISI Grade	Type*	Example properties and applications
301	A	High work hardening rate. Used for structural applications where high strength plus high ductility is required.
302	A	General purpose austenitic with good corrosion resistance. Service temperatures to 800° C.
303	A	Free machining form of 302.
304	A	Low carbon modification of 302 for restriction of carbide precipitation during welding. Good formability. Low pitting corrosion resistance. Wide ranges of applications including water tubing, automotive exhausts and food processing industries.
304L	A	Extra low carbon form of 304 for further restriction of carbide precipitation during welding. It has improved resistance to pitting and crevice corrosion in chloride bearing environments. Good forming and machinability characteristics. Applications include brewery, dairy, food processing and pharmaceutical production plant.
304H	A	Higher temperature version of 304. Most common creep resisting steel with good weldability.
304N	A	Higher nitrogen than 304 to increase strength with minimum effect on ductility and corrosion resistance. Applications as for 304 but requiring higher strength.
309	A	High temperature strength and scale resistance.
309S	A	Low carbon modification of 309. Service temperatures to 1100°C in air. Good oxidation and sulphadation resistance. Applications include furnaces, heat exchangers and metallurgical plants.
309H	A	Higher temperature version of 309S.
310	A	Higher elevated temperature strength and scale resistance than 309.
310S	A	Low carbon version of 310. Good oxidation and sulphadation resistance. Service temperatures to 1100°C in air. Some tendency to long term embrittlement at high temperatures.
310H	A	Higher temperature version of 310S.
316	A	Similar to 304. Mo gives higher resistance to general corrosion in non-oxidising acids. It also gives higher resistance to pitting and crevice corrosion, and has higher strength at elevated temperatures. Suitable for applications where chloride contents make 304 unsuitable (i.e. >200mg/l).
316L	A	Low carbon form of 316. It has improved resistance to pitting and crevice corrosion in chloride bearing environments.
316H	A	Higher temperature version of 316. High creep resistance.
316Ti	A	Similar to 316L. Ti gives good high temperature qualities.
316N	A	Higher nitrogen than 316 to increase strength with minimum effect on ductility and corrosion resistance. Very high creep resistance/rupture up to 700°C.
316LN	A	Higher strength variant of 316L.
317	A	Higher corrosion and creep resistance than 316.
321	A	Similar to 304. Stabilised for weldments subject to corrosive conditions. Very good high temperature qualities, with higher strength at elevated temperatures than 304 steels. Contains titanium added in proportion to carbon.
321H	A	Similar to 321. Higher temperature version.
329	A	Similar to 316 but with better resistance to stress corrosion cracking. Capable of age hardening.
347	A	Service temperatures to 850°C in air. 347H available. Applications include superheater tubes in power plants, furnace tubes.
348	A	Similar to 321. Has low magnetic retentivity. Applications include radioactive systems and nuclear energy uses.
405	F	Non hardenable grade for assemblies where air hardening grades such as 410 or 403 are not suitable. Applications include petrochemical industry.
409	F	General-purpose construction steel. Applications include car exhaust systems.
410	M	General purpose heat treatable martensitic grade with 13% chromium giving fair resistance to corrosion. Magnetic. Service temperatures to 750°C.
429	F	Improved weldability compared with 430. Applications include nitric acid and nitrogen fixation equipment.
430	F	General purpose non-hardenable ferritic grade with 17% chromium. Used for decorative tube. Service temperature to 800°C.
431	M	Special purpose hardenable steel used where particularly high mechanical properties are required. Similar to 410 but with higher corrosion resistance and better machinability. Service temperature to 650° C.
446-1	F	High resistance to corrosion and scaling at high temperatures, especially for intermittent service. Often used in sulphur bearing atmosphere. Applications include recuperators, thermocouple protection tubes. Service temperatures to 1150°C in air.

* Type A = Austenitic, F = Ferritic, M = Martensitic.