



E STEEL SDN BHD (891338-A)

NO 3, Lorong Sungai Puloh 7/KU 6,
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Stainless Steel - Grade 430, UNS S43000, SUS430, SUS430F

Chemical Formula

Fe, <0.12% C, 16-18% Cr, <0.75% Ni, <1.0% Mn, <1.0% Si, <0.040% P, <0.030% S

Background

SUS 430 is a ferritic, straight chromium, non-hardenable grade, combining good corrosion resistance and formability characteristics with useful mechanical properties. Its ability to resist nitric acid attack permits its use in specific chemical applications but automotive trim and appliance components represents its largest fields of application.

SUS 430F is the free-machining version of this grade, available in bar form for use in automatic screw machines. SUS 434 is the molybdenum bearing version of SUS 430 and has the same useful combination of properties. Its molybdenum addition improves corrosion resistance.

Composition for SS430 / SS430F grade stainless steel

Grade		C	Mn	Si	P	S	Cr	M o	Ni	N
SS430	min.	-	-	-	-	-	16. 0	-	-	-
	max	0.1 2	1.0 0	1.0 0	0.04 0	0.03 0	18. 0	-	0.7 5	-
SS430 F	min.	-	-	-	-	0.15	16. 0	-	-	-
	max	0.1 2	1.2 5	1.0 0	0.06	-	18. 0	-	-	-

Mechanical Properties of 430 / 430F grade stainless steel

Grade	Tensile Strength (MPa) min	Yield Strength 0.2% Proof (MPa) min	Elongation (% in 50mm) min	Hardness	
				Rockwell B (HR B) max	Brinell (HB) max
SS430	450	205	22	89	183
SS430F	552 typical	379 typical	25 typical	-	262



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Grade Specification Comparison for 430 grade stainless steel

Grade	UNS No	Old British		Euronorm		Swedish SS	Japanese JIS
SS430	S43000	430S17	60	1.4016	X8Cr17	2320	SUS 430
SS430F	S43020	-	-	1.4104	X12CrMoS17	2383	SUS 430F

These comparisons are approximate only. The list is intended as a comparison of functionally similar materials **not** as a schedule of contractual equivalents. If exact equivalents are needed original specifications must be consulted.

Corrosion Resistance

SUS430 has good resistance to a wide variety of corrosive media including nitric acid and some organic acids. It attains its maximum corrosion resistance when in the highly polished or buffed condition. In general its resistance to pitting and crevice corrosion resistance is close to that of SUS304. Stress corrosion cracking resistance of SUS430 is very high, as it is for all ferritic grades.

Like other high-sulphur free machining grades 430F has much reduced resistance to pitting and crevice corrosion compared to its non-free machining equivalent, particularly in the cross-section direction.

Heat Resistance

Resists oxidation in intermittent service up to 870°C and to 815°C in continuous service. This grade may become brittle at room temperature after prolonged heating in the 400-600°C range. This effect can be eliminated by annealing.

Heat Treatment

Solution Annealing - Heat to 815-845°C, hold for ½ hour per 25mm of thickness, slow furnace cool to 600°C and then quickly air cool. Slow cooling from 540-400°C will cause embrittlement.

Sub-Critical anneal - Heat to 760-815°C and then air cool or water quench.

This grade is not hardenable by thermal treatment.

Note that SUS430 is likely to scale more heavily at elevated temperatures than SUS304, and the scale produced is more difficult to remove by pickling.



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Welding

If welding is necessary pre-heat at 150-200°C. Embrittlement in the weld metal and heat affected zone can be relieved by a post-weld anneal at 790-815°C, but grain refinement will not occur. Use Grade SS430, SS308L, SS309 or SS310 filler rod, depending upon application. AS 1554.6 pre-qualifies welding of Grade SS430 with Grade SS309 filler rods and electrodes.

Machining

Grade SUS430 is easier to machine than the standard austenitic grades such as SUS304, but there is still a tendency for galling and pick-up on the cutting tool. Bars that have been lightly drawn are easier to machine than those in the annealed condition. Grade SUS430F, the free machining version of SUS430, is very much easier to machine.

Fabrication

The lower work hardening rate makes bending and forming somewhat easier than for grade SUS304, but the lower ductility restricts very severe operations. Wherever possible severe bends should be made with the bend axis at right angles to the rolling direction. Severe cold heading of SUS430 wire is possible.

If very severe cold working is required it may be necessary to carry out a sub-critical intermediate anneal.

Applications

Typical applications for 430 grade include:

- Linings for dish washers
- Refrigerator cabinet panels
- Automotive trim
- Lashing Wire
- Element Supports
- Stove trim rings
- Fasteners
- Chimney Liners

Typical applications for 430F grade include:

- Repetition machined components