

CORROSION RESISTANT MATERIAL SELECTION

Corrosion Resistant Alloys				
Alloy	PREN	Density		Application
		g/cm ³	lb/in ³	
304	21	7.93	0.29	General good corrosion resistance grade
304L	21	7.93	0.29	Lower carbon than 304 impedes carbide precipitates in heat affected zone giving good weldability. Reduced carbides also lowers susceptibility to intergranular corrosion.
316	24	7.93	0.29	Alloyed with molybdenum which improves corrosion resistance in marine environments, chlorides, and biofouling. Excellent pitting corrosion resistance.
316L	24	7.93	0.29	Carbon content restricted, which impedes carbide precipitates in heat affected zone giving good weldability. Reduced carbides also lowers susceptibility to intergranular corrosion.
317L	28	7.93	0.29	Same as for 316, with increased pitting corrosion resistance
347	17	7.93	0.29	As for 321 but uses niobium and tantalum as stabilizing elements. Alloy performs well in thermal cycling situations.
Alloy 400	-	8.83	0.32	General purpose alloy with good combination of high strength and toughness over a wide temperature range, has good ductility & corrosion resistance.
Alloy K500	-	8.46	0.31	Same as for 400, with high strength, precipitation hardenable, good corrosion resistance
Alloy 625	46	8.44	0.31	High strength, excellent fabricability, ease of welding, and outstanding corrosion resistance. Excellent resistance to sulfuric, hydrochloric, hydrofluoric, phosphoric, nitric, and organic acids. Also excellent in alkalis, salts, seawater, and chloride cracking environments.
Alloy 825	28	8.10	0.29	Same as for 625, good resistance to stress corrosion in sulfuric/phosphoric acid. Good general resistance in moderate oxidizing and reducing environments. High level of chloride pitting resistance.
Alloy C22	65	8.69	0.31	Outstanding resistance to pitting, crevice corrosion, and stress corrosion cracking. Excellent resistance to oxidizing aqueous media; wet chlorine, mixtures of nitric acid and oxidizing acid with chlorine ions. Resists precipitate formation in weld areas.
Alloy C276	69	8.90	0.32	Very good resistance to chloride sulfuric acid
Heat Resistant Alloys				
Alloy	PREN	Density		Application
		g/cm ³	lb/in ³	
321	17	7.93	0.29	Titanium prevents formation of chromium carbides during welding. Also helps to avoid intergranular corrosion. Improved scaling resistance and fatigue properties compared to 304. Good where welding required with improved high temperature properties.
310	27	7.93	0.29	For high temperature performance where 18/8 type are inadequate. Good scaling resistance
Alloy 718	26	8.19	0.3	Age hardenable, high strength up to 1300F (700C) corrosion resistance & good weldability