

904L

904L (UNS N08904) is an austenitic stainless steel designed for a middle to high level of corrosion resistance. It contains high levels of chromium and nickel with additions of molybdenum and copper to provide good corrosion resistance in certain media. The low carbon level of 904L provides resistance to intergranular corrosion in the welded condition as in welded vessels and other large and complex fabrications.

it is suitable for service temperatures up to approx. 450°C.

It is listed in NACE MR 0175 for sour service and has gained ASME Approval for Pressure Vessel applications.

Chemical Composition, %

element	Cr	Ni	Fe	Mo	Cu	N	C	Mn	Si	P	S
min.	19.00	23.00	bal.	4.00	1.00	0.10	0.020	2.00	1.00	0.040	0.030
max.	23.00	28.00		5.00	2.00						

Chemical Composition according to ASTM. Some compositional limits of other specifications may vary slightly.

Designation and standards

National Standards	Material designation	Chemical composition	Forgings	Rod and bar	Plate and sheet	Strip	Seamless tube
ASTM ASME NACE	UNS N08904	A959 SA959 MR0175	A182 SA182	A479 SA479 A649 SA649	A240 SA240 B625 SB625	A240 SA240 B625 SB625	A269 SA269 A312 SA312 B677 SB677
DIN	1.4539 X1NiCrMoCu25-20-5	DIN 10088-1	DIN 10250-4	DIN 10088-3 DIN 10272	DIN 10088-2 DIN 10028-7	DIN 10088-2 DIN 10028-7	
GB/T	015Cr21Ni26Mo5Cu2 S31782	GB/T 20878	NB/T 47010	NB/T 47010	GB/T 4237	GB/T 3280	

Density 7.95g/cm³

Corrosion resistance

- good resistance to chloride stress corrosion cracking
- better resistance to pitting and crevice corrosion by chlorides compared to stainless type 316L and 317L
- good resistance to intergranular corrosion in the welded condition
- good resistance to reducing media such as hot phosphoric acid and dilute sulfuric acid
- acceptable resistance to sulfide stress cracking as per NACE MR0175

Applications

Typical applications are:

- production and transport of sulfuric acid
- metal pickling in sulfuric acid
- production and concentration of phosphoric acid
- use in seawater, brackish water, condensers, heat exchangers and pipe work in general
- paper and allied industries
- gas washing
- chemical and pharmaceutical industries

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