

Alloy 20 Material Grade

Principal Design Features: This alloy is a columbium stabilized material that combines excellent corrosion resistance with elevated mechanical properties and relatively easy fabrication. It particularly excels in resisting corrosion to hot sulfuric acids when compared to conventional stainless steels such as 316.

Partial List of Applications: Good availability at both the mill and distributor levels have made this a popular choice for a wide variety of applications. Included among these are: equipment for the manufacture of synthetic rubber, plastics, organic and heavy chemicals, pharmaceuticals, solvents and explosives, petroleum products, etc. Also employed in heat exchangers, mixing tanks, metal cleaning and pickling equipment and process piping.

Machinability: Superior finishes may be obtained using set-up and process speeds and feeds normally employed in austenitic stainless steels such as 316 and 317. Slow speeds and heavy, constant feeds are the rules in working this alloy.

Forming: To obtain maximum ductility, heat material to 2100 F(1149 C). Understand, however, that this process will adversely affect the stability of the material. Without this process, the material can be satisfactorily formed albeit with a high work hardening rate.

Welding: Most commonly used welding methods with the exception of oxyacetylene welding have been successfully employed with this alloy. The presence of columbium tends to minimize the precipitation of carbides in the heat affected zone, so the material may, in most cases, be used in the "as welded" condition. Pre-heating is not required.

Alloy 20 Chemistry Data

Carbon	0.07 max
Chromium	19 - 21
Copper	3 - 4
Iron	Balance
Manganese	2 max
Molybdenum	2 - 3
Nickel	32 - 38
Phosphorus	0.045 max
Silicon	1 max
Sulfur	0.035 max

Alloy 20 Physical Data

Density (lb / cu. in.)	0.292
Specific Gravity	8.055
Specific Heat (Btu/lb/Deg F - [32-212 Deg F])	0.12
Electrical Resistivity (microhm-cm (at 68 Deg F))	651
Poissons Ratio	0.31
Magnetic Permeability	1.002
Modulus of Elasticity Tension	28

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