Alloy N155

Alloy N155 (UNS R30155, W73155) is recommended for us in applications involving high stress at temperatures up to 1500°F, and moderate stress up to 2000°F. It has excellent oxidation resistance, good ductility, and is readily fabricated. Its high-temperature properties are inherent and are not dependent upon age-hardening. Production and use of the alloys dates back to the late 1940s.

The alloy has been used in a number of aircraft application including tailpipes and tail cones, afterburner parts, exhaust manifolds, combustion chambers, turbine blades, buckets, and nozzles. It also gives excellent service for high-temperature bolts, and has proven to be an economical material of construction for use in heat-treating equipment where strength at high temperatures is essential.

Alloy N155 has good resistance to corrosion in certain media under both oxidizing and reducing conditions. When solution heat treated, alloy N155 alloy has about the same resistance to nitric acid as does stainless steel. It has better resistance than stainless steel to weak solutions of hydrochloric acid. It withstands all concentrations of sulfuric acid at room temperature.

The alloy can be machined, forged and cold-formed by conventional methods. The alloy can be welded by various arc and resistance-welding processes.

This alloy is available as sheet, strip, plate, wire, coated electrodes, billet stock and sane and investment castings. It is also available in the form of re-melt stock to a certified chemistry.

Most wrought forms of n155 alloy are shipped in the solution heat-treated condition to assure optimum properties. Sheet is given a solution heat-treatment of 2150°F, for a time dependent upon section thickness, followed by a rapid air cool or water quench. Bar stock and plate (1/4 in. and heavier) are usually solution heat treated at 2150°F followed by water quench.

Alloy N155 suffered from mediocre oxidation resistance, a tendency for heat affected zone cracking during welding, and a relatively wide scatter band of mechanical properties.

Chemical properties(weight%)

C	Si	Mn	P	S	Cr
0.08-0.16	1 Max.	1-2	0.04 Max.	0.03 Max.	20.0-22.5
Mo	**Ni**	**N**	**Co**	**W**	**Nb**
2.5-3.5	19.0-21.0	0.10-0.20	18.5-21.5	2.00-3.00	0.75-1.25

Physical properties

Thermal Conductivity	Specific heat	Melting point	Density
12 w/m.k	460 J/Kg-k	0.92 $\Omega mm^2/m$	8.25 g/cm^3

Mechanical properties

Yield Strength	Tensile Strength	Elongation	Hardness
345 Mpa	690-930 Mpa	20%	89-92 HBR