

MULTIMET[®] alloy

Principal Features

MULTIMET[®] alloy (UNS R30155, W73155) is recommended for use 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 applications 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.

MULTIMET[®] alloy has good resistance to corrosion in certain media under both oxidizing and reducing conditions. When solution heat treated, MULTIMET[®] 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.

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

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

Most wrought forms of MULTIMET[®] 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.

MULTIMET[®] alloy suffered from mediocre oxidation resistance, a tendency for heat affected zone cracking during welding, and a relatively wide scatter band of mechanical properties. HAYNES[®] 556[®] alloy was developed to address these concerns and as an improvement.