

Williams Material Suffix	Common Designation	ASTM Forging Specification	Service Recommendations
<b>A105N</b>	1/4% Max Carbon Steel	ASTM A105N	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and +800°F (+427°C).
<b>LF2</b>	Low Temp Carbon Steel	ASTM A350 Grade LF2	Non-corrosive applications at temperatures from -50°F (-46°C) to +800°F (+427°C).
<b>F5</b>	5%Chrome 1/2%Moly	ASTM A182 Grade F5	Non-corrosive applications at temperatures between -20°F (-30°C) and +1200°F (+650°C).
<b>F9</b>	9%Chrome 1%Moly	ASTM A182 Grade F9	Non-corrosive applications at temperatures between -20°F (-30°C) and +1200°F (+650°C).
<b>F11</b>	1-1/4%Chrome 1/2%Moly	ASTM A182 Grade F11	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and +1100°F (+593°C).
<b>F22</b>	2-1/4%Chrome 1%Moly	ASTM A182 Grade F22	Non-corrosive applications including water, oil and gases at temperatures between -20°F (-30°C) and +1100°F (+593°C).
<b>F91</b>	9%Chrome 1%Moly	ASTM A182 Grade F91	Non-corrosive applications at temperatures between -20°F (-30°C) and +1200°F (+650°C).
<b>304</b>	19%Chrome 9%Nickel	ASTM A182 Grade F304	Applications at temperatures up to +1000°F (+538°C).
<b>304L</b>	19%Chrome, 10%Nickel Low Carbon	ASTM A182 Grade F304L	Applications at temperatures up to +800°F (+427°C).
<b>304H</b>	18%Chrome 9%Nickel	ASTM A182 Grade F304H	Applications at temperatures up to +800°F (+427°C).
<b>316</b>	19%Chrome, 10%Nickel 2%Moly	ASTM A182 Grade F316	Applications at temperatures up to +1000°F (+538°C).
<b>316L</b>	19%Chrome, 10%Nickel 2%Moly, Low Carbon	ASTM A182 Grade F316L	Applications at temperatures up to +800°F (+427°C).
<b>316H</b>	18%Chrome, 8%Nickel with Molybdenum	ASTM A182 Grade F316H	Applications at temperatures up to +800°F (+427°C).
<b>317L</b>	25%Chrome, 21%Nickel 3/4%Moly	ASTM A182 Grade F317L	317L has superior corrosion resistance in difficult environments and can be used at temperatures between +1700°F (+927°C) to +2200°F (+1204°C).
<b>321</b>	18%Chrome, 10%Nickel with Titanium	ASTM A182 Grade F321	Applications at temperatures up to +800°F (+427°C).
<b>347</b>	18%Chrome, 10%Nickel with Columbium	ASTM A182 Grade F347	347 has good intergranular-corrosion resistance and is resistant to atmospheric conditions between temperatures of +800°F(+427°C) and +1650°F(+899°C).
<b>410</b>	13%Chrome 1/2%Moly	ASTM A182 Grade F6a	410 is the baic martensitic stainless. It has good impact strength, corrosion and scaling resistance up to +1200°F (+649°C).
<b>420</b>	13%Chrome, 1%Nickel 1/4%Moly	ASTM A276 Grade 420	Full corrosion resistance only in the hardened or hardened and stress relieved conditions. Temperature should be below +800°F (+427°C).
<b>17-4PH</b>	15-1/2%Chrome 4-1/2%Nickel	ASTM A564 Grade 630	Good corrosive resistance properties at temperatures up to +600°F (+316°C).
<b>440C</b>	17%Chrome 3/4%Moly	ASTM A276 Grade 440C	This grade is used in the harded plus tempered condition. For best corrosion resistance, the tempering temperature should be below +800°F (+427°C).
<b>ALLOY 20</b>	20%Chrome, 35%Nickel 2-1/2%Moly	ASTM A182 Grade F20	Good resistance to hot sulfuric acid to +800°F (+425°C).
<b>F51 (Duplex 2205)</b>	22%Chrome, 5%Nickel 3%Moly	ASTM A182 Grade F51	F51 is a super duplex stainless steel. Good Moderate to good corrosion resistance in a variety of environments. Service to +600°F (+316°C).
<b>F53 (Duplex 2507)</b>	25%Chrome, 7%Nickel 4-1/2%Moly	ASTM A182 Grade F53	F53 is a super duplex stainless steel. This material has excellent corrosion resistance in a variety of environments. Service to +600°F (+316°C).
<b>F55</b>	25%Chrome, 7%Nickel 3-1/2%Moly	ASTM A182 Grade F55	This material combines high mechanical strength and good ductility with excellent corrosion resistance in environments with temperatures up to +600°F (+316°C).
<b>400</b>	Monel	ASTM B564 Grade 400	This nickel alloy has good corrosion resistance, good weldability and high strength. Great mechanical properties at subzero temperatures up to +1000°F (+538°C).
<b>K500</b>	Monel	QQ-N-286 Grade K500	This nickel alloy has good corrosion resistance. Monel K500 has great mechanical properties at subzero temperatures up to about +480°C.
<b>600</b>	Inconel	ASTM B564 Grade 600	This nickel-chromium alloy has good oxidation resistance at higher temperatures to +2000°F (+1093°C) .
<b>625</b>	Inconel	ASTM B564 Grade 625	This nickel-chromium alloy has good carburization and oxidation in high-resistance at higher temperatures to +2000°F (+1093°C).
<b>800H/HT</b>	Incoloy	ASTM B564 Grade 800	This nickel-chromium alloy has good carburization and oxidation in high-resistance and normally used in temperatures above +1100°F (+593°C).
<b>825</b>	Incoloy	ASTM B564 Grade 825	Alloy 825 has a high level of corrosion resistance in both reducing and oxidizing environments and good mechanical properties at temperatures up to +1000°F (+538°C).
<b>X-750</b>	Inconel	ASTM B637 Grade X-750	This nickel-chromium alloy has good resistance to corrosion and oxidation along with high tensile and creep-rupture properties at temperatures to +1300°F (+700°C).
<b>C276</b>	Hastelloy	ASTM B564 Grade C276	This nickel-molybdenum-chromium alloy has excellent corrosion resistance in a wide range of corrosive media and corrosion resistant at ambient temperatures.