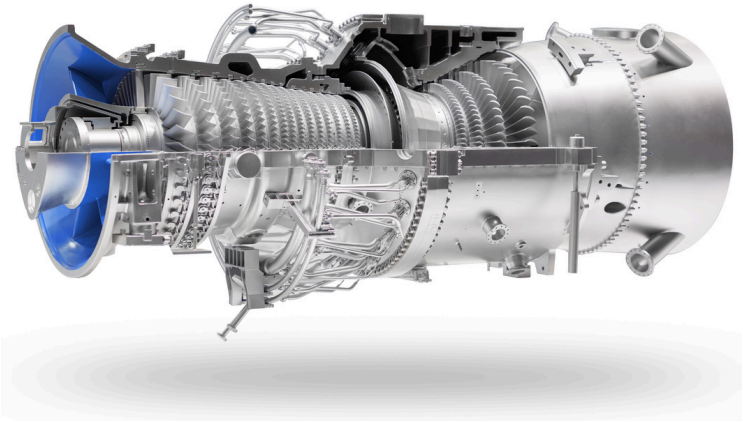
Haynes International Gas Turbine Alloys

For more than 113 years, Haynes International has been a leader in the development, manufacturing, and distribution of high-performance alloys for mission-critical applications.

We are proud of our extensive history with gas turbines that dates back to early aero engines. Today, our products are used in parts for almost every commercial airplane, in many military aircraft, as well as aboard vehicles exploring the frontiers of space. We are committed to delivering the highest quality products, solutions, and service that the aerospace industry demands.

Hot Section Rings, Seals, and Shrouds

HAYNES® 282® alloy, HAYNES® 230® alloy, HASTELLOY® X alloy, HAYNES® 263 alloy, HAYNES® 214® alloy, HAYNES®HR-224® alloy, HAYNES® 242® alloy, HAYNES® 244® alloy, HAYNES® HR-120® alloy, HAYNES® 25 alloy, HAYNES® 188 alloy, HAYNES® 718 alloy, MULTIMET® alloy, ULTIMET® alloy



Combustors

HAYNES® 282® alloy, HAYNES® 233® alloy, HAYNES® 230® alloy, HASTELLOY® X alloy, HAYNES® 188 alloy, HAYNES® 263 alloy, HAYNES® 617 alloy, HAYNES® 718 alloy, HAYNES® 75 alloy, HAYNES® X-750 alloy, HAYNES® R-41 alloy, HAYNES® Waspaloy alloy

Exhaust Section

HAYNES® X alloy, HAYNES® 625 alloy, HAYNES® HR-120® alloy, HAYNES® HR-160® alloy

HAYNES® 233® alloy

HAYNES® 233® alloy is a new, superior turbine hot gas path alloy with outstanding creep strength coupled with excellent oxidation resistance at temperatures up to 2100°F (1149°C) - a combination of properties never before achieved in a readily fabricable alloy. The alloy achieves its exceptional oxidation resistance via formation of a protective alumina scale, while the high creep strength is a result of solid-solution and carbide strengthening. Finally, the alloy can be readily fabricated using conventional methods since it exhibits good hot workability, cold formability, and weldability. These capabilities offer the highest performance yet achieved in metallic aerospace and industrial gas turbine combustors, transition pieces, rings and casts, and other hot structures.

HAYNES® 282® alloy

HAYNES® 282® alloy is a new, wrought, gamma-prime strengthened superalloy developed for hightemperature structural applications, especially those in aero and industrial gas turbine engines. Since its introduction in 2005, it has been quickly adopted by many OEM's for its unique combination of creep strength, thermal stability, weldability, and fabricability not available in other commercial alloys. The excellent creep strength in the temperature range of 1200 to 1700°F (649° to 927°C) surpasses that of Waspaloy alloy and approaches that of R-41 alloy. The features of this alloy make it suitable for critical gas turbine applications, such as combustion liners, transition pieces, forged rings and cases, exhaust and shroud structures, and other hot gas path components.

HAYNES® 230® alloy

HAYNES® 230® alloy is the premium solid-solution, turbine hot gas path alloy available today. It offers a better combination of high-temperature strength, resistance to prolonged exposures to oxidizing environments up to 2100°F (1149°C), excellent long-term thermal stability, and fabricability than any commercially available hightemperature alloy. It is used for combustion cans, transition ducts, flame holders, turbine shrouds, thermocouple sheaths, and other important gas turbine components.

HAYNES® 214® alloy

HAYNES® 214® alloy is the most oxidation resistant, wrought nickel alloy commercially available, offering outstanding resistance to 2300°F (1260°C) via formation of a highly protective alumina scale. Strengths are very good at intermediate temperatures to 1650°F (900°C), and the alloy can be conventionally formed and joined. This alloy is used in demanding, specialized gas turbine parts, such as honeycomb seals, combustor.

HAYNES® 188 alloy

HAYNES® 188 alloy is a cobalt-nickel-chromium-tungsten alloy that offers excellent high-temperature strength and superior oxidation resistance up to 2000°F (1095°C) and thermal stability. This alloy is used extensively in demanding military and civil aircraft gas turbine engine combustors, transition ducts, and after-burner components.

HASTELLOY® X alloy

For nearly 70 years, HASTELLOY® X alloy has been and continues to be the workhorse alloy for combustion parts in industrial gas turbine applications all over the world. The alloy offers a very good balance of hightemperature strength, oxidation resistance, and fabricability at lower cost than many other materials. This alloy is widely used in industrial gas turbine and aircraft engine fabricated combustor and exhaust components, such as transition ducts, combustor cans and liners, injector nozzles and spray bars, flame holders, exhaust struts and many other hot gas path components.

HAYNES® 617 alloy

HAYNES® 617 alloy is a common high temperature alloy in use on many industrial gas turbines since it offers excellent high-temperature strength and good oxidation resistance up to 2000°F (1095°C), together with good thermal stability and fabricability. This alloy is used in transition ducts, large burner can structures, and similar hot gas path components.

HAYNES® HR-120® alloy

This is a solid-solution-strengthened heat-resistant alloy that provides excellent strength at elevated temperature combined with very good resistance to carburizing and sulfidizing environments. Its oxidation resistance is comparable to other widely used Fe-Ni-Cr materials, such as alloys 330 and 800H, but its strength at temperatures up to 2000ºF (1095ºC) is significantly higher, even in comparison to Ni-Cr alloys.
The alloy can be readily formed hot or cold, and is commonly welded using HAYNES® 556® filler wire.

HAYNES® 263 alloy

This is an age-hardenable nickel-cobalt-chromium-molybdenum alloy developed specifically to combine good age-hardened strength properties with excellent fabrication characteristics in the annealed condition. HAYNES® 263 alloy exhibits excellent intermediate temperature tensile ductility, and is not normally subject to strain age cracking problems common for gamma prime strengthened alloys. Its strength at elevated temperature is not quite as high as materials such as HAYNES® 282® alloy, Waspaloy alloy, or R-41 alloy. However, it is much easier to form or weld than Waspaloy alloy and R-41 alloy. Because HAYNES® 282® alloy exhibits superior tensile, creep-rupture, and low cycle fatigue strength than HAYNES® 263 alloy and has significantly greater fabricability than Waspaloy and R-41 alloys, it is replacing HAYNES® 263 alloy in many applications.