

THE SUPERALLOYS COMMITTEE
of the Specialty Steel Industry of North America

POSITION PAPER ON
NATIONAL DEFENSE

INTRODUCTION

The Specialty Steel Industry of North America's Superalloys Committee is a Washington, D.C.-based trade group representing approximately 90 percent of U.S. producers of high-performance materials or superalloys. While superalloys are primarily nickel-based materials, some contain other alloys, such as cobalt or iron, as the predominant element.

These materials are designed to withstand high temperatures or corrosive environments. Because of their unique alloy content and unlike other steels or nonferrous alloys, they have the ability to perform under rigorous conditions and possess properties (thermal, magnetic and electrical) that are well tuned to suit these particular conditions. The applications for superalloys are in the production of gas turbine engines and other aviation/aerospace components, power generation gas turbines, nuclear reactor components, environmental protection equipment, oil and gas extraction, human orthopedic implants and many other critical high-performance applications. Given the material's complexity, there are few producers of superalloys in the world. The U.S., however, is the world's leading producer.

IMPORTANCE OF DOMESTIC SUPERALLOYS PRODUCTION
TO U.S. DEFENSE INDUSTRIES

The U.S. superalloys industry is a vital partner to American defense contractors and the Department of Defense (DOD). Our specialty materials are found in virtually every military platform—from nuclear aircraft carriers and missile systems to all U.S. military planes flying today. U.S.-made superalloys are a critical component of American military strength.

The events of September 11, 2001 focused renewed attention on our national defense and domestic security infrastructure. Virtually all elements of the defense infrastructure are dependent on high performance materials, like superalloys.

The range of defense applications for superalloys is staggering. U.S.-produced nickel alloys, for example, are key components in the production of the gas turbine engines that power our planes. Examples of these components include compressor and turbine blades, vanes, spacers, discs, shafts, seals, casings, rings, after-burners, fasteners and springs. Many of the fasteners and mounts contained in the airframe also are comprised of superalloys. Other systems heavily dependent on superalloys include the space shuttle, the cruise missile, the M1-A1 tank, and the nuclear submarine, aircraft carrier and destroyer programs.

FEDERAL GOVERNMENT/U.S. SUPERALLOYS INDUSTRY

JOINT R&D EFFORTS

U.S. superalloys producers regularly participate in research and development (R&D) activities in conjunction with the Department of Defense. These joint initiatives have led to many breakthroughs in metals technology for both military and commercial applications. Federal government/industry R&D efforts have produced literally hundreds of military applications and processes that are usable by both military contractors and commercial producers.

A current example of a successful joint effort is the Materials Affordability Initiative. This collaboration between the defense and metals industries has resulted in reduced manufacturing process costs and has developed specific solutions to military applications, ranging from the Joint Strike Fighter to the F-22 and F-18 E/F fighters. Another example is the Specialty Metals Processing Consortium (SMPC) which, in conjunction with Sandia Laboratories, is improving the quality of ingots with the two-fold aim of enhancing the competitiveness of the U.S. industry and maintaining high quality suppliers to the DOE Nuclear Weapons Complex. The SMPC research analyzes the processes that form the metallurgical foundation of materials in high performance hardware such as gas turbine aircraft engines.

BERRY AMENDMENT/BUY AMERICAN PURCHASE REQUIREMENTS

For more than 25 years, U.S. law has required the Department of Defense to purchase only domestically produced superalloys for use in military applications. Known as the Berry Amendment, this “buy-America” purchase requirement recognizes the critical importance of maintaining a defense industry supply base. Superalloys have been covered under the Berry Amendment in part to assist the American specialty metals industry maintain its vital research and development work in new metallurgical technology—an essential component of advanced weaponry. This valuable collaboration among the government, prime defense contractors and the specialty metals industry has led to the creation of many technologically advanced materials. The U.S. industry’s ability to continue providing materials at the forefront of technology will depend, to a significant degree, on the continued unfettered access to the defense sector.

Since originally enacted into law in an annual defense appropriations bill, Congress has reaffirmed the importance of the Berry Amendment’s buy America purchase requirements in virtually every DoD authorization and appropriations measure. In fact, during the Senate Armed Services Committee consideration of the FY 2000 defense authorization legislation that included an extended debate over the merits of the Berry Amendment, the committee voted overwhelmingly to oppose an amendment that would have weakened the buy America provisions. In recognition of the importance of this law to the critical defense supply base, Congress made the Berry Amendment permanent law in the FY 2002 Department of Defense authorization legislation.

Despite the codification of this provision, the U.S. superalloys industry is concerned about its recent implementation by the Department of Defense. “Availability” waivers of the

Berry Amendment are being issued by DOD on major aerospace programs that consume substantial volumes of superalloys. Additionally, there are legislative proposals being introduced by DOD to narrow significantly the scope of the provision. The industry questions the wisdom of these policies at a time when the health of our nation's high performance materials base is critical to our national security.

CONCLUSIONS

- ❑ A strong and viable U.S. superalloys industry is critical to America's national defense and homeland security.
- ❑ The U.S. superalloys industry is world-class. But it is often vulnerable to the cycles of the military/commercial aerospace industries, which it highly depends on.
- ❑ U.S. superalloys sales to defense industries and joint federal government/superalloys industry R&D efforts are critically important. Every new and technologically improved defense platform will require improved specialty materials, including superalloys. But this does not tell the whole story of the industry's importance to overall national security.
- ❑ In the wake of September 11, America's citizens and political leaders have become re-sensitized to the critical importance of growing defense infrastructure needs related to homeland security.
- ❑ Superalloys are more essential than ever to our nation's defense infrastructure.