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Defense Primer: Acquiring Specialty Metals, Rare Earth Magnets, and Tungsten

Some metals (such as titanium and tungsten) and metal alloys, as well as strong permanent magnets known as rare earth magnets, are critical to U.S. Department of Defense (DOD) operations. These materials are frequently integrated into components (e.g., integrated circuits, electrical wiring, or optoelectronic devices) or structures (e.g., aircraft fuselages or ship hulls) of the military platforms and weapon systems that enable warfighting capabilities.

A rare earth element is one of 17 chemical elements, including the 15 metallic chemical elements with atomic numbers 57 through 71, as well as the chemically similar elements scandium and yttrium. These materials are considered rare in spite of their relative abundance throughout the Earth's crust, as the extraction and production of such materials can be difficult and costly. Rare earth magnets produced using rare earth elements are the strongest known permanent magnets.

There are few, and in some cases, no known alternatives for many of these materials, which often have unique physical properties, such as high material strength coupled with low density, or resistance to various forms of corrosion. Many of these materials are subject to *sourcing restrictions or prohibitions* in DOD acquisitions. Congress established these restrictions or prohibitions to protect the U.S. domestic materials industry and ensure the United States maintains critical production capabilities and capacity within the U.S. defense industrial base.

Certain sourcing restrictions establish that some items—or components of such items—incorporating certain metals and metal alloys known as specialty metals generally must be produced or manufactured in the United States. Other sourcing prohibitions establish that some items—or components of such items—incorporating certain types of rare earth magnets and tungsten may not be acquired from specified foreign sources.

Sourcing Restrictions in Acquisitions

For more information, see CRS Report R43354, *Domestic Content Restrictions: The Buy American Act and Complementary Provisions of Federal Law*.

Acquiring Specialty Metals

Domestic sourcing restrictions for DOD acquisition of specialty metals first appeared in the FY1973 DOD appropriations bill (P.L. 92-570) as an expansion of domestic content restrictions on DOD purchases of food, clothing, and other goods. These restrictions are commonly known as the Berry Amendment. The Berry Amendment sourcing restrictions were included in annual DOD

appropriations legislation from 1941 until 2002, when they were permanently codified as 10 U.S.C. §2533a by the FY2002 National Defense Authorization Act (NDAA, P.L. 107-107). In 2006, the FY2007 NDAA (P.L. 109-364) moved the specialty metal-related provisions from 10 U.S.C. §2533a to 10 U.S.C. §2533b.

The domestic sourcing mandate for specialty metals only applies to the Defense Department.

Applicability of Restrictions

The specialty metals domestic sourcing restrictions apply to all DOD prime contracts and subcontracts. For the purposes of the restriction, 10 U.S.C. §2533b defines a *specialty metal* as any of the following metals or metal alloys:

- Steel with a maximum alloy content exceeding one or more of the following limits: manganese, 1.65%; silicon, 0.60%; copper, 0.60%; or containing more than 0.25% of any of the following elements: aluminum, chromium, cobalt, niobium (columbium), molybdenum, nickel, titanium, tungsten, or vanadium.
- Metal alloys consisting of nickel, iron-nickel, and cobalt base alloys containing a total of other alloying metals (except iron) in excess of 10%.
- Titanium and titanium alloys.
- Zirconium and zirconium base alloys.

DOD uses the foundry location where the final melting or similar production of a specialty metal takes place to determine its origin. For example, titanium sponge—unwrought titanium that has not been melted—that has been manufactured in Kazakhstan, shipped to the United States, and melted into ingots at a foundry in Ohio would be considered compliant with the specialty metals domestic sourcing mandate. Under the specialty metals restrictions, DOD generally may not acquire certain military platforms or weapon systems—or components of these platforms and systems—that contain any amount of a specialty metal that was not melted or produced in the United States.

The restriction applies to aircraft; missile and space systems; ships; tank and automotive items; weapon systems; and ammunition. DOD and its prime contractors are also prohibited from directly acquiring any specialty metal (e.g., metal sheets, rods, plates) if it was not melted or produced in the United States.

Exceptions

Law and policy provide a number of exceptions to the specialty metals sourcing mandate, including the following selected examples:

- circumstances where the Secretary of Defense or a secretary of a military department determines that compliant specialty metal of satisfactory quality and

sufficient quantity, and in the required form, cannot be procured as and when needed;

- acquisitions outside the United States in support of combat operations or contingency operations;
- acquisitions for which the use of other-than-competitive procedures has been approved when the need for materials or end items is of an unusual and compelling urgency;
- acquisitions where the prime contract is at or below the simplified acquisition threshold (generally \$250,000);
- situations where an acquisition furthers an international agreement (e.g., trade or offset agreements) with a qualifying country;
- purchases of electronic components, such as diodes or integrated circuits, unless the Secretary of Defense, pursuant to a recommendation of the Strategic Materials Protection Board, determines that the domestic availability of a particular electronic component is critical to national security;
- covered items incorporating specialty metals that were not melted in the United States if the total amount of noncompliant specialty metals in such an item does not exceed 2% of the total weight of specialty metals in the item;
- commercially available off-the-shelf (COTS) items containing specialty metals, except in certain circumstances;
- acquisitions of some commercially available items (e.g., fasteners, high-performance magnets);
- acquisition of commercial derivative military articles in certain circumstances; and
- items containing noncompliant materials if the acceptance of such items is necessary to the national security interests of the United States.

Acquiring Rare Earth Magnets and Tungsten

DOD sourcing restrictions for the acquisition of rare earth magnets and tungsten first appeared in the FY2019 NDAA (P.L. 115-232). These restrictions were permanently codified as 10 U.S.C. §2533c. In contrast to the specialty metals restrictions, 10 U.S.C §2533c establishes that these materials, or finished products containing these materials, may not generally be sourced from four specific countries: the Democratic People’s Republic of Korea, the People’s Republic of China, the Russian Federation, or the Islamic Republic of Iran.

These sourcing prohibitions only apply to the Department of Defense.

Applicability of Prohibitions

The sourcing prohibitions for rare earth magnets and tungsten apply to all DOD prime contracts and subcontracts at any tier. Covered materials include:

- samarium-cobalt magnets;
- neodymium-iron-boron magnets;
- tungsten metal powder; and
- tungsten heavy alloy or any finished or semi-finished component containing tungsten heavy alloy.

Under these sourcing prohibitions, DOD generally may not directly acquire rare earth magnets or tungsten that was melted or produced in the four specified countries, or military platforms or weapon systems containing rare earth

magnets or tungsten that was melted or produced in the four specified countries. The prohibitions apply to aircraft; missile and space systems; ships; tank and automotive items; weapon systems; and ammunition.

DOD is also generally prohibited from selling covered materials from the National Defense Stockpile to the specified nations, or to any third party reasonably believed to be acting as a broker or agent for a covered nation or an entity in a covered nation. The National Defense Stockpile was established by Congress in 1939 (50 U.S.C. §98 et seq.) to acquire and retain strategic and critical materials to decrease or prevent the potential dependence of the United States on foreign sources for supplies of these materials in times of national emergency.

Exceptions

Law and policy provide limited exceptions to these prohibitions, applicable to:

- circumstances where the Secretary of Defense determines that compliant materials of satisfactory quality and quantity, in the required form, cannot be procured as and when needed at a reasonable price;
- procurement or sale of covered materials, or end items containing such materials, outside of the United States for use outside of the United States;
- acquisitions at or below the simplified acquisition threshold;
- purchase of a COTS end item containing covered materials, barring COTS end items that are 50% or more tungsten by weight, or mill products (e.g., metal sheets, rods, plates) that have not been incorporated into an end item or component;
- purchase of electronic devices containing covered materials, unless the Secretary of Defense, pursuant to a recommendation of the Strategic Materials Protection Board, determines that the domestic availability of a particular electronic device is critical to national security; or
- purchase of an end item containing a neodymium-iron-boron magnet manufactured from recycled material if the milling of the recycled material and sintering of the final magnet takes place in the United States.

Relevant Statutes and Regulations

Title 10, *U.S. Code*, §2533b and §2533c

DFARS Subparts 225.7003 and 225.7018

CRS Products

CRS In Focus IF10548, *Defense Primer: U.S. Defense Industrial Base*

CRS In Focus IF11311, *Defense Primer: The National Technology and Industrial Base*

CRS In Focus IF10609, *Defense Primer: The Berry and Kissell Amendments*

CRS Report R43864, *China’s Mineral Industry and U.S. Access to Strategic and Critical Minerals: Issues for Congress*

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