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Data Dictionary for Industrial Base Policy Business Health Metrics

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**DATA DICTIONARY FOR INDUSTRIAL BASE POLICY BUSINESS
HEALTH METRICS**

(As of April 2023)

The Office of the Under Secretary of Defense for Acquisition and Sustainment (OUSD(A&S)) Industrial Base Policy (IBP) established six metrics to measure resilience in defense industrial base supply chains (see Table 1). At the direction of the Director, Policy, Analysis, and Transition (PA&T), the Institute for Defense Analyses (IDA) developed measure calculations, identified key data sources for each metric, and refined language to document metric findings. This document serves as a data dictionary, providing detailed information for each of the metrics.

Table 1. Metric Definitions and Data Sources

Metric	Industrial Health Metric	Measure	Key Data Sources
1	% Change Year-on-Year in Key Sector Jobs Filled	$(\# \text{ Jobs Filled in Key Sector in Current Year} - \# \text{ Jobs Filled in Key Sector Reference Year}) / (\# \text{ Jobs Filled in Key Sector in Reference Year})$	Bureau of Labor Statistics
2	% Supplier R&D Investment across the Five Key Sectors	Domestic and Global R&D Spending by Key Sector	National Science Foundation Business Enterprise Research and Development (BERD) Survey
3	% of Domestically-Held New Patents in the Five Key Sectors	$(\# \text{ of New US-Held Patents in Sector}) / (\text{Total } \# \text{ of New Patents in Sector})$	U.S. Patent and Trademark Office (USPTO)
4	% Change Year-on-Year of Domestic Suppliers in Five Key DIB Sectors	$(\# \text{ Domestic Suppliers in Current Year} - \# \text{ Domestic Suppliers in Reference Year}) / (\# \text{ Domestic Suppliers in Reference Year})$	SAM.gov, USAspending.gov
5	% Domestic Suppliers Participating in Five Key DIB Sectors	$(\# \text{ Domestic Suppliers Participating in 5 Key DIB Sectors}) / (\text{Total } \# \text{ Domestic Suppliers in Five Key DIB Sectors})$	SAM.gov, USAspending.gov
6	Comparative % of Domestic versus Foreign Suppliers Participating in Five Key DIB Sectors	$(\# \text{ Foreign Suppliers Participating in 5 Key DIB Sectors}) / (\# \text{ Suppliers Participating in Five Key DIB Sectors})$	SAM.gov, USAspending.gov

Metric 1: % Change Year-on-Year in Key Sector Jobs Filled

The IDA team sourced the employment data from the Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW). The team performed calculations using the following key fields:

- **area_fips:** Used to filter by location. Available levels of detail include county, state, and nationwide.
- **industry_code:** The six-digit North American Industry Classification System (NAICS) codes in this field are aligned with the NAICS codes in Table 3 to determine the key sector.
- **qtrly_estabs:** The count of establishments by quarter is used for the Establishments by Year view.
- **month1_emplvl, month2_emplvl, month3_emplvl:** The average of these three fields are used to determine the quarterly employment level.
- **total_qtrly_wages:** The total quarterly wages field is used along with the quarterly employment level field to calculate average wages, shown in the Wage by Year view.

Metric 2: % Supplier R&D Investment across the Five Key Sectors

The IDA team sourced the R&D spending data from the annual National Science Foundation BERD survey. The team performed calculations using the following tables and aligned the sectors according to Table 2.

- **BERD Table 69:** Worldwide R&D paid for by the company and performed by the company and others, by business activity: 2008–2019.
- **BERD Table 73:** Domestic R&D paid for by the company and others and performed by the company, by business activity: 2011–2019.

Metric 3: % of Domestically-Held New Patents in the Five Key Sectors

The IDA team sourced the patent data from the USPTO through the PatentsView API. The team performed the calculations using the following fields:

- **cpc_current:** The Cooperative Patent Classification (CPC) codes associated with the patent. Patents are aligned to a key sector using Table 5. A patent can be assigned more than one CPC code, if any of a patent's CPC codes align with a sector, that patent is included in the count for that sector.
- **assignee_country:** The associated country of the patent assignee. This field is used for the Patents by Country view, and to calculate the percent of new patents in each sector held domestically.
- **patent_year:** The year the patent was granted.

Metrics 4–6: Measuring Sector Suppliers (Suppliers by Year, Domestic Participation in DIB, and Foreign Supplier Participation)

The IDA team used SAM.gov and USAspending.gov as the primary data sources. Relevant data fields are:

- **Supplier Name,**
- **Supplier Unique Entity ID (UEI),**
- **Physical Location details,**
- **Mailing Address details,**
- **Parent Company information,**
- **NAICS (company and award),**
- **Product and Service Codes (PSC) (company and award),**
- **Awarding and Funding Agency,**
- **Award ID,**
- **Place of Performance details,**
- **Period of Performance details,**
- **Date Signed,**
- **Supplier Business Type information.**

The team first identified federal suppliers within the key sectors through the SAM.gov supplier database. The team identified and aligned relevant companies with key sectors according to Tables 3 and 4 based on company NAICS and PSC codes using the “naics_string” and “psc_string” fields. Ultimately, the IDA team determined that PSC codes were better suited for tailoring the suppliers list.

Metric 4: % Change Year-on-Year of Domestic Suppliers in Five Key DIB Sectors

The IDA team is still collecting contracts for all identified suppliers from USAspending.gov. Currently, the data contains prime contracts only. Key data fields include:

- **Key Sector- PSC:** “Transaction PSC” matched to key sectors.
- **Supplier Count:** Count of suppliers with “Recipient Location” in the U.S.
- **Year:** Determined by “Period of Performance Start Date.”

The team aligned contracts for the DIB suppliers identified in SAM.gov with relevant sectors for both NAICS and PSC according to Tables 3 and 4. The team then used “Period of Performance Start Date” as the measure year and counted suppliers with relevant contracts for each sector within that year.

Metric 5: % Domestic Suppliers Participating in Five Key DIB Sectors

The IDA team validated first tier federal supplier participation in the DIB from a list of sector suppliers by identifying suppliers with direct contracts awarded by the DoD as indicated by USAspending. Key data fields include:

- **Supplier UEI:** “entity_id.”
- **Company Location:** “Physical Location” fields in SAM.gov.

- **Active registration:** Determined from SAM.gov “expiration_date” (cut-off January 2023).
- **Key Sectors:** “psc_string” matched to aligned PSC.
- **DIB Supplier:** Supplier has DoD contract award in USAspending.

Metric 6: Comparative % of Domestic versus Foreign Suppliers Participating in Five Key DIB Sectors

The IDA team determined domestic versus foreign supplier participation for DIB suppliers compiled from SAM.gov by using the Physical Location field; however, we also compared mailing address and place of incorporation to ensure ratios did not vary.

- **Supplier UEI:** “entity_id”
- **Company Location:** “Physical Location” fields in SAM.gov
- **Active registration:** Determined from SAM.gov “expiration_date” (cut-off January 2023).
- **Key Sectors:** “psc_string” matched to aligned PSC.
- **DIB Supplier:** Supplier has DoD contract award in USAspending.

Details on Key Data Sources: NAICS and PSC Codes

To facilitate data collection for the six industrial health metrics written for the Strategic Management Plan, the IDA team compiled a list of NAICS and PSC associated with the five key sectors called out in E.O. 14017. The team then used these coding schemes to associate relevant business data to the key sectors, distinguishing these sectors from the larger industrial base. Pulling large sets of data based on NAICS code or PSC allowed for initial data pulls, categorization, and refinements.

The IDA team added a “Castings and Forgings – Supplemental” category to capture ubiquitous crafted metal items that may not fall under a defined NAICS or PSC “Castings and Forgings” category but would still be of interest.

Table 2. BERD Business Code Alignment

Business Activity	Business Code	Sector
Mining	21200	Strategic Materials
Support activities for mining, including oil and gas	21300	Strategic Materials
Primary metal manufacturing	33100	Casting and Forging
Fabricated metal products manufacturing	33200	Casting and Forging
Construction machinery manufacturing	33312	Casting and Forging
Semiconductor machinery manufacturing	33321	Microelectronics
Industrial machinery manufacturing (except semiconductor machinery)	33322	Casting and Forging
Metalworking and other general purpose machinery manufacturing	33390	Casting and Forging
Semiconductor and other electronic components manufacturing	33440	Microelectronics
Guided missiles, space vehicles, and related parts manufacturing	33644	Kinetics

The IDA team collected NAICS codes and descriptions from the U.S. Census Bureau.¹

Table 3. NAICS Code Sector Alignment

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
212290	Strategic & Critical Materials	Other Metal Ore Mining	This industry comprises establishments primarily engaged in developing the mine site, mining, and/or beneficiating (i.e., preparing) metal ores (except iron and manganese ores valued for their iron content, gold ore, silver ore, copper, nickel, lead, and zinc ore).	2022
212390	Strategic & Critical Materials	Other Nonmetallic Mineral Mining and Quarrying	This industry comprises establishments primarily engaged in developing the mine site, mining, and/or milling or otherwise beneficiating (i.e., preparing) nonmetallic minerals (except coal, stone, sand, gravel, clay, and ceramic and refractory minerals). Drylake brine	2022

¹ <https://www.census.gov/naics/>

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			operations are included in this industry, as well as establishments engaged in producing the specified minerals from underground and open pit mines.	
325180	Strategic & Critical Materials	Other Basic Inorganic Chemical Manufacturing	This industry comprises establishments primarily engaged in manufacturing basic inorganic chemicals (except industrial gases and synthetic dyes and pigments).	2022
325199	Strategic & Critical Materials	All Other Basic Organic Chemical Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing basic organic chemical products (except aromatic petrochemicals, industrial gases, synthetic organic dyes and pigments, gum and wood chemicals, cyclic crudes and intermediates, and ethyl alcohol).	2022
325212	Strategic & Critical Materials	Synthetic Rubber Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing synthetic rubber.	2022
325920	Kinetics	Explosives Manufacturing	This industry comprises establishments primarily engaged in manufacturing explosives.	2022
325998	Strategic & Critical Materials	All Other Miscellaneous Chemical Product and Preparation Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing chemical products (except basic chemicals, resins, and synthetic rubber; cellulosic and noncellulosic fibers and filaments; pesticides, fertilizers, and other agricultural chemicals; pharmaceuticals and medicines; paints, coatings and adhesives; soaps, cleaning compounds, and toilet preparations; printing inks; explosives; custom compounding of purchased resins; and	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			photographic films, papers, plates, chemicals, and copy toners).	
326291	Strategic & Critical Materials	Rubber Product Manufacturing for Mechanical Use	This U.S. industry comprises establishments primarily engaged in manufacturing rubber goods (except tubing) for mechanical applications, using the processes of molding, extruding or lathe-cutting. Products of this industry are generally parts for motor vehicles, machinery, and equipment.	2022
327992	Strategic & Critical Materials	Ground or Treated Mineral and Earth Manufacturing	This U.S. industry comprises establishments primarily engaged in calcining, dead burning, or otherwise processing beyond beneficiation, clays, ceramic and refractory minerals, barite, and miscellaneous nonmetallic minerals.	2022
331110	Strategic & Critical Materials	Iron and Steel Mills and Ferroalloy Manufacturing	This industry comprises establishments primarily engaged in one or more of the following: (1) direct reduction of iron ore; (2) manufacturing pig iron in molten or solid form; (3) converting pig iron into steel; (4) making steel; (5) making steel and manufacturing shapes (e.g., bar, plate, rod, sheet, strip, wire); (6) making steel and forming pipe and tube; and (7) manufacturing electrometallurgical ferroalloys. Ferroalloys add critical elements, such as silicon and manganese for carbon steel and chromium, vanadium, tungsten, titanium, and molybdenum for low- and high-alloy metals. Ferroalloys include iron-rich alloys and more pure forms of elements added during the steel manufacturing process that alter or improve the characteristics of the metal.	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
331221	C&F-Supplemental	Rolled Steel Shape Manufacturing	This U.S. industry comprises establishments primarily engaged in rolling or drawing shapes (except wire), such as plate, sheet, strip, rod, and bar, from purchased steel.	2022
331222	C&F-Supplemental	Steel Wire Drawing	This U.S. industry comprises establishments primarily engaged in drawing wire from purchased steel.	2022
331313	Strategic & Critical Materials and C&F	Alumina Refining and Primary Aluminum Production	This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) refining alumina (i.e., aluminum oxide) generally from bauxite; (2) making aluminum from alumina; and/or (3) making aluminum from alumina and rolling, drawing, extruding, or casting the aluminum they make into primary forms. Establishments in this industry may make primary aluminum or aluminum-based alloys from alumina.	2022
331314	Strategic & Critical Materials	Secondary Smelting and Alloying of Aluminum	This U.S. industry comprises establishments primarily engaged in (1) recovering aluminum and aluminum alloys from scrap and/or dross (i.e., secondary smelting) and making billet or ingot (except by rolling) and/or (2) manufacturing alloys, powder, paste, or flake from purchased aluminum.	2022
331318	C&F-Supplemental	Other Aluminum Rolling, Drawing, and Extruding	This U.S. industry comprises establishments primarily engaged in (1) rolling, drawing, or extruding shapes (except flat rolled sheet, plate, foil, and welded tube) from purchased aluminum and/or (2) recovering aluminum from scrap and rolling, drawing, or extruding shapes	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			(except flat rolled sheet, plate, foil, and welded tube) in integrated mills.	
331410	Strategic & Critical Materials	Nonferrous Metal (except Aluminum) Smelting and Refining	This industry comprises establishments primarily engaged in (1) smelting ores into nonferrous metals and/or (2) the primary refining of nonferrous metals (except aluminum) by electrolytic methods or other processes.	2022
331491	C&F-Supplemental	Nonferrous Metal (except Copper and Aluminum) Rolling, Drawing, and Extruding	This U.S. industry comprises establishments primarily engaged in (1) rolling, drawing, or extruding shapes (e.g., bar, plate, sheet, strip, tube) from purchased nonferrous metals and/or (2) recovering nonferrous metals from scrap and rolling, drawing, and/or extruding shapes (e.g., bar, plate, sheet, strip, tube) in integrated mills.	2022
331492	Strategic & Critical Materials	Secondary Smelting, Refining, and Alloying of Nonferrous Metal (except Copper and Aluminum)	This U.S. industry comprises establishments primarily engaged in (1) alloying purchased nonferrous metals and/or (2) recovering nonferrous metals from scrap. Establishments in this industry make primary forms (e.g., bar, billet, bloom, cake, ingot, slab, slug, wire) using smelting or refining processes.	2022
331512	C&F	Steel Investment Foundries	This U.S. industry comprises establishments primarily engaged in manufacturing steel investment castings. Investment molds are formed by covering a wax shape with a refractory slurry. After the refractory slurry hardens, the wax is melted, leaving a seamless mold. Investment molds provide highly detailed, consistent castings. Establishments in this	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			industry purchase steel made in other establishments.	
331513	C&F	Steel Foundries (except Investment)	This U.S. industry comprises establishments primarily engaged in manufacturing steel castings (except steel investment castings). Establishments in this industry purchase steel made in other establishments.	2022
331523	C&F	Nonferrous Metal Die-Casting Foundries	This U.S. industry comprises establishments primarily engaged in introducing molten nonferrous metal, under high pressure, into molds or dies to make nonferrous metal die-castings. Establishments in this industry purchase nonferrous metals made in other establishments.	2022
331524	C&F	Aluminum Foundries (except Die-Casting)	This U.S. industry comprises establishments primarily engaged in pouring molten aluminum into molds to manufacture aluminum castings (except nonferrous die-castings). Establishments in this industry purchase aluminum made in other establishments.	2022
331529	C&F	Other Nonferrous Metal Foundries (except Die-Casting)	This U.S. industry comprises establishments primarily engaged in pouring molten nonferrous metals (except aluminum) into molds to manufacture nonferrous castings (except nonferrous die-castings and aluminum castings). Establishments in this industry purchase nonferrous metals, such as copper, nickel, lead, and zinc, made in other establishments.	2022
332111	C&F	Iron and Steel Forging	This U.S. industry comprises establishments primarily engaged in manufacturing iron and steel forgings from purchased iron and steel by hammering mill shapes. Establishments making iron and steel forgings and further.	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			<p>manufacturing (e.g., machining, assembling) a specific manufactured product are classified in the industry of the finished product. Iron and steel forging establishments may perform surface finishing operations, such as cleaning and deburring, on the forgings they manufacture.</p>	
332112	C&F	Nonferrous Forging	<p>This U.S. industry comprises establishments primarily engaged in manufacturing nonferrous forgings from purchased nonferrous metals by hammering mill shapes. Establishments making nonferrous forgings and further manufacturing (e.g., machining, assembling) a specific manufactured product are classified in the industry of the finished product. Nonferrous forging establishments may perform surface finishing operations, such as cleaning and deburring, on the forgings they manufacture.</p>	2022
332117	C&F	Powder Metallurgy Part Manufacturing	<p>This U.S. industry comprises establishments primarily engaged in manufacturing powder metallurgy products using any of the various powder metallurgy processing techniques, such as pressing and sintering or metal injection molding. Establishments in this industry generally make a wide range of parts on a job or order basis.</p>	2022
332312	C&F	Fabricated Structural Metal Manufacturing	<p>This U.S. industry comprises establishments primarily engaged in fabricating structural metal products, such as assemblies of concrete reinforcing bars and fabricated bar joists.</p>	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
332322	C&F	Sheet Metal Work Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing sheet metal work (except stampings).	2022
332710	C&F	Machine Shops	This industry comprises establishments known as machine shops primarily engaged in machining metal and plastic parts and parts of other composite materials on a job or order basis. Generally machine shop jobs are low volume using machine tools, such as lathes (including computer numerically controlled); automatic screw machines; and machines for boring, grinding, milling, and additive manufacturing.	2022
332811	C&F	Metal Heat Treating	This U.S. industry comprises establishments primarily engaged in heat treating, such as annealing, tempering, and brazing, and cryogenically treating metals and metal products for the trade.	2022
332812	C&F	Metal Coating, Engraving (except Jewelry and Silverware), and Allied Services to Manufacturers	This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) enameling, lacquering, and varnishing metals and metal products; (2) hot dip galvanizing metals and metal products; (3) engraving, chasing, or etching metals and metal products (except jewelry; personal goods carried on or about the person, such as compacts and cigarette cases; precious metal products (except precious plated flatware and other plated ware); and printing plates); (4) powder coating metals and metal products; and (5) providing other metal surfacing services for the trade. Included in this industry	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			are establishments that perform these processes on other materials, such as plastics, in addition to metals.	
332992	Kinetics	Small Arms Ammunition Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing small arms ammunition.	2022
332993	Kinetics	Ammunition (except Small Arms) Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing ammunition (except small arms). Examples of products made by these establishments are bombs, depth charges, rockets (except guided missiles), grenades, mines, and torpedoes.	2022
332994	Kinetics	Small Arms, Ordnance, and Ordnance Accessories Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing small arms, other ordnance, and/or ordnance accessories.	2022
332999	C&F	All Other Miscellaneous Fabricated Metal Product Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing fabricated metal products (except forgings and stampings, cutlery and handtools, architectural and structural metals, boilers, tanks, shipping containers, hardware, spring and wire products, machine shop products, turned products, screws, nuts and bolts, metal valves, ball and roller bearings, ammunition, small arms and other ordnances and accessories, and fabricated pipes and pipe fittings).	2022
333242	Microelectronics	Semiconductor Machinery Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing wafer processing equipment, semiconductor assembly and packaging equipment, and other	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			semiconductor making machinery.	
333514	C&F	Special Die and Tool, Die Set, Jig, and Fixture Manufacturing	This U.S. industry comprises establishments, known as tool and die shops, primarily engaged in manufacturing special tools and fixtures, such as cutting dies and jigs.	2022
333517	C&F	Machine Tool Manufacturing	This U.S. industry comprises establishments primarily engaged in (1) manufacturing metal cutting machine tools (except handtools) and/or (2) manufacturing metal forming machine tools (except handtools), such as punching, sheering, bending, forming, pressing, forging and die-casting machines.	2022
334413	Microelectronics	Semiconductor and Related Device Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing semiconductors and related solid-state devices. Examples of products made by these establishments are integrated circuits, memory chips, microprocessors, diodes, transistors, solar cells, and other optoelectronic devices.	2022
335910	Batteries	Battery Manufacturing	This industry comprises establishments primarily engaged in manufacturing primary and storage batteries.	2022
335911	Batteries	Storage Battery Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing storage batteries.	2017
335912	Batteries	Primary Battery Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing wet or dry primary batteries.	2017
335991	Strategic & Critical Materials	Carbon and Graphite Product Manufacturing	This U.S. industry comprises establishments primarily engaged in manufacturing carbon, graphite, and metal-graphite	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
			brushes and brush stock; carbon or graphite electrodes for thermal and electrolytic uses; carbon and graphite fibers; and other carbon, graphite, and metal-graphite products.	
336412	Kinetics	Aircraft Engine and Engine Parts Manufacturing	This U.S. industry comprises establishments primarily engaged in one or more of the following: (1) manufacturing aircraft engines and engine parts; (2) developing and making prototypes of aircraft engines and engine parts; (3) aircraft propulsion system conversion (i.e., major modifications to systems); and (4) aircraft propulsion systems overhaul and rebuilding (i.e., periodic restoration of aircraft propulsion system to original design specifications).	2022
336414	Kinetics	Guided Missile and Space Vehicle Manufacturing	This U.S. industry comprises establishments primarily engaged in (1) manufacturing complete guided missiles and space vehicles and/or (2) developing and making prototypes of guided missiles or space vehicles.	2022
336415	Kinetics	Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing	This U.S. industry comprises establishments primarily engaged in (1) manufacturing guided missile and/or space vehicle propulsion units and propulsion unit parts and/or (2) developing and making prototypes of guided missile and space vehicle propulsion units and propulsion unit parts.	2022
336419	Kinetics	Other Guided Missile and Space Vehicle Parts and Auxiliary	This U.S. industry comprises establishments primarily engaged in (1) manufacturing guided missile and space vehicle parts and auxiliary equipment (except guided missile and space vehicle	2022

NAICS	Key Sector	NAICS Description	NAICS Definition	Relevance Year
		Equipment Manufacturing	propulsion units and propulsion unit parts) and/or (2) developing and making prototypes of guided missile and space vehicle parts and auxiliary equipment.	
424690	Kinetics	Other Chemical and Allied Products Merchant Wholesalers	This industry comprises establishments primarily engaged in the merchant wholesale distribution of chemicals and allied products (except agricultural and medicinal chemicals, paints and varnishes, fireworks, and plastics materials and basic forms and shapes).	2022

The IDA team collected the PSCs and descriptions from the General Service Administration’s April 2022 PSC Manual.²

Table 4. Product and Service Code Sector Alignment

PSC	Product and Service Code Name	Key Sector
1040	CHEMICAL WEAPONS AND EQUIPMENT	Kinetics
1045	LAUNCHERS, TORPEDO AND DEPTH CHARGE	Kinetics
1055	LAUNCHERS, ROCKET AND PYROTECHNIC	Kinetics
1070	NETS AND BOOMS, ORDNANCE	Kinetics
1090	ASSEMBLIES INTERCHANGEABLE BETWEEN WEAPONS IN TWO OR MORE CLASSES	Kinetics
1095	MISCELLANEOUS WEAPONS	Kinetics
1105	NUCLEAR BOMBS	Kinetics
1110	NUCLEAR PROJECTILES	Kinetics
1115	NUCLEAR WARHEADS AND WARHEAD SECTIONS	Kinetics
1120	NUCLEAR DEPTH CHARGES	Kinetics
1125	NUCLEAR DEMOLITION CHARGES	Kinetics
1127	NUCLEAR ROCKETS	Kinetics
1135	FUZING AND FIRING DEVICES, NUCLEAR ORDNANCE	Kinetics
1145	EXPLOSIVE AND PYROTECHNIC COMPONENTS, NUCLEAR ORDNANCE	Kinetics
1195	MISCELLANEOUS NUCLEAR ORDNANCE	Kinetics
1325	BOMBS	Kinetics

² <https://www.acquisition.gov/psc-manual>

PSC	Product and Service Code Name	Key Sector
1330	GRENADES	Kinetics
1336	GUIDED MISSILE WARHEADS AND EXPLOSIVE COMPONENTS	Kinetics
1337	GUIDED MISSILE AND SPACE VEHICLE EXPLOSIVE PROPULSION UNITS, SOLID FUEL; AND COMPONENTS	Kinetics
1338	GUIDED MISSILE AND SPACE VEHICLE INERT PROPULSION UNITS, SOLID FUEL; AND COMPONENTS	Kinetics
1340	ROCKETS, ROCKET AMMUNITION AND ROCKET COMPONENTS	Kinetics
1345	LAND MINES	Kinetics
1346	REMOTE MUNITIONS	Kinetics
1350	UNDERWATER MINE AND COMPONENTS, INERT	Kinetics
1351	UNDERWATER MINES AND COMPONENTS, EXPLOSIVE	Kinetics
1355	TORPEDOS AND COMPONENTS, INERT	Kinetics
1356	TORPEDOS AND COMPONENTS, EXPLOSIVE	Kinetics
1360	DEPTH CHARGES AND COMPONENTS, INERT	Kinetics
1361	DEPTH CHARGES AND COMPONENTS, EXPLOSIVE	Kinetics
1365	MILITARY CHEMICAL AGENTS	Kinetics
1370	PYROTECHNICS	Kinetics
1375	DEMOLITION MATERIALS	Kinetics
1376	BULK EXPLOSIVES	Kinetics
1377	CARTRIDGE AND PROPELLANT ACTUATED DEVICES AND COMPONENTS	Kinetics
1390	FUZES AND PRIMERS	Kinetics
1410	GUIDED MISSILES	Kinetics
1420	GUIDED MISSILE COMPONENTS	Kinetics
1425	GUIDED MISSILE SYSTEMS, COMPLETE	Kinetics
1427	GUIDED MISSILE SUBSYSTEMS	Kinetics
1430	GUIDED MISSILE REMOTE CONTROL SYSTEMS	Kinetics
1440	LAUNCHERS, GUIDED MISSILE	Kinetics
1450	GUIDED MISSILE HANDLING AND SERVICING EQUIPMENT	Kinetics
1560	AIRFRAME STRUCTURAL COMPONENTS	C&F
1610	AIRCRAFT PROPELLERS AND COMPONENTS	C&F
1615	HELICOPTER ROTOR BLADES, DRIVE MECHANISMS AND COMPONENTS	C&F
1620	AIRCRAFT LANDING GEAR COMPONENTS	C&F
2010	SHIP AND BOAT PROPULSION COMPONENTS	C&F
2030	DECK MACHINERY	C&F

PSC	Product and Service Code Name	Key Sector
2040	MARINE HARDWARE AND HULL ITEMS	C&F
2835	GAS TURBINES AND JET ENGINES; NON-AIRCRAFT PRIME MOVER, AIRCRAFT NON-PRIME MOVER, AND COMPONENTS	C&F
2840	GAS TURBINES AND JET ENGINES, AIRCRAFT, PRIME MOVING; AND COMPONENTS	C&F
2950	TURBOSUPERCHARGER AND COMPONENTS	C&F
3020	GEARS, PULLEYS, SPROCKETS, AND TRANSMISSION CHAIN	C&F - Supplemental
3110	BEARINGS, ANTIFRICTION, UNMOUNTED	C&F - Supplemental
3120	BEARINGS, PLAIN, UNMOUNTED	C&F - Supplemental
3130	BEARINGS, MOUNTED	C&F - Supplemental
3465	PRODUCTION JIGS, FIXTURES, AND TEMPLATES	C&F
3470	MACHINE SHOP SETS, KITS, AND OUTFITS	C&F
5305	SCREWS	C&F - Supplemental
5306	BOLTS	C&F - Supplemental
5307	STUDS	C&F - Supplemental
5310	NUTS AND WASHERS	C&F - Supplemental
5315	NAILS, MACHINE KEYS, AND PINS	C&F - Supplemental
5320	RIVETS	C&F - Supplemental
5325	FASTENING DEVICES	C&F - Supplemental
5330	PACKING AND GASKET MATERIALS	C&F - Supplemental
5340	HARDWARE, COMMERCIAL	C&F
5342	HARDWARE, WEAPON SYSTEM	Kinetics
5360	COIL, FLAT, LEAF, AND WIRE SPRINGS	C&F - Supplemental
5365	BUSHINGS, RINGS, SHIMS, AND SPACERS	C&F - Supplemental
5430	STORAGE TANKS	C&F
5445	PREFABRICATED TOWER STRUCTURES	C&F
5961	SEMICONDUCTOR DEVICES AND ASSOCIATED HARDWARE	Microelectronics
5962	MICROCIRCUITS, ELECTRONIC	Microelectronics
5963	ELECTRONIC MODULES	Microelectronics
5980	OPTOELECTRONIC DEVICES AND ASSOCIATED HARDWARE	Microelectronics
6810	CHEMICALS	Strategic & Critical Materials
6830	GASES: COMPRESSED AND LIQUEFIED	Strategic & Critical Materials
6850	MISCELLANEOUS CHEMICAL SPECIALTIES	Strategic & Critical Materials
9110	FUELS, SOLID	Strategic & Critical Materials

PSC	Product and Service Code Name	Key Sector
9130	LIQUID PROPELLANTS AND FUELS, PETROLEUM BASE	Strategic & Critical Materials
9135	LIQUID PROPELLANT FUELS AND OXIDIZERS, CHEMICAL BASE	Strategic & Critical Materials
9390	MISCELLANEOUS FABRICATED NONMETALLIC MATERIALS	Strategic & Critical Materials
9450	NONMETALLIC SCRAP, EXCEPT TEXTILE	Strategic & Critical Materials
9505	WIRE, NONELECTRICAL	C&F - Supplemental
9510	BARS AND RODS	C&F - Supplemental
9515	PLATE, SHEET, STRIP, FOIL, AND LEAF	C&F
9520	STRUCTURAL SHAPES	C&F
9525	WIRE, NONELECTRICAL, NONFERROUS BASE METAL	C&F - Supplemental
9530	BARS AND RODS, NONFERROUS BASE METAL	C&F
9535	PLATE, SHEET, STRIP, AND FOIL; NONFERROUS BASE METAL	C&F
9540	STRUCTURAL SHAPES, NONFERROUS BASE METAL	C&F
9545	PLATE, SHEET, STRIP, FOIL, AND WIRE: PRECIOUS METAL	C&F
9610	ORES	Strategic & Critical Materials
9620	MINERALS, NATURAL AND SYNTHETIC	Strategic & Critical Materials
9630	ADDITIVE METAL MATERIALS	Strategic & Critical Materials
9640	IRON AND STEEL PRIMARY AND SEMIFINISHED PRODUCTS	C&F
9650	NONFERROUS BASE METAL REFINERY AND INTERMEDIATE FORMS	Strategic & Critical Materials
9660	PRECIOUS METALS PRIMARY FORMS	Strategic & Critical Materials
9670	IRON AND STEEL SCRAP	Strategic & Critical Materials
9680	NONFERROUS SCRAP	Strategic & Critical Materials
6135	BATTERIES, NONRECHARGEABLE	Batteries
6140	BATTERIES, RECHARGEABLE	Batteries

The IDA team applied a congruency match for patents to each key sector by CPC codes as defined by the USPTO.

Table 5. Cooperative Patent Classification Code Sector Alignment

CPC Code	Key Sector	Description
C01B 3/0063	Strategic & Critical Materials	{only containing a rare earth metal and only one other metal}
C22B	Strategic & Critical Materials	PRODUCTION AND REFINING OF METALS (electrolytic C25); PRETREATMENT OF RAW MATERIALS
C22C	Strategic & Critical Materials	ALLOYS (flints C06C 15/00; treatment of alloys C21D, C22F)
C30B 29/22	Strategic & Critical Materials	Complex Oxides
C30B 29/602	Strategic & Critical Materials	Nanotubes
E21C	Strategic & Critical Materials	MINING OR QUARRYING
C25D 7/12	Microelectronics	Electroplating characterized by the article coated: Semiconductors
C25F 3/12	Microelectronics	PROCESSES FOR THE ELECTROLYTIC REMOVAL OF MATERIALS FROM OBJECTS; APPARATUS THEREFOR: of semiconducting materials
C25F 3/30	Microelectronics	PROCESSES FOR THE ELECTROLYTIC REMOVAL OF MATERIALS FROM OBJECTS; APPARATUS THEREFOR: of semiconducting materials
C30B 15/04	Microelectronics	adding doping materials, e.g. for n-p-junction
C30B 23/	Microelectronics	Single-crystal growth by condensing evaporated or sublimed materials
C30B 23/02	Microelectronics	Epitaxial-layer growth
C30B 25/	Microelectronics	Single-crystal growth by chemical reaction of reactive gases, e.g. chemical vapor-deposition growth
C30B 25/02	Microelectronics	Epitaxial-layer growth
G11C	Microelectronics	STATIC STORES (semiconductor devices for storage H01L, e.g. H01L 27/108 – H01L 27/11597)
H01C	Microelectronics	RESISTORS
H01F 1/40	Microelectronics	of magnetic semiconductor materials, e.g. CdCr ₂ S ₄ (devices using galvano-magnetic or similar effects H10N 50/00)
H01F 17	Microelectronics	Fixed inductances of the signal type (coils in general H01F 5/00 {inductors without a potential-jump or surface barrier specially adapted for integrated circuits, details thereof and multistep manufacturing processes therefor H01L 28/10})
H01G	Microelectronics	CAPACITORS; CAPACITORS, RECTIFIERS, DETECTORS, SWITCHING DEVICES OR LIGHT-SENSITIVE DEVICES, OF THE ELECTROLYTIC TYPE (selection of specified materials as

CPC Code	Key Sector	Description
		dielectric H01B 3/00; capacitors with potential-jump or surface barrier H01L 29/00)
H01L	Microelectronics	SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR (use of semiconductor devices for measuring G01; resistors in general H01C; magnets, inductors, transformers H01F; capacitors in general H01G; electrolytic devices H01G 9/00; batteries, accumulators H01M; waveguides, resonators, or lines of the waveguide type H01P; line connectors, current collectors H01R; stimulated-emission devices H01S; electromechanical resonators H03H; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R; electric light sources in general H05B; printed circuits, hybrid circuits, casings or constructional details of electrical apparatus, manufacture of assemblages of electrical components H05K; use of semiconductor devices in circuits having a particular application, see the subclass for the application)
C06B	Kinetics	EXPLOSIVES OR THERMIC COMPOSITIONS (blasting F42D); MANUFACTURE THEREOF; USE OF SINGLE SUBSTANCES AS EXPLOSIVES (compounds in general C01, C07 or C08; {demolition agents based on cementitious or like materials C04B 41/0009;})
C06C	Kinetics	DETONATING OR PRIMING DEVICES; FUSES (ammunition fuses F42C); CHEMICAL LIGHTERS; PYROPHORIC COMPOSITIONS
C06D 5/00	Kinetics	Generation of pressure gas, e.g. for blasting cartridges, starting cartridges, rockets (explosive compositions containing an oxidizer, fuels for rocket engines intended for reaction with an oxidant other than air C06B)
F41B 9/0087	Kinetics	{characterized by the intended use, e.g. for self-defense, law-enforcement, industrial use, military purposes (F41B 9/0046 takes precedence)}
F41F	Kinetics	APPARATUS FOR LAUNCHING PROJECTILES OR MISSILES FROM BARRELS, e.g. CANNONS (small arms F41C); LAUNCHERS FOR ROCKETS OR TORPEDOES; HARPOON GUNS (functional features or details common to both small arms and ordnance, mountings therefor F41A; projecting missiles without use of explosive or combustible propellant charge F41B)
F41G 7	Kinetics	Direction control systems for self-propelled missiles (flight control B64C, G05D 1/00 {; counter-measures against guided missiles F41H 11/02; spin-stabilized missiles F42B 10/26}); self-propelled or guided missiles having direction control systems only installed aboard F42B 15/01; rocket torpedoes F42B 17/00; marine torpedoes or sea-mines having self-propulsion means F42B 19/00; locating by use of radio or other waves G01S; computing aspects G06)
F42B 1	Kinetics	Explosive charges characterized by form or shape but not dependent on shape of container

CPC Code	Key Sector	Description
F42B 10	Kinetics	Means for influencing, e.g. improving, the aerodynamic properties of projectiles or missiles; Arrangements on projectiles or missiles for stabilizing, steering, range-reducing, range-increasing or fall-retarding (F42B 6/00 takes precedence)
F42B 12/365	Kinetics	Projectiles, missiles or mines characterized by the warhead, the intended effect, or the material: {Projectiles transmitting information to a remote location using optical or electronic means (F42B 12/385 takes precedence)}
F42B 12/38	Kinetics	Projectiles, missiles or mines characterized by the warhead, the intended effect, or the material: of tracer type
F42B 12/44	Kinetics	Projectiles, missiles or mines characterized by the warhead, the intended effect, or the material: of incendiary type
F42B 12/52	Kinetics	Projectiles, missiles or mines characterized by the warhead, the intended effect, or the material: fuel-air explosive devices
F42B 15	Kinetics	Self-propelled projectiles or missiles, e.g. rockets; Guided missiles (F42B 10/00, F42B 12/00, F42B 14/00 take precedence: for practice or training F42B 8/12: rocket torpedoes F42B 17/00; marine torpedoes F42B 19/00; cosmonautic vehicles B64G; jet-propulsion plants F02K)
F42B 19	Kinetics	Marine torpedoes, e.g. launched by surface vessels or submarines (having additional propulsion means for movement through air F42B 17/00); Sea mines having self-propulsion means (F42B 12/00 takes precedence; launching means F41F; locating by use of radio or other waves G01S; automatic control of course G05D 1/00; firing directors or calculators G06G)
F42B 21	Kinetics	Depth charges (F42B 12/00 takes precedence; for practice or training F42B 8/28; laying aspects B63G)
F42B 22	Kinetics	Marine mines, e.g. launched by surface vessels or submarines (F42B 12/00 takes precedence; for practice or training F42B 8/28; mine laying or sweeping B63G)
F42B 23	Kinetics	Land mines {; Land torpedoes} (F42B 12/00 takes precedence; for practice or training F42B 8/28)
F42B 25	Kinetics	Fall bombs (F42B 10/00, F42B 12/00 take precedence; for practice or training F42B 8/12 {; gliding type bombs F42B 15/105})
F42B 29	Kinetics	Noiseless, smokeless, or flashless missiles launched by their own explosive propellant
F42B 3	Kinetics	Blasting cartridges, i.e. case and explosive (fuse cords, e.g. detonating fuse cords C06C 5/00; chemical aspects of detonators, blasting caps or primers C06C 7/00)
F42B 3/195	Kinetics	Manufacture
F42B 30	Kinetics	Projectiles or missiles, not otherwise provided for, characterized by the ammunition class or type, e.g. by the launching apparatus or weapon used (F42B 10/00, F42B 12/00, F42B 14/00 take precedence)
F42B 33	Kinetics	Manufacture of ammunition; Dismantling of ammunition; Apparatus therefor (F42B 5/188 takes precedence; manufacturing processes for

CPC Code	Key Sector	Description
		hollow charges F42B 1/036; manufacture of blasting cartridge initiators F42B 3/195)
F42B 35	Kinetics	Testing or checking of ammunition {(apparatus for measuring the energy of projectiles G01L 5/14)}
F42B 39/14	Kinetics	Explosion or fire protection arrangements on packages or ammunition (F42B 39/20 {and F42B 39/24} take precedence; {wall or panel structure of fireproof safes or storage containers E05G 1/024})
F42C	Kinetics	AMMUNITION FUZES (blasting cartridge initiators F42B 3/10; chemical aspects C06C); ARMING OR SAFETY MEANS THEREFOR (filling fuses F42B 33/02; fitting or extracting primers in or from fuses F42B 33/04; containers for fuses F42B 39/30)
F42D	Kinetics	BLASTING (fuses, e.g. fuse cords, C06C 5/00; {for obtaining fluid from wells E21B 43/00; for mining or quarrying E21C 37/00; for making tunnels or galleries E21D 9/006}); cartridges F42B 3/00)
B21B	Castings & Forgings	Rolling Metal
B21C	Castings & Forgings	Manufacture of metal sheets, wire, rods, tubes or profiles, otherwise than by rolling; auxiliary operations used in connection with metal-working without essentially removing metal
B21D	Castings & Forgings	WORKING OR PROCESSING OF SHEET METAL OR METAL TUBES, RODS OR PROFILES WITHOUT ESSENTIALLY REMOVING MATERIAL; PUNCHING METAL
B21H	Castings & Forgings	MAKING PARTICULAR METAL OBJECTS BY ROLLING, e.g. SCREWS, WHEELS, RINGS, BARRELS, BALLS
B21J	Castings & Forgings	FORGING; HAMMERING; PRESSING METAL; RIVETING; FORGE FURNACES
B21K	Castings & Forgings	MAKING FORGED OR PRESSED METAL PRODUCTS, e.g. HORSE-SHOES, RIVETS, BOLTS OR WHEELS
B22C	Castings & Forgings	FOUNDRY MOULDING
B22D	Castings & Forgings	CASTING OF METALS; CASTING OF OTHER SUBSTANCES BY THE SAME PROCESSES OR DEVICES
B22F	Castings & Forgings	WORKING METALLIC POWDER; MANUFACTURE OF ARTICLES FROM METALLIC POWDER; MAKING METALLIC POWDER (making alloys by powder metallurgy C22C); APPARATUS OR DEVICES SPECIALLY ADAPTED FOR METALLIC POWDER
B22F 10/	Castings & Forgings	Additive manufacturing of workpieces or articles from metallic powder
B22F 5/	Castings & Forgings	Manufacture of workpieces or articles from metallic powder characterized by the special shape of the product
B23B	Castings & Forgings	TURNING; BORING
B23C	Castings & Forgings	MILLING

CPC Code	Key Sector	Description
B23D	Castings & Forgings	PLANING; SLOTTING; SHEARING; BROACHING; SAWING; FILING; SCRAPING; LIKE OPERATIONS FOR WORKING METAL BY REMOVING MATERIAL, NOT OTHERWISE PROVIDED FOR
B23F	Castings & Forgings	MAKING GEARS OR TOOTHED RACKS (by stamping B21D; by rolling B21H; by forging or pressing B21K; by casting B22; arrangements for copying or controlling B23Q; machines or devices for grinding or polishing, in general B24B)
B23G	Castings & Forgings	THREAD CUTTING; WORKING OF SCREWS, BOLT HEADS, OR NUTS, IN CONJUNCTION THEREWITH (making helical grooves by turning B23B 5/48, by milling B23C 3/32, by forging, pressing, or hammering B21K 1/56, by grinding B24B 19/02; arrangements for copying or controlling B23Q; thread-forming by corrugating tubes B21D 15/04, by rolling B21H 3/02)
B23H	Castings & Forgings	WORKING OF METAL BY THE ACTION OF A HIGH CONCENTRATION OF ELECTRIC CURRENT ON A WORKPIECE USING AN ELECTRODE WHICH TAKES THE PLACE OF A TOOL; SUCH WORKING COMBINED WITH OTHER FORMS OF WORKING OF METAL (processes for the electrolytic or electrophoretic production of coatings, electroforming, or apparatus therefor C25D; processes for the electrolytic removal of material from objects C25F; manufacturing printed circuits using precipitation techniques to apply the conductive material to form the desired conductive pattern H05K 3/18)
B23K	Castings & Forgings	SOLDERING OR UNSOLDERING; WELDING; CLADDING OR PLATING BY SOLDERING OR WELDING; CUTTING BY APPLYING HEAT LOCALLY, e.g. FLAME CUTTING; WORKING BY LASER BEAM (making metal-coated products by extruding metal B21C 23/22; building up linings or coverings by casting B22D 19/08; casting by dipping B22D 23/04; manufacture of composite layers by sintering metal powder B22F 7/00; arrangements on machine tools for copying or controlling B23Q; covering metals or covering materials with metals, not otherwise provided for C23C; burners F23D)
B23P	Castings & Forgings	METAL-WORKING NOT OTHERWISE PROVIDED FOR; COMBINED OPERATIONS; UNIVERSAL MACHINE TOOLS (arrangements for copying or controlling B23Q)
B23Q	Castings & Forgings	DETAILS, COMPONENTS, OR ACCESSORIES FOR MACHINE TOOLS, e.g. ARRANGEMENTS FOR COPYING OR CONTROLLING (tools of the kind used in lathes or boring machines B23B 27/00); MACHINE TOOLS IN GENERAL CHARACTERISED BY THE CONSTRUCTION OF PARTICULAR DETAILS OR COMPONENTS; COMBINATIONS OR ASSOCIATIONS OF METAL-WORKING MACHINES, NOT DIRECTED TO A PARTICULAR RESULT
B24B	Castings & Forgings	MACHINES, DEVICES, OR PROCESSES FOR GRINDING OR POLISHING (grinding of gear teeth B23F, of screw-threads B23G)

CPC Code	Key Sector	Description
		1/36; by electro-erosion B23H; abrasive or related blasting B24C; tools for grinding, buffing or sharpening B24D; polishing compositions C09G 1/00; abrasives C09K 3/14; electrolytic etching or polishing C25F 3/00; grinding arrangements for use on assembled railway tracks E01B 31/17); DRESSING OR CONDITIONING OF ABRADING SURFACES; FEEDING OF GRINDING, POLISHING, OR LAPPING AGENTS
B24C 5/062	Castings & Forgings	{Rotor blades or vanes; Locking means therefor}
B24C 5/064	Castings & Forgings	{One-piece wheels; Integral impeller units, e.g. made by casting}
B32 15/00	Castings & Forgings	Layered products comprising {a layer of} metal
C21B	Castings & Forgings	MANUFACTURE OF IRON OR STEEL (preliminary treatment of ferrous ores or scrap C22B 1/00; electric heating H05B)
C21C	Castings & Forgings	PROCESSING OF PIG-IRON, e.g. REFINING, MANUFACTURE OF WROUGHT-IRON OR STEEL; TREATMENT IN MOLTEN STATE OF FERROUS ALLOYS (refining metals in general C22B 9/00)
C21D	Castings & Forgings	MODIFYING THE PHYSICAL STRUCTURE OF FERROUS METALS; GENERAL DEVICES FOR HEAT TREATMENT OF FERROUS OR NON-FERROUS METALS OR ALLOYS; MAKING METAL MALLEABLE, e.g. BY DECARBURISATION OR TEMPERING (surface treatment of metallic material involving at least one process provided for in class C23 and at least one process covered by this subclass C23F 17/00; unidirectional solidification of eutectic materials or unidirectional demixing of eutectoid materials C30B)
C22F	Castings & Forgings	CHANGING THE PHYSICAL STRUCTURE OF NON-FERROUS METALS AND NON-FERROUS ALLOYS (surface treatment of metallic material involving at least one process provided for in class C23 and at least one process covered by this subclass, C23F 17/00)
C23C	Castings & Forgings	COATING METALLIC MATERIAL; COATING MATERIAL WITH METALLIC MATERIAL; SURFACE TREATMENT OF METALLIC MATERIAL BY DIFFUSION INTO THE SURFACE, BY CHEMICAL CONVERSION OR SUBSTITUTION; COATING BY VACUUM EVAPORATION, BY SPUTTERING, BY ION IMPLANTATION OR BY CHEMICAL VAPOUR DEPOSITION, IN GENERAL (making metal-coated products by extrusion B21C 23/22; covering with metal by connecting pre-existing layers to articles, see the relevant places, e.g. B21D 39/00, B23K; metallizing of glass C03C; metallizing mortars, concrete, artificial stone, ceramics or natural stone C04B 41/00; enamelling of, or applying a vitreous layer to, metals C23D; treating metal surfaces or coating of metals by electrolysis or electrophoresis C25D; single-crystal film growth C30B;

CPC Code	Key Sector	Description
		by metallizing textiles D06M 11/83; decorating textiles by locally metallizing D06Q 1/04)
C23F 11/00	Castings & Forgings	Inhibiting corrosion of metallic material by applying inhibitors to the surface in danger of corrosion or adding them to the corrosive agent (adding inhibitors to mineral oil, fuels, or lubricants C10; adding inhibitors to pickling solutions C23G)
B21L	Castings & Forgings	MAKING METAL CHAINS
H01M	Batteries	PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL ENERGY INTO ELECTRICAL ENERGY
H02J 3/32	Batteries	using batteries with converting means
H02J 7/00	Batteries	Circuit arrangements for charging or depolarizing batteries or for supplying loads from batteries

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