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U.S. Strengthens Export Controls on Advanced Computing Items, Semiconductor Manufacturing Items

Robert A. Friedman, Molly B. O'Casey, and Jingwen Xing*

In this article, the authors review a final rule focusing on advanced-node integrated circuit production and semiconductor manufacturing activities and an interim final rule relating to advanced computing and semiconductor manufacturing items proposed in December 2024 by the U.S. Bureau of Industry and Security.

The U.S. Bureau of Industry and Security (BIS) on December 2, 2024, issued a Final Rule, "Additions and Modifications to the Entity List; Removals From the Validated End-User (VEU) Program" (Final Rule),[1] and an Interim Final Rule (IFR),[2] "Foreign-Produced Direct Product Rule Additions, and Refinements to Controls for Advanced Computing and Semiconductor Manufacturing Items."

BIS amended the Export Administration Regulations (EAR) through the Final Rule by adding entities to the Entity List and through the IFR by adding controls on advanced computing items and semiconductor manufacturing items, including new foreign-direct product rules and Export Control Classification Numbers (ECCNs).

These rules took effect as of December 2, 2024, but in some instances have delayed compliance dates. For the Final Rule, the changes that pertain to Entity List license requirements and other Entity List–related requirements linked to Footnote 5 designations had a compliance date of December 31, 2024.

For the IFR, the compliance date was generally December 2, 2024. Exporters should be aware, however, that the compliance date for some amendatory instructions was December 31, 2024.[3]

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U.S. Export Controls

U.S.-origin items, software, and technology cannot be exported to prohibited end users or for prohibited end uses. End users included on the Entity List are subject to license restrictions or prohibited from receiving U.S. exports. BIS adds entities to the Entity List upon determining that they are engaging in acts contrary to the national security and foreign policy interests of the United States.

U.S. export control jurisdiction under the EAR is based on the U.S.-origin nature of the item exported. For foreign-made items, U.S. export control jurisdiction derives from U.S.-origin components, software or technology incorporated into the foreign-made item. Pursuant to the Foreign-Direct Product (FDP) Rules, foreign-produced items located outside the United States are subject to the EAR under certain circumstances.

In particular, a foreign-produced item is within the scope of the EAR if it is a direct product of specified technology or software that is classified within a listed ECCN. Additionally, a foreign-produced item is within the scope of the EAR if it is produced by a complete plant or major component of a plant, which is itself a direct product of specified technology or software that is classified within a listed ECCN.

The FDP Rules apply based on a "product scope," which specifies the conditions and the ECCNs included and a "destination or end-use scope" or an "end-user scope," which specifies the controlled country of export, end use of the export, or end user of the export.

The Final Rule

The purpose of the Final Rule was to ensure appropriate EAR controls are in place on advanced computing items and semiconductor manufacturing items, including in connection with the entities being added or modified to the Entity List.

Modifications and Additions to the Entity List

In the Final Rule, BIS added 140 entities to the Entity List and modified 14 existing entries. The 140 newly added entities are located in China, Japan, South Korea, and Singapore. The 14

existing entries are located in China. According to BIS, all of these entities are or have been involved in:

1. The development and production of advanced-node integrated circuits (ICs);
2. The development and production of semiconductor manufacturing items; and/or
3. Support for the Chinese government's military-civil fusion development strategy, including indigenous production of advanced-node ICs to support China's military modernization.

Footnote 5 Designation

Of the entities subject to the Final Rule, BIS has applied entity-specific restrictions involving foreign-produced items to nine newly added entities[4] and seven existing entities.[5] These restrictions are organized pursuant Footnote 5 to the Entity List. Entities subject to the Footnote 5 designation will be discussed further under the IFR.

The license review policy for each entity identified on the Entity List is set out in that entity's Entity List entry. For example, the Final Rule modified the license review policy for Semiconductor Manufacturing International Corp. (SMIC) to be a presumption of denial for all items subject to the EAR, except that case-by-case review applies for items used for production of 200 millimeter wafers destined to a 200 millimeter production facility.

Removal from Validated End-User Program

The Final Rule removes three entities[6] from the VEU Program, all located in China.

VEUs are designated entities that may export items under a general EAR authorization instead of an individual export license. The VEU Program allows designated entities to receive specific items without requiring their suppliers to apply for individual export, reexport, or in-country transfer licenses. However, this benefit is subject to strict eligibility criteria based on the destination and the nature of the items involved.

VEU-eligible items authorized for VEU transactions vary by entity and can include commodities, software, and technology,

except for those controlled under the Commerce Control List (CCL) for missile technology or crime control reasons.

Interim Final Rule

The purpose of the IFR was to reduce the risk that U.S. technology contributes to the China's efforts to produce advanced-node ICs, which have important military applications across various technology ecosystems (e.g., computing power and artificial intelligence (AI) capabilities) that threaten U.S. national security and foreign policy interests.

In the IFR, BIS added new controls for certain semiconductor manufacturing equipment (SME) and related items, created new Foreign Direct Product rules to undermine certain countries' or entities of concern's advanced-node ICs production capability, added new controls for certain high-bandwidth memory (HBM) important for advanced computing and clarified controls on certain software keys that allow for the use of items such as software tools, among other changes.

New and Updated End-Use Controls

The IFR updates the definition of "advanced-node ICs" to include those circuits that meet any of the following criteria:

1. Logic integrated circuits using a nonplanar transistor architecture or with a production "technology node" of 16/14 nanometers or less;
2. NOT AND (NAND) memory integrated circuits with 128 layers or more; or
3. Dynamic random-access memory (DRAM) integrated circuits having:
    a. A memory cell area of less than 0.0019 μm2, or
    b. A memory density greater than 0.288 gigabits per square millimeter.

The definition includes an update to the technical parameters defining advanced-node DRAM ICs. The previous definition used half-pitch to characterize advanced-node DRAM ICs. However, that definition allowed fabrication facilities to make substantial

improvements in memory density by using more compact memory cell architectures, as well as by stacking DRAM in three dimensions, without meeting the definition, thereby avoiding controls. The IFR also requires a different destination scope for 3A090.c items.

Specifically, for an ECCN 3A090.c commodity, the destination scope is met when there is "knowledge," as defined in the EAR, that the item is intended to any destination other than Macau or Country Group D:5 for an entity that is headquartered in, or whose ultimate parent company is headquartered in, Macau or Country Group D:5. For all other advanced computing items referenced in Section 744.23(a)(3)(i), it remains the case that the destination scope is met where there is "knowledge" that the items are destined to any destination other than those specified in Country Groups D:1, D:4, or D:5 (excluding any destination also specified in Country Groups A:5 or A:6) for an entity that is headquartered in, or whose ultimate parent company is headquartered in, either Macau or Country Group D:5.

Further, the IFR revised the advanced computing items end-use controls to add an exclusion for 3E001 technology for 3A090.c items from the scope of the 3E001 technology (for 3A090 items) subject to the end-use controls.

Moreover, with regard to SME, license requirements are now applied for all items subject to the EAR and identified on the CCL when destined directly to Macau or Country Group D:5 for end use in the development or production of certain SME—whether for front-end or back-end IC production equipment—and updating the list of covered SME items to include the new SME ECCN entries.

The SME Foreign Direct Product Rule and Footnote 5 FDP Rule

BIS found that Chinese entities of concern continued to purchase SME items and their components (e.g., integrated circuits), produced outside the United States with U.S. technology, software, or tools. Based on these findings, BIS modified the FDP Rule to impose additional controls on certain SME items, which are used for production of advanced-node ICs and present a national security risk.

Accordingly, the IFR implements the new SME FDP Rule, which is applicable to certain SME that is essential to, or supports,

producing advanced-node ICs, which have important military applications. The IFR also implements a new Footnote 5 FDP Rule, which is applicable to entities designated with new Footnote 5 on the Entity List.

The Footnote 5 FDP Rule

The Footnote 5 FDP Rule extends the jurisdiction of the EAR to certain non-U.S.-made SME and related items when both the product scope and the end-user scope of the rule are met.

End-User Scope

Pursuant to the Footnote 5 FDP Rule, certain foreign-produced items are subject to the EAR and require a license if the exporter, reexporter, or transferor has "knowledge" (which includes reason to know) that (1) such foreign-produced commodities will be incorporated in any part, component, or equipment produced, purchased, or ordered by an entity with a Footnote 5 designation; or (2) any entity with a Footnote 5 designation is a party to any transaction involving such foreign-produced commodities. As of the date of this writing, 16 entities are on the Entity List with a Footnote 5 designation.

Product Scope

The foreign-produced commodities subject to the Footnote 5 FDP Rule are commodities most relevant to semiconductor production and related activities.[7]

These commodities are within the Footnote 5 FDP Rule's product scope if they are:

- A direct product of technology or software subject to the EAR and specified in ECCNs relevant to semiconductor production and related activities;[8]
- Produced by a complete plant or "major component" of a plant (located outside the United States) when the complete plant or "major component," whether made in the United States or a foreign country, is itself a direct product of U.S.-origin technology or software;[9] or

- Contain a commodity that is produced by a complete plant or "major component" of a plant (located outside the United States) when the complete plant or "major component,"[10] whether made in the United States or a foreign country, is itself a direct product of U.S.-origin technology.[11]

This third product scope element—expressly controlling non-U.S.-made items that contain another non-U.S.-made commodity that is itself an FDP—is an extension of the traditional application of the FDP rules. A note to this element confirms that a non-U.S.-made item containing non-U.S.-made ICs produced at a plant using equipment that is the direct product of U.S.-origin technology is covered where the relevant technical parameters for the item are met. As a result, non-U.S.-made SME containing any ICs produced using U.S.-designed SME is likely to meet the product scope of the rule.

BIS found that there is a significant prevalence of certain types of U.S.-origin tools (or foreign-produced tools that are subject to the EAR) in fabrication facilities for the production of ICs so the IFR added Red Flag 26, which indicates that if the foreign-produced item contains at least one IC, there is a Red Flag that the product scope of the Footnote 5 Rule is met. BIS publishes a list of Red Flags that is not all-inclusive but is intended to illustrate the types of circumstances that should cause reasonable suspicion that a transaction will violate the EAR.

In parallel, the IFR established that there is no de minimis threshold for a commodity described in a Category 3B ECCN (except 3B001.a.4, c, d, f.1, f.5, k to n, p.2, p.4, r, or 3B002.c) when the commodity contains U.S.-origin ICs specified under Category 3, 4, or 5 of the CCL and the commodity is destined for a Footnote 5 entity. These changes extend EAR jurisdiction over non-U.S.-made SMEs described in the relevant Category 3B ECCNs that contain ICs either produced in the U.S. or produced outside the United States using U.S.-designed equipment where the relevant technical parameters are met and there is a nexus to a Footnote 5 designee.

In an effort to limit scope, BIS clarifies that the Footnote 5 FDP Rule does not generally apply to destinations identified in the new Supplement No. 4 to Part 742 in which the IFR lists countries excluded from certain SME license requirements. These countries are members of multilateral export control regimes, such as the Wassenaar Arrangement on Export Controls for Conventional Arms and Dual-Use Goods and Technologies (Wassenaar

Arrangement), and have the authority to control key SME items of concern.

Whether non-U.S.-made items that are subject to the EAR under the new Footnote 5 jurisdictional rules (which apply when the transaction has the requisite nexus to a Footnote 5 entity and the product scope of the rule is met) require a license for export, reexport, or in-country transfer depends on the classification of the items and express circumstances set forth in the IFR.

The SME FDP Rule

The SME FDP Rule extends the jurisdiction of the EAR to certain non-U.S.-made SME and related items when both the product scope and the destination scope of the rule are met.

Destination Scope

Pursuant to the SME FDP Rule, specified foreign-produced commodities of national security concern meet the destination scope of the SME FDP Rule if there is "knowledge" (which includes reason to know) that the foreign-produced commodity is destined to Macau or a destination in Country Group D:5 (e.g., China) of Supplement No. 1 to Part 740 of the EAR.

Product Scope

These commodities are within the SME rule's product scope if they:

- Are a foreign-produced commodity specified in ECCNs on equipment for the manufacturing of semiconductor devices, materials, or related equipment,[12] or ECCNs on test or inspection equipment "specially designed" for testing or inspecting finished or unfinished semiconductor devices[13] that is the direct product of technology or software subject to the EAR and specified in the corresponding ECCNs.[14]
- Are a foreign-produced commodity that is produced by any complete plant or "major component" of a plant that is located outside the United States when the plant or "major component" of a plant, whether made in the United States

or a foreign country, itself is a direct product of U.S.-origin technology or software that is specified in ECCNs relevant to semiconductor production and related activities.[15]

- Contain a commodity produced by any complete plant or "major component" of a plant that is located outside the United States, when the complete plant or "major component" of a plant, whether made in the United States or a foreign country, itself is a direct product of U.S.-origin technology or software that is specified in ECCNs relevant to semiconductor production and related activities.[16]

Similar to the Footnote 5 FDP Rule, the IFR provides that there is no de minimis threshold for a commodity meeting the parameters in ECCNs 3B001.a.4, c, d, f.1, f.5, k to n, p.2, p.4, r, or 3B002.c when the commodity contains a U.S.-origin IC specified under Categories 3, 4, or 5 of the CCL and the commodity is destined for Macau or a destination specified in Country Group D:5, unless excluded from the national security license requirement in Section 742.4(a)(4) or the regional stability (RS) license requirement in Section 742.6(a)(6) of the EAR.

The SME FDP Rule provides an exception in which a license is not required if the commodity is reexported or exported from abroad by an entity located in a country specified in Supplement No. 4 to Part 742[17] and the entity is not headquartered or has an ultimate parent company headquartered in Macau or a destination specified in Country Group D:5.

The SME FDP Rule also provides an exception in which a license is not required if the commodity is reexported or exported from abroad by an entity located in a country that has implemented equivalent controls to U.S. national security license requirements on certain SME and associated software and technology, and the entity is not headquartered and does not have an ultimate parent company headquartered in Macau or a destination specified in Country Group D:5.

Additional Revisions Related to the Production of Semiconductors and Other Conforming Changes

The additional revisions include the establishment of new License Exception Restricted Fabrication Facility (RFF), the

addition of eight new Red Flags, and revisions and conforming changes to other parts of the EAR.

License Exception RFF

The RFF exception enables limited exports to fabrication facilities that are not engaged in advanced-node IC production. To mitigate risks, the exception includes pre-shipment notifications, annual end-use confirmation reports, and monitoring of installed equipment, prohibition of exports for advanced-node IC production, and detailed requirements for facilities to verify compliance with U.S. national security objectives.

Red Flags

The IFR adds Red Flags 20 to 27 to guide exporters in identifying risky transactions. These scenarios include ambiguous end users, orders linked to listed entities, or items designed for advanced-node IC production. They also flag situations involving post-export modifications for advanced uses, facilities connected to restricted activities, and foreign-produced items falling under Footnote 5 FDP rule. These red flags aim to enhance due diligence and compliance efforts, to assist industry in preventing unauthorized use of sensitive U.S.-origin technologies.

End-Use Control Clarifications

BIS has expanded end-use controls to cover development and production activities of semiconductor equipment and components. Newly added ECCNs, such as 3B903, strengthen oversight of critical tools and materials used in semiconductor manufacturing.

Conforming Adjustments

The rule updates General Prohibition Three and other sections of the EAR for consistency, ensuring clear and effective application of the new FDP rules.

Revision to Temporary General License

The IFR revises the Temporary General License (TGL) by adding newly added ECCNs.

The validity dates within the TGL are revised as follows:

- For SME items controlled for Anti-Terrorism (AT) reasons and newly added ECCNs (e.g., 3B993, 3B994), the validity date is extended to December 2026.
- For HBM items under ECCN 3A090.c, the validity date is extended to December 2026.
- Advanced computer items keep their current deadline of December 2025.

The Addition of High-Bandwidth Memory Controls

The IFR introduces new controls for HBM due to its strategic importance in enabling advanced computing capabilities, particularly for applications in AI, machine learning, and military systems.

In the case of advanced AI models' development, as the speed of advanced logic increases, a similar increase in memory capacity and bandwidth is also required. In particular, advanced AI models rely on HBM, which can be paired with advanced logic chips to function in almost all advanced computing ICs destined for advanced AI data centers.

Creation of New ECCN 3A090.c

The IFR imposes new controls on certain HBM commodities. More specifically, ECCN 3A090.c describes HBM stacks with a specific memory bandwidth density. BIS uses such thresholds as the bandwidth density—rather than just the bandwidth—to ensure controls will still apply if an IC uses a larger quantity of smaller HBM chips at little additional cost.

This new classification captures HBM with the capacity to significantly enhance data processing in AI training models, supercomputing, and other high-performance systems.

BIS specified that the control of advanced memory chips is key to national security because of their military, intelligence, and surveillance applications. In particular, new ECCN 3A090.c restrictions will play a crucial role in slowing China's attempts to indigenize advanced AI chip production, since Chinese advanced computing ICs are highly reliant on imported HBM.

Along with the advanced computing FDP rule, which subjects foreign-produced 3A090.c items to the EAR control, BIS will control the exports of HBM with a "memory bandwidth density" greater than 2 gigabytes (GB) per second per square millimeter where "memory bandwidth density" is the memory bandwidth of the package or stack measured in GB per second divided by the area of the package or stack measured in square millimeters. Currently, all HBM stacks in production exceed this threshold.

HBM stacks that are incorporated into an IC or a higher-level commodity (e.g., a computer or electronic assembly) may be controlled under ECCN 3A090.a or .b, 4A090.a or .b or the ".z" subparagraph of an ECCN; however, the performance parameters under ECCN 3A090.c are not used for determining whether an item is classified in ECCN 4A090.a or .b or in a ".z" ECCN.

HBM items specified in ECCNs 3A090.c, 3D001 software (for 3A090.c), and 3E001 technology (for 3A090.c) are subject to a new RS license requirement at EAR Section 742.6(a)(6)(i)(B) when exported, reexported, or transferred (in-country) to or within Macau, China, or other destinations specified in Country Group D:5. This license requirement does not apply to deemed exports or deemed reexports of such technology or software. A review policy of a presumption of approval applies for entities neither headquartered in nor whose ultimate parent company is headquartered in Macau or Country Group D:5. All other license applications will be reviewed under a policy of a presumption of denial.

New License Exception HBM for ECCN 3A090.c

BIS provides limited license exceptions for HBM exports under specific conditions, such as to approved allied countries, ensuring

compliance with international agreements and reducing supply chain disruption.

The IFR adds a new License Exception HBM. This exception authorizes certain exports, reexports, and transfers (in-country) for some of the HBM commodities under ECCN 3A090.c under specific conditions:

- Exporters must be headquartered in the United States or in a Country Group A:5 country, without a parent company headquartered in Macau or a Country Group D:5 country.
- As for the product scope, this exception applies only to items classified under ECCN 3A090.c with a memory bandwidth density less than 3.3 GB/s/mm^2.
- Exports to Macau or D:5 destinations must be directly purchased by an eligible end user and not otherwise prohibited. Items may go directly to packaging sites or for packaging within U.S. or Country Group A:5/A:6 facilities not linked to prohibited destinations.
- This exception does not apply to distributors, intermediate consignees (unless performing limited logistics roles), facilities in Macau, or D:5 destinations involved in advanced-node IC production.

The IFR also implements reporting requirement when applying this exception. For example, License Exception HBM includes reporting requirements if red flags are identified and not resolved within 60 days.

Additionally, the product scope of the Advanced Computing Items TGL was expanded to include new ECCN 3A090.c, and the end-use scope of the Advanced Computing Items TGL was revised to (1) cover exports, reexports, or in-country transfers of ECCN 3A090.c items to or within a destination specified in Country Group D:5 when the preexisting conditions of the TGL are met; and (2) add two new permitted ultimate end uses for ECCN 3A090.c items.

Finally, the IFR clarified that items classified under ECCN 3A090.c are not eligible for License Exceptions Notified Advanced Computing or Advanced Computing Authorized due to concerns that such items could be diverted for incorporation into other items that would be of national security and foreign policy concern for advanced AI model training applications.

Clarification to Software Keys to Address When Authorization Is Required

The IFR introduces refinements to the controls on software keys, which enable or renew access to controlled hardware or software. This applies to software keys that allow users the ability to use software or hardware by providing access to it and software keys that renew existing software or hardware use licenses.

Prior to this revision, the rule described the transfer of "access information" only and did not otherwise address the software license keys that allow access but are not "access information."

This revision specifies that software keys (or software license keys) are classified and controlled under the same ECCNs on the CCL as the corresponding software or hardware to which they provide access. In the case of hardware, the software key would be classified under the corresponding ECCN in the software group. For instance, a software key for hardware classified under ECCN 5A992[18] will be classified under ECCN 5D992.[19]

If authorization is required for the software or hardware, authorization is likewise required for the software key. Likewise, if authorization via an export license is obtained for software or hardware, that license also authorizes the corresponding software license key, consistent with the terms and conditions set forth in the license.

If no authorization was required for the initial export of the software or hardware and associated software key, but a license requirement is later imposed on the software or hardware (e.g., because the end user is designated to the Entity List), subsequent exports, reexports, or in-country transfers of the software, hardware, and software key are subject to the new license requirement.

This classification applies to keys for critical tools such as electronic computer-aided design (ECAD) and technology computer-aided design software, both of which are essential for developing advanced-node ICs.

The scope of these controls includes software keys that activate or renew access to advanced computing, semiconductor manufacturing or other sensitive applications. These controls aim to prevent circumvention by restricting unauthorized access to tools used in developing semiconductors or other critical technologies.

Revisions to the Commerce Control List to Align Newly Added Items

The IFR includes significant updates to the Commerce Control List to align with these new changes regarding advanced computing items. These changes encompass revisions to five existing ECCNs[20] and the addition of eight new ECCNs.[21]

The revisions of five existing ECCNs include refinements to technical parameters for controlled items, such as HBM, SME, and advanced computing systems. These adjustments ensure consistency with international export control regimes (e.g., the Wassenaar Arrangement).

The eight new ECCNs cover emerging technologies such as HBM, AI-enabling hardware and components, quantum computing technologies, and advanced semiconductor tools. These changes aim to capture advanced computing systems and semiconductor technologies with military applications and those supporting AI, machine learning, and high-performance computing systems. The revisions also strengthen controls on dual-use technologies critical to national security.

- ECCN 3B993 contains certain former ECCN 3B001 entries and controls certain additional equipment and related items that enable production of advanced-node ICs, but which BIS stated also have legitimate applications in non-advanced-node production such that license requirements to all parties in China and a presumption of denial license policy are not warranted.
- ECCN 3B994 is a broad new control that applies to SME designed for volume production.
- ECCN 3D992 controls software for the development or production of specified commodities, as well as ECAD software for advanced semiconductor packaging involving multiple chips or chiplets co-packaged in a single device.
- ECCN 3D993 controls software for the production or development of commodities in ECCN 3B993 (3D993.a), as well as ECAD software designed or modified for the development or production of ICs using multipatterning (3D993.b), computational lithography software (3D993.c), and software designed or modified to improve

the productivity of controlled deep ultraviolet (DUV) photolithography equipment (3D993.d).
- ECCN 3D994 controls software for the development or production of commodities specified in ECCN 3B994.
- ECCNs 3E992, 3E993, and 3E994 control technology for the development or production of certain commodities specified in ECCNs 3B001, 3B002, 3B993, and 3B994, as well as in the case of ECCN 3B993.b technology designed or modified to increase the wafers processed per hour by greater than 1 percent of equipment specified in ECCNs 3B001.f.1 or 3B993.f.1.

U.S. Export Controls on Semiconductors and China's Response

In the past several years, BIS has issued updates to the EAR that are aimed at restricting China's ability to obtain certain high-performance semiconductors with potential military applications, develop and maintain supercomputers, and manufacture advanced semiconductors. These updates to U.S. export controls are a reaction to China's Military-Civil Fusion doctrine, under which China's civilian technology sector is expected to more closely support the military sector. In fact, the U.S. measures are reflective of China's Made in China 2025 program, which is designed to reduce Chinese dependency on Western sources.

BIS initially issued rules on advanced semiconductors in October 2022. In October 2023, BIS issued updates and additions to these rules to "close loopholes" in the October 2022 rules. BIS indicated its intention to issue updates on an annual basis.

As Chinese companies are cut off from U.S. suppliers, they may be encouraged to direct their investments inward to the domestic semiconductor development efforts. This may also be disruptive to U.S. allies who are concerned with inadvertent noncompliance with complex U.S. export controls. Thus, the global supply chain may become more localized, undermining the economies of scale upon which innovation in the semiconductor industry relies.

In the more immediate term, China immediately retaliated by imposing export controls on commodities that are strategically important to the United States. In response to BIS's announcement, on December 3, 2024, China's Ministry of Commerce banned

exports of several critical minerals to the United States (gallium, germanium, and antimony). The export of graphite will now also be subject to greater scrutiny.

These materials have both military and civilian applications. Gallium and germanium are the two most vital minerals to the development of the next generation of advanced chips. Graphite is an important input in electric vehicle batteries.

BIS estimates that these updates to the Entity List will result in an additional 200 license applications submitted to BIS annually. Exporters are required to reassess their product classifications to determine whether their items fall under the updated or new ECCNs. These revisions impose stricter requirements for exports to Country Group D:5 or entities on the Entity List, particularly for items that contribute to military modernization efforts.

In Summary

- BIS issued a Final Rule on December 2, 2024, that adds 140 entities to the Entity List and removes three entities from the VEU Program targeting advanced-node IC production and semiconductor manufacturing activities.
- Meanwhile, BIS issued an Interim Final Rule introducing new FDP rules, including Footnote 5 designations and adding controls on high-bandwidth memory, semiconductor manufacturing equipment, and software keys to limit the export of U.S.-origin technologies used in military or strategic applications.
- The Final Rule and Interim Final Rule took effect as of December 2, 2024, with compliance deadlines for specific provisions, such as Footnote 5 designations, set for December 31, 2024.
- The Chinese government retaliated by banning exports of several critical minerals to the United States (gallium, germanium, and antimony), as well as restricting graphite.

Notes

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1. https://www.federalregister.gov/documents/2024/12/05/2024-28267/additions-and-modifications-to-the-entity-list-removals-from-the-validated-end-user-veu-program.

2. https://www.federalregister.gov/documents/2024/12/05/2024-28270/foreign-produced-direct-product-rule-additions-and-refinements-to-controls-for-advanced-computing.

3. The changes made in this Interim Final Rule in amendatory instructions 4, 5, 15, 16, 17, 19, 20, 21, 23, 25, 29 and 31 (ECCNs 3B001, 3B002, 3B991, 3B992, 3B993, 3B994, 3A090, 3D001 (related to 3A090.c and 3B commodities), 3D002, 3D992, 3D993, 3D994, 3E001 (related to 3A090.c and 3B commodities), (HBM controls and related changes), 3E992, 3E993, and 3E994) Footnote 5, and FDP rules and related changes and DRAM definition changes had a compliance date of December 31, 2024.

4. E.g., Shanghai Integrated Circuit Equipment & Materials, Industry Innovation Center Co. Ltd.; Zhangjiang Laboratory; Northern Integrated Circuit Technology Innovation Center (Beijing) Co. Ltd.; SMIC Advanced Technology R&D (Shanghai) Corp.; Wuhan Xinxin Semiconductor Manufacturing Co. Ltd.; Chinese Academy of Sciences Institute of Microelectronics.

5. E.g., Fujian Jinhua Integrated Circuit Co. Ltd.; PXW Semiconductor Manufactory Co. Ltd.; Semiconductor Manufacturing International (Beijing) Corp.; Semiconductor Manufacturing International Corp. (SMIC); Semiconductor Manufacturing South China Corp.; Shanghai Integrated Circuit Research and Development Center; and SMIC Northern Integrated Circuit Manufacturing (Beijing) Co. Ltd.

6. E.g., CSMC Technologies Corp. (CSMC), Shanghai Huahong Grace Semiconductor Manufacturing Corp. (HHGrace), and Advanced Micro-Fabrication Equipment Inc., China, aka, Advanced Micro-Electronics Corp. (AMEC).

7. 3B001 (except 3B001.a.4, c, d, f.1, f.5, g, h, k to n, p.2, p.4, r), 3B002 (except 3B002.c), 3B903, 3B991 (except 3B991.b.2.a through 3B991.b.2.b), 3B992, 3B993, or 3B994.

8. See 3D001 (for 3B commodities), 3D901, 3D991 (for 3B991 and 3B992), 3D993, 3D994, 3E001 (for 3B commodities), 3E901 (for 3B903), 3E991 (for 3B991 and 3B992), 3E993, or 3E994.

9. See 3D001 (for 3B commodities), 3D901, 3D991 (for 3B991 and 3B992), 3D992, 3D993, 3D994, 3E001 (for 3B commodities), 3E901 (for 3B903), 3E991 (for 3B991 and 3B992), 3E992, 3E993, or 3E994.

10. See ECCN 3D001 (for 3B commodities), 3D901, 3D991 (for 3B991 and 3B992), 3D992, 3D993, 3D994, 3E001 (for 3B commodities), 3E901 (for 3B903), 3E991 (for 3B991 and 3B992), 3E992, 3E993, or 3E994 (see Section 734.9(e)(3)(i)(B)(2)).

11. "Direct product" is defined as "the immediate product (including processes and services) produced directly by the use of technology or software." "Technology" is defined as "information necessary for the development,

production, use, operation, installation, maintenance, repair, overhaul, or refurbishing (or other terms specified in ECCNs on the CCL that control technology) of an item." "Software" is defined as "a collection of one or more programs or microprograms fixed in any tangible medium of expression." "Major component" is defined as "any assembled element which forms a portion of an end item without which the end item is inoperable." "End item" is defined as "a system, equipment or assembled commodity ready for its intended use. Only ammunition, or fuel or other energy source is required to place it in an operating state." A major component of a plant located outside the United States is defined as "equipment that is essential to the production of an item, including testing equipment."

12. ECCN 3B001.a.4, c, d, f.1, f.5, k to n, p.2, p.4, r (equipment for the manufacturing of semiconductor devices, materials or related equipment).

13. ECCN 3B002.c (test or inspection equipment "specially designed" for testing or inspecting finished or unfinished semiconductor devices).

14. ECCN 3D992 ("Software" for the "development" or "production" of commodities specified in 3B001) or ECCN 3E992 ("Technology" for the "production" or "development" of commodities specified in 3B001) of the CCL.

15. ECCN 3D001 (for 3B commodities), 3D901, 3D991 (for 3B991 and 3B992), 3D992, 3D993, 3D994, 3E001 (for 3B commodities), 3E901 (for 3B903), 3E991 (for 3B991 or 3B992), 3E992, 3E993, or 3E994 of the CCL.

16. ECCN 3D001 (for 3B commodities), 3D901, 3D991 (for 3B991 and 3B992), 3D992, 3D993, 3D994, 3E001 (for 3B commodities), 3E901 (for 3B903), 3E991 (for 3B991 or 3B992), 3E992, 3E993, or 3E994 of the CCL.

17. This includes members of multilateral export control regimes (e.g., the Wassenaar Arrangement) and has the authority to control key SME items of concern.

18. ECCN 5A992 provides for "Equipment not controlled by 5A002."

19. ECCN 5D992 provides for "Information Security" "software" not controlled by 5D002."

20. ECCNs 3B001, 3B002, 3B991, 3B992, and 3D002.

21. ECCNs 3B993, 3B994, 3D992, 3D993, 3E992, 3E993, 3D994, and 3E994.