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UNITED STATES COPYRIGHT OFFICE

Long Comment Regarding a Proposed Exemption Under 17 U.S.C. § 1201

Please submit a separate comment for each proposed class.

NOTE: This form must be used in all three rounds of comments by all commenters not submitting short-form comments directly through regulations.gov, whether the commenter is supporting, opposing, or merely providing pertinent information about a proposed exemption.

When commenting on a proposed expansion to an existing exemption, you should focus your comments only on those issues relevant to the proposed expansion.

[ ] Check here if multimedia evidence is being provided in connection with this comment

ITEM A. COMMENTER INFORMATION

Commenter is the individual Michael Weinberg, the petitioner for this proposed class. Commenter can be contacted at hello@michaelweinberg.org

ITEM B. PROPOSED CLASS ADDRESSED

Proposed Class 15: Computer Programs – 3D Printing

ITEM C. OVERVIEW

As per the Register's Notice of Inquiry and Request for Petitions,[1] the proposed class is an expansion of the existing class related to 3D printers. The proposed revised class clarifies language relating to two elements of the existing class.

First, the proposed class replaces the term "feedstock" in the existing exemption with the term "material." While commenter does not believe that this change materially alters the scope of the class, the proposed change will provide clarity by more closely aligning the language used in the exemption with the language used in the 3D printing industry and community.

Second, the proposed class removes "microchip-reliant" from the text of the current exemption. Some 3D printers may limit their materials using technology that does not primarily rely on microchips for validation. To the extent such technology would fall within the scope of the

[1] Exemptions to Permit Circumvention of Access Controls on Copyrighted Works, 85 Fed. Reg. 37399 (June 22, 2020).

exemption, language limiting the exemption to "microchip-reliant" technology may unintentionally exclude activities properly conceived as within the scope of the exemption.

ITEM D. TECHNOLOGICAL PROTECTION MEASURE(S) AND METHOD(S) OF CIRCUMVENTION

3D printers use digital files to create physical objects. Printers use the digital files that represent the geometry of a physical object to selectively assemble input material, effectively building the object up layer by layer. 3D printers range from inexpensive desktop machines costing a few hundred dollars[2] to industrial machines that cost hundreds of thousands of dollars.[3]

As explained in the Register's 2018 Recommendation, "3D printing involves 'various technologies that translate digital files into physical objects by adding successive layers of material.' These materials or 'feedstock' are typically ABS or PLA plastics, but can also be metals, waste plastics, woods, or bio-tissue. Manufacturers of 3D printers also sell feedstock as a way to ensure some quality control and likely to also secure recurring revenue."[4]

Some manufacturers of 3D printers use a range of technological methods to ensure that the material used in those printers is manufacturer-approved before the printer's software allows it to be used to create 3D objects. The existing exemption allows users to circumvent these restrictions in order to make use of non-manufacturer approved printing materials.

ITEM E. ASSERTED ADVERSE EFFECTS ON NONINFRINGING USES

Commenter adopts the Registrar's analysis of the adverse effects on noninfringing uses in the 2018 Recommendation in order to focus this comment on the two proposed modifications of the existing exemption.[5] The Registrar's prior analysis, as well as the renewal of the exiting exemption, was not opposed during the Registrar's initial commenting process in this proceeding.

Replacing the term "feedstock" with the term "material"

The first proposed modification is to replace the term "feedstock" with the term "material" in the exemption. The purpose of this modification is to incorporate the most commonly used term for the item in question into the text of the exemption, therefore reducing the likelihood of confusion. While these terms are functionally interchangeable (and are used as such in the 2018 Recommendation),[6] "material" is in much more common usage across the industry.

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[2] *See, e.g.* the Monoprice MP Select Mini 3D Printer V2, Black. At the time of this writing the printer retails for $219.99. https://www.monoprice.com/product?p_id=21711 (last visited November 11, 2020).

[3] A high end Stratasys 3D printer can cost as much as $750,000. *See* Computer Aided Technology, *3D Printer Price: How Much Does a 3D Printer Cost?*, https://www.cati.com/3d-printing/3d-printer-price/ (last visited November 11, 2020).

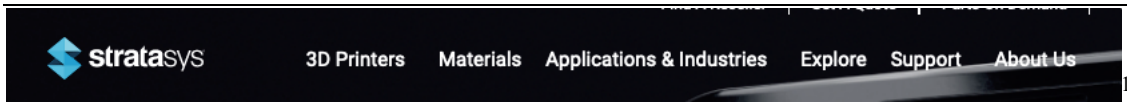
[4] U.S. Copyright Office, Section 1201 Rulemaking: Seventh Triennial Proceeding to Determine Exemptions to the Prohibition on Circumvention, Recommendation of the Acting Register of Copyrights at 319 (2018) (citations omitted) ("2018 Recommendation").

[5] *Id*.

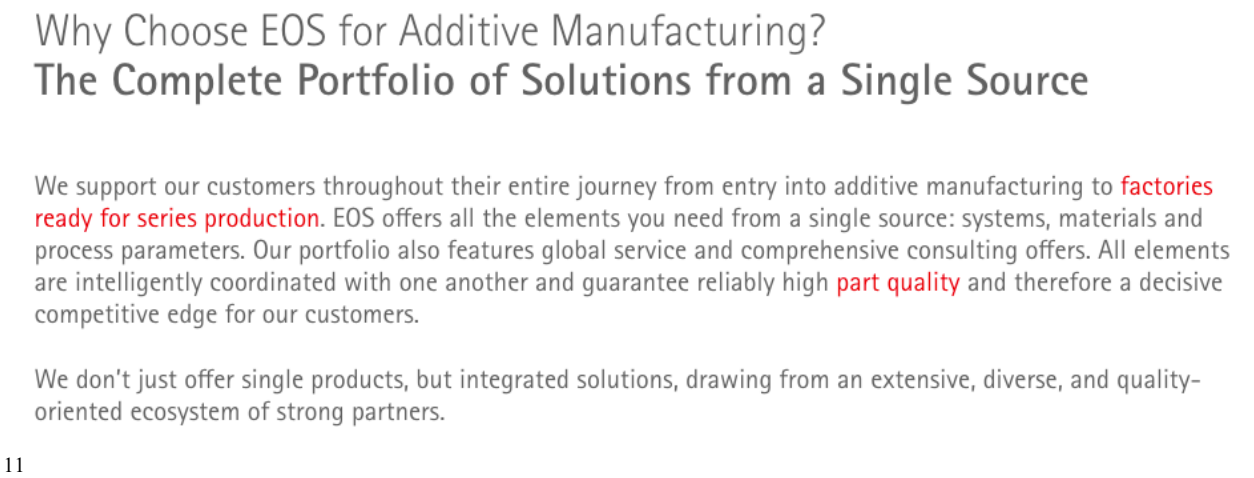
[6] *Id.* ("These materials or 'feedstock' are typically….").

The existing exemption uses the term "feedstock" to describe the matter used by 3D printers generically, across a wide range of technologies.[7] Although the term "feedstock" is used in the 3D printing industry to identify the matter used by 3D printers to produce objects,[8] it is much more common to use the term "material." For example, major 3D printer manufacturers have prominent "materials" sections on their websites and in their marketing materials:

[9]



[10]



[11]

[12]

[7] *Id.*

[8] *See, e.g.* Victor Anusci, *Low-binder solvent-based feedstocks now available for 3D printing*, 3D Printing Media Network (June 12, 2020), https://www.3dprintingmedia.network/low-binder-feedstock-now-available-for-3d-printing/; *Development of Explosive Feedstock for Commercial-off-the-Shelf (COTS) 3D Printers*, Department of Defense/SBIR Solicitation Number DoD 2017.1 (2017), https://www.sbir.gov/node/1208505; Peter Byrley, et. al., *Particle and volatile organic compound emissions from a 3D printer filament extruder*, Science of the Total Environment 736 (2020).

[9] Image from Makerbot.com (last visited November 11, 2020).

[10] Image from Stratays.com (last visited November 11, 2020).

[11] Image from EOS.info (last visited October 4, 2020).

[12] Image from exone.com (last visited November 11, 2020).

[13]

"Materials" is a catch-all term for matter used in a wide range of 3D printing technologies as applied to a wide range of uses. In light of its widespread adoption in the 3D printing industry, in the interest of clarity commenter suggests replacing the term "feedstock" with "material" in the proposed exemption. Doing so will help to avoid any unintended disputes or confusion regarding the applicability of the exemption to a given 3D printing material.

Eliminating "microchip-reliant" from the exemption language

The current exemption language reads, in part "Computer programs that employ microchip-reliant technological measures to limit the use of feedstock . . ."[14] The second proposed modification to the exemption is to eliminate the 'microchip-reliant' qualifier from that language so that it would read, in part "Computer programs that employ technological measures to limit the use of feedstock . . .".

Commenter believes that the current language reflects an understanding that many TPMs used by 3D printer manufacturers to identify material produced by the manufacturer rely on a microchip-based verification technology.[15] While this remains true, in recent years manufacturers in the 2D printing space have moved beyond these types of microchip-based verification techniques, relying on other methods for verifying the source of materials. Although the underlying intent and behavior of manufacturers using these technologies is the same, such a shift might make it harder to apply the exemption to the types of situations it is intended to address.

For example, HP, a manufacturer of both 2D and 3D printers, has implemented "HP Auto Sense" technology that is designed to match media and ink as part of the 2D printing process.[16] This feature uses optical scanners to identify media used in printers, instead of a RFID-based verification technique.

While processing and responding to the signal produced by the optical sensors itself relies on microchips, commenter is concerned that the slightly different role of microchips in the process could cause ambiguity in interpreting the exemption text. Although the user behavior in relation to this technology would be identical – circumventing a TPM in order to ensure interoperability

[13] Image from ultimaker.com (last visited November 11, 2020).
[14] Exemption to Prohibition on Circumvention of Copyright Protected Systems for Access Control Technologies, 83 Fed. Reg. 54,010, 54,031 (October 26, 2018).
[15] "To ensure that the manufacturer-approved feedstock is used in a 3D printer, some manufacturers add a verification microchip attached to the feedstock cartridge that ensures that the feedstock is manufacturer-approved before the printer's software allows it to print 3D objects . . .", 2018 Recommendation at 320.
[16] *Enhanced Media Sensing with HP Auto Sense*, HP Press Kit. http://www.hp.com/hpinfo/newsroom/press_kits/2008/printingpro/bg_autosense_technical.pdf (last visited November 11, 2020).

with third party materials – the technical role of microchips in the process could raise questions about the applicability of the exemption to these situations.

Commenter does not believe that the current language is intended to encourage parties to litigate the extent to which a given TPM that restricts the use of third-party material relies on microchips in imposing that restriction. Nor is the current language intended to exclude a type of TPM that falls within the scope of § 1201 but does not rely on microchips. Therefore, the possible ambiguity that 'microchip-reliant' may inject into the analysis of the exemption is not outweighed by any identifiable benefit.

The text of 17 U.S.C § 1201 limits its scope to TPMs that control access to works protected by copyright law.[17] Furthermore, as the Acting Register observed in the in 2018 Recommendation, this proceeding is limited to "matters bearing on traditional copyright concerns."[18]

In light of these existing statutory restrictions, the addition of the "microchip-reliant" qualifying language to potentially further narrow the scope of the exemption provides little benefit or clarity and should be removed. The harm recognized by the existing exemption is not directly related to the technology used to implement the TPM.

The existing exemption acknowledges that TPMs should not be used to limit a user's ability to use third-party materials in 3D printers. This harm is not directly related to the technical implementation of the TPM. To the extent that circumventing the TPM would trigger § 1201 liability, it properly fits within the scope of the exemption. To the extent that the 3D printer manufacturer created a TPM that operates outside of the scope of § 1201, the section would not apply. Given this existing statutory limitation on the scope of the exemption, there is no benefit from the additional qualifying language linking the TPM to "microchip-reliant" implementations.

It is unlikely that the existing exemption intends to exclude TPMs that simultaneously fall within the scope of § 1201 and do not rely on microchips. However, the inclusion of this qualifier creates a potential ambiguity that could harm the rights of users. Commenter request the Registrar to remove this ambiguity in a revised version of the exemption.

[17] 17 U.S.C § 1201(a)(1)(A)

[18] This observation was made specifically in reference to the fifth factor, in excluding concerns related to medical device or airplane part safety. 2018 Recommendation at 328.