

HP 3D600/700/710 Fusing and Detailing Agents

Summary of Regulatory Compliance and Environmental Attributes



Introduction

HP 3D600/700/710 Fusing and Detailing Agents are water-based formulations designed by HP to meet worldwide regulatory requirements.

Regulatory Summary

Chemical Inventory Status

The following countries have chemical inventory requirements and HP 3D600/700/710 Fusing and Detailing Agents can be imported without restriction:

- Australia (AICS)
- Canada (DSL, NDSL)
- Providence of Ontario
- China (IECSC)
- Japan (ISHL)
- Japan (CSCL/ENCS)
- Korea (KECI, K-REACH))
- New Zealand (NZIoC)
- Philippines (PICCS)
- Switzerland (ChemO)
- Taiwan (ECSI)
- United States (TSCA)

For EU REACH, HP has completed all necessary pre-registrations/registrations to import the HP 3D600/700/710 Fusing and Detailing Agents.

Regulated Materials

HP 3D600/700/710 Fusing and Detailing Agents **DO NOT** contain the following regulated materials:

- Arsenic, antimony, soluble barium, cadmium, chromium, cobalt, mercury, lead, nickel, copper, and selenium as intentionally added ingredients
- Restricted azo colorants¹
- Substances regulated as drugs and drug precursors or those requiring special permits for use
- Substances currently regulated under Annex XIV of EU REACH (authorisations) or substances currently restricted under Annex XVII of EU REACH (restrictions)
- Halogenated organics

¹ EU Directive 2002/61/EC, additionally referenced as Regulation (EC) No 1907/2006: REACH, Annex XVI (article 67), restricts the use of azo colorants that break down to aromatic amines known to cause cancer.



Health and Environmental Performance

Emissions

HP 3D600/700/710 Fusing and Detailing Agents do not contain Hazardous Air Pollutants (HAPs)².

Volatile Organic Content (VOC) content for HP 3D600/700/710 Fusing and Detailing Agents is <300 gram/liter (by EPA Method 24). Additional emissions data is available upon request. Cleaning and maintenance procedures are designed for minimal VOC emissions and comply with regulations in the United States.

2-pyrrolidone (2P) (CAS No. 616-45-5) is present in the 3D600/3D700 Fusing and Detailing Agents at <20% and 5% by weight, respectively. 2P is a Category 1B reproductive toxin according to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS, as implemented by the EU Classification, Labeling and Packing Regulation No1272/2008/EC (CLP)), US HazCom 2012, and other country-specific GHS regulations. To ensure users are safe during printing operation, indicative testing³ of HP Jet Fusion 3D printers was performed using the HP 3D600/700/710 agents. Results showed that relevant emissions were below applicable limits and guidelines⁴ as detailed below.

Human and Ecological Health

HP 3D600/700/710 Fusing and Detailing Agents do not contain intentionally added components in the following categories:

- California Proposition 65 listed chemicals at concentrations requiring labeling;
- Substances identified as endocrine disruptors;
- Substances considered very toxic or toxic;
- Substances classified as respiratory sensitizers;
- Substances identified as "very high concern" (SVHC) according to EU REACH criteria; and
- Substances identified as "very persistent and/or very bioaccumulative" (VPVB) according to EU REACH criteria.

2-pyrrolidone (2P) (CAS No. 616-45-5) is present in the 3D600/3D700 Fusing and Detailing Agents at <20% and 5% by weight, respectively. 2P is a Category 1B reproductive toxin according to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS, as implemented by

² HP 3D600/700/710 Fusing and Detailing Agents were tested for Hazardous Air Pollutants, as defined in the Clean Air Act, per U.S. Environmental Protection Agency Method 311 (testing conducted in 2013) and none were detected.

³ HP commissioned indicative testing of HP Jet Fusion 3D 3200 and 4200 printers operated with HP 3D PA12 material, carried out by the Fraunhofer Wilhelm-Klauditz-Institute (WKI), Braunschweig, Germany, 2016/2017 following the recommendations of the respective user manual.

⁴ Permissible Exposure Limits (PELs-TWA), 29 CFR 1910.1000 Z-1, Z-2 and Z-3, U.S. Occupational Safety and Health Administration (OSHA), accessed November 2019. Permissible Exposure Limits, Table AC-1, California Division of Occupational Safety and Health, accessed November 2019. Workplace limits (AGW), TRGS 900, German Ordinance of Hazardous Substances (GefStoffV), German Committee on Hazardous Substances (AGS), 2006 (as amended). Workplace Exposure Standards for Airborne Contaminants (WES), Safe Work Australia, 2018. Permissible exposure levels of toxic substances, in: Workplace Safety and Health (General Provisions) Regulations (G.N. No. S 134/2006), Singapore Government, Revised Ed. 2007. National standard of the People's Republic of China, Indoor Air Quality Standard, 2003. Basic criteria for award of the German Blue Angel environmental label for Office Equipment with Printing Function, DE-UZ 205, RAL gGmbH. Derived No-Effect Level (DNEL) Values as introduced by the REACH regulation, appendix 1, no. 1.0.1., 1 July 2007. Values are taken from the GESTIS DNEL List of the DGUV website, accessed November 2019. Recommended Exposure Limits, NIOSH Pocket Guide to Chemical Hazards, National Institute for Occupational Safety and Health, 2007. Threshold Limit Values (TLVs®), American Conference of Governmental Industrial Hygienists, 2018.



the EU Classification, Labeling and Packing Regulation No1272/2008/EC (CLP)), US HazCom 2012, and other country-specific GHS regulations and therefore the HP 3D600/700/710 Fusing and Detailing Agents are classified as Category 1B H360: May damage fertility or the unborn child. 2P may be present in the final printed part.

2-Methyl-2H-isothiazol-3-one (MIT) (CAS No. 2682-20-4) is present in the 3D400/3D450 Fusing and Detailing Agents at <0.1% by weight in these formulations. MIT is a Category 1 skin sensitizer according to the Globally Harmonized System of Classification and Labeling of Chemicals (GHS, as implemented by the EU Classification, Labeling and Packing Regulation No1272/2008/EC (CLP)), US HazCom 2012, and other country-specific GHS regulations. MIT may be present in the final printed part.

Transportation

HP 3D600/700/710 Fusing and Detailing Agents are non-flammable, non-combustible⁵, and do not require special handling, storage, or transportation-related conditions. These formulations are not classified as Dangerous Goods in accordance with international modes of transport (IATA, IMDG, U.S. DOT, and/or ADR) and do not contain listed marine pollutants.

Waste Profile Datasheet

HP is providing the information in this section voluntarily as a service to assist customers in determining appropriate disposal methods for this product at the end of life.

Flashpoint (USEPA Method 1020)

>110C

Corrosivity to steel (USEPA Method 1110)

Fusing Agent = 0.06 mm/year

Detailing Agent <0.1 mm/year

pH (USEPA Method 9040)

9.18

Metals Content (ICP-MS)

Antimony	<0.1 mg/L
Arsenic	0.1 mg/L
Barium	<0.1 mg/L
Beryllium	<0.1 mg/L
Cadmium	<0.1 mg/L
Chromium	<0.1 mg/L
Copper	<0.1 mg/L
Lead	<0.1 mg/L
Mercury	<0.1 mg/L
Nickel	0.1 mg/L
Selenium	<0.1 mg/L
Silver	<0.1 mg/L
Thallium	<0.1 mg/L

⁵ HP 3D600/700/710 Fusing and Detailing Agents are not classified as flammable or combustible liquids under the USDOT or international transportation regulations. Testing per the Pensky-Martins Closed Cup method demonstrated flash point greater than 110° C.



Vanadium <0.1 mg/L

Zinc <0.1 mg/L

Toxicity (DOHS (Title 22) Hazardous Waste Bioassay using Fathead Minnow)

LC50 for fish is >750 mg/L for all agents.

Classification of Fusing and Detailing Agents

Category 1B H360: May damage fertility or the unborn child.

Category 1A H317: May cause an allergic skin reaction.

Restriction of Hazardous Substances (RoHS)

Parts printed on an HP 3D printer using HP 3D600/700 Agents and various HP 3D materials have been tested for RoHS (Directive 2011/65/EU as amended by Directive EU 2015/863) restricted substances following IEC 62321 standards. Please refer to HP HR 3D PA 12, PA11, and PA 12 GB statements for results.

Recyclability

Planet Partners is a World-Wide program with country and regional differences in availability. Please visit <http://www.hp.com/recycle> to confirm whether a product is eligible for the Planet Partners Program in your country or region.

Speciality Applications

Food Contact

Currently, no HP 3D materials or agents are designed or approved for direct or indirect food contact applications and accordingly they should not be used for food applications or direct and indirect food contact applications.

USP Class I-VI and FDA Intact Skin Surface Devices Statement

Please refer to the HP HR 3D PA 12 and PA11 statements for results.

Statement of Composition for Toy Applications

Please refer to the HP HR 3D PA 12 and PA11 statements for results.

HP Design for Environment (DfE) Program

In 1992, HP adopted a pioneering company-wide Design for the Environment program that considers environmental impact in the design of every product and solution, from the smallest ink cartridge to entire data centers.

For more information about HP's social and environmental responsibility programs, see www.hp.com/livingprogress.

