



SAFETY DATA SHEET

1. Identification

Important information	*** This Safety Data Sheet is only authorised for use by HP for HP Original products. Any unauthorised use of this Safety Data Sheet is strictly prohibited and may result in legal action being taken by HP. ***
Product identifier	V1R12Series
Other means of identification	None.
Recommended use	Materials to be processed in HP 3D MJF equipment only.
Recommended restrictions	HP PA11 powder is not intended to be used in medical device applications that constitute a non-temporary implant (i.e., that, in whole or in part, may be in contact with a patient's skin, body fluids or tissues for more than 30 days.).
Manufacturer/Importer/Supplier/Distributor information	
	HP Canada Co. 5150 Spectrum Way, Floor 6 Mississauga, Ontario, Canada L4W 5G1
Telephone	888-206-0291
HP Inc. health effects line	
(Toll-free within the US)	1-800-457-4209
(Direct)	1-760-710-0048
HP Inc. Customer Care Line	
(Toll-free within the US)	1-800-474-6836
(Direct)	1-208-323-2551
Email:	sustainability@hp.com
Emergency Telephone Number	1-760-710-0048
Supplier	Not available.

2. Hazard identification

Physical hazards	Not classified.
Health hazards	Not classified.
Environmental hazards	Not classified.
OSHA defined hazards	Not classified.
Label elements	
Hazard symbol	None.
Signal word	Warning
Hazard statement	May form combustible dust concentrations in air.
Precautionary statement	
Prevention	Take precautionary measures against static discharge. Use with adequate ventilation. Avoid generation or accumulation of dust.
Response	If inhaled, remove to fresh air. Get medical attention if symptoms persist. IN CASE OF FIRE, use water spray or fog, foam, dry chemical or CO2. Collect in a chemical waste container. Use only vacuum cleaners approved for combustible dust collection.
Storage	Not available.
Disposal	Not available.
Other hazards	May form combustible dust concentrations in air. Risk of skin burns caused by hot melt.

Supplemental information

This material is considered hazardous under the OSHA Hazard Communication Standard criteria, based on hazard(s) not otherwise classified.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
Proprietary polymer		Proprietary	>= 98%

Composition comments The components of this product have been evaluated in accordance with the hazard criteria of the Canada Hazardous Products Regulations (HPR).

4. First-aid measures

Inhalation	If dust from the material is inhaled, remove the affected person immediately to fresh air. Move to fresh air in case of accidental inhalation of vapors or decomposition products. If breathing is difficult, give oxygen. Oxygen or artificial respiration if needed. Consult a physician for specific advice.
Skin contact	Wash the skin immediately with soap and water. In case of contact with molten product, cool rapidly with water and seek immediate medical attention. Do not attempt to remove molten product from skin because skin will tear easily.
Eye contact	Dust: Wash well-open eyes immediately, abundantly and thoroughly with water. Remove particle remaining under the eyelids. If irritation persists, consult a doctor. On contact with hot product: Cool eyes rapidly with cold water after contact with molten polymer. Continue to rinse for at least 15 minutes. Get medical attention immediately.
Ingestion	If swallowed, do NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.
Most important symptoms/effects, acute and delayed	No experiences of acute or chronic damages in humans have been made yet.
General information	Risk of skin burn caused by hot melt. Do not leave the victim unattended. Remove victim immediately from source of exposure. Victim to lie down in the recovery position, cover and keep him warm.

5. Fire-fighting measures

Suitable extinguishing media	Water spray, foam, dry powder or carbon dioxide.
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	May be released in case of fire: carbon monoxide, carbon dioxide, nitric oxides, organic products of decomposition. Under certain fire conditions, traces of other toxic products may occur.
Special protective equipment and precautions for firefighters	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
Fire fighting equipment/instructions	Do not use a solid stream of water. A solid stream of water can cause a dust explosion. Fire fighting equipment should be thoroughly decontaminated after use.
General fire hazards	Dust clouds generated during handling and/or storage can form explosive mixtures with air. Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to free-fall or to be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	In case product dust is released: Dust mask
Methods and materials for containment and cleaning up	Sweep up or vacuum up spillage and collect in suitable container for disposal. If a vacuum is used, the motor must be rated as dust explosion-proof. Dispose of in compliance with federal, state, and local regulations.
Environmental precautions	Prevent further leakage or spillage. Do not let product enter drains. Do not flush into surface water or sanitary sewer system.

7. Handling and storage

Precautions for safe handling	Avoid contact with skin and eyes Avoid breathing dust. Prevent dust accumulation to minimize explosion hazard. Inside and outside the equipment should be cleaned regularly with an explosion-protected vacuum cleaner to avoid dust accumulation. Do not sweep the dust or or try to remove it with a compressed-air gun. Remove contaminated clothing and wash the skin thoroughly with soap and water after work.
Conditions for safe storage, including any incompatibilities	Store away from moisture and heat to maintain the technical properties of the product. Eliminate sources of ignition. Do not expose to heat or store above 60 C.

8. Exposure controls/personal protection

Occupational exposure limits

ACGIH Material	Type	Value
V1R12Series	TWA	3 mg/m3
Comments:	Respirable particles	10 mg/m3
Comments:	Inhalable Particles	
Biological limit values	No biological exposure limits noted for the ingredient(s).	
Exposure guidelines	Particles Not Otherwise Specified / Nuisance Dust	
	US OSHA (PEL:Z-1): 5 mg/m3 Respirable fraction	
	US OSHA (PEL:Z-1): 15 mg/m3 Total dust	
	US OSHA as amended (03/2016) (TWA:Z-3): 15 millions of particles per cubic foot of air Respirable fraction	
	US OSHA as amended (03/2016) (TWA:Z-3): 50 millions of particles per cubic foot of air Total dust	
	US OSHA as amended (03/2016) (TWA:Z-3): 5 mg/m3 Respirable fraction	
	US OSHA as amended (03/2016) (TWA:Z-3): 15 mg/m3 Total dust	

Appropriate engineering controls

HP recommends the use of HP accessories for unpacking 3D parts and refilling the build chamber. If other methods are used, read the following: Dust clouds generated during handling and/or storage can form explosive mixtures with air. Dust explosion characteristics vary with the particle size, particle shape, moisture content, contaminants, and other variables. Check that all equipment is properly grounded and installed to satisfy electrical classification requirements. As with any dry material, pouring this material or allowing it to fall freely or be conveyed through chutes or pipes can accumulate and generate electrostatic sparks, potentially causing ignition of the material itself, or of any flammable materials which may come into contact with the material or its container.

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Consult ACGIH ventilation manual, NFPA Standard 91 and NFPA Standard 654 for design of exhaust system and safe handling.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields.
Skin protection	
Hand protection	Recommended gloves: Nitrile 6 mil minimum thickness. Protective heat-insulating gloves are to be used during thermal processing. Any areas of skin covered with dust must be washed immediately with soap and water as the powder draws out natural moisture from the skin. Use barrier cream regularly.
Other	Processing of this product releases vapors or fumes which may cause skin irritation. It is a good industrial hygiene practice to minimize skin contact. Wash thoroughly after handling.
Respiratory protection	Avoid breathing dust. Avoid breathing processing fumes or vapors. Where airborne exposure is likely or airborne exposure limits are exceeded, use NIOSH approved respiratory protection equipment appropriate to the material and/or its components and substances released during processing.

Thermal hazards In thermal processing: Risk of skin burns. Wear appropriate thermal protective clothing, when necessary.

9. Physical and chemical properties

Appearance	Powder. Solid.
Physical state	Not available.
Form	Powder.
Color	Transparent, translucent.
Odor	Not available.
Odor threshold	Olfactory threshold: Dodecane-1-thiol 0,5 ppm
pH	Not available.
Melting point/freezing point	392 - 396 °F (200 - 202.22 °C)
Initial boiling point and boiling range	Not available.
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Density	0.47 g/ml
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	> 662 °F (> 350 °C)
Viscosity	Not available.
Other information	
Density	0.47 g/ml
Explosive properties	Dusts might form explosive mixtures with air. Powder explosivity data: Minimum Ignition Energy (MIE) "dust cloud" w/ Inductance >10mJ. Layer Ignition Temperature (LIT) "dust layer" >400degC. Minimum Ignition Temperature (MIT) "dust cloud" >360degC. Auto Ignition Temperature (AIT) >400degC.
Oxidizing properties	Not oxidizing.

10. Stability and reactivity

Reactivity	Under normal conditions: stable.
Chemical stability	The product is stable under normal handling and storage conditions.
Possibility of hazardous reactions	Will not occur.
Conditions to avoid	Take measures to mitigate material spillage and avoid potential ignition sources such as ESD (ElectroStatic Discharges), flames, and sparks. Do not smoke nearby. Avoid wet/humid environment. Recommended working humidity 50-70%. Avoid dust formation.
Incompatible materials	Oxidizing materials, acids, strong bases, water and high humidity.

Hazardous decomposition products	Thermal decomposition: Decomposition temperature: > 350 °C 300 - 350 °C: possible formation of: Monomer and oligomer (white fumes) Temperature exceeding 350°C: Thermal decomposition giving toxic and corrosive products : Carbon monoxide, Ammonia, Amino derivatives Temperature exceeding 500 °C : Formation of toxic products through combustion: Carbon oxides, Hydrogen cyanide (hydrocyanic acid), (traces).
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11. Toxicological information

Information on likely routes of exposure

Inhalation	At high temperature, products of thermal decomposition can be irritating to respiratory system.
Skin contact	May be considered as comparable to a similar product for which experimental results are: Non irritating to skin.
Eye contact	May be considered as comparable to a similar product for which experimental results are: Not irritating to the eyes.
Ingestion	May be considered as comparable to a similar product for which experimental results are: Slightly harmful by ingestion.

Symptoms related to the physical, chemical and toxicological characteristics Not available.

Information on toxicological effects

Acute toxicity Based on available data, the classification criteria are not met.

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitization

Respiratory sensitization Based on available data, the classification criteria are not met.

Skin sensitization Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Based on available data, the classification criteria are not met.

Specific target organ toxicity - single exposure Based on available data, the classification criteria are not met.

Inhalation: Possible irritation of respiratory system. Olfactory threshold: Dodecane-1-thiol 0,5 ppm. In man: (Alveolar dust fraction).

Specific target organ toxicity - repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Based on available data, the classification criteria are not met.

Further information Complete toxicity data are not available for this specific formulation

12. Ecological information

Ecotoxicity No ecotoxicity data noted for the ingredient(s).

Persistence and degradability Not available.

Bioaccumulative potential Not available.

Mobility in soil Not available.

Other adverse effects Not available.

13. Disposal considerations

Disposal instructions Do not allow this material to drain into sewers/water supplies. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations.

Waste from residues / unused products Not available.

Contaminated packaging Not available.

14. Transport information

DOT

Not regulated as dangerous goods.

IATA

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

ADR

Not regulated as dangerous goods.

Further information Not a dangerous good under DOT, IATA, ADR, IMDG, or RID.

15. Regulatory information**Canadian regulations****Controlled Drugs and Substances Act**

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

International regulations

HP complies with chemical regulatory requirements in chemical substance notification laws, where applicable. All chemical substances are notified or exempt from notification or listed in the inventory as existing substances in the following countries: US (TSCA), Canada (DSL/NDSL), Australia (AICIS), Japan (ISHL, ENCS), Philippines (PICCS), New Zealand (NZIoC), Russia and China (IECSC). For guidance on importation and/or additional requirements for registration schemes such as EAEU, EU, South Korea, Turkey, UK, India and Taiwan, please contact the Sustainability and Compliance Center (sustainability@hp.com).

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Montreal Protocol

Not applicable.

Basel Convention

Not applicable.

16. Other information

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Version # 11

Other information This SDS was prepared in accordance with Canada Controlled Product Regulations.

Disclaimer This Safety Data Sheet document is provided without charge to customers of HP. Data is the most current known to HP at the time of preparation of this document and is believed to be accurate. It should not be construed as guaranteeing specific properties of the products as described or suitability for a particular application. This document was prepared to the requirements of the jurisdiction specified in Section 1 above and may not meet regulatory requirements in other countries.

Revision information Regulatory Information: United States
Regulatory information: International regulations

Explanation of abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Cleveland Open Cup
DOT	Department of Transportation
EPCRA	Emergency Planning and Community Right-to-Know Act (aka SARA)
IARC	International Agency for Research on Cancer
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
RCRA	Resource Conservation and Recovery Act
REC	Recommended
REL	Recommended Exposure Limit
SARA	Superfund Amendments and Reauthorization Act of 1986
STEL	Short-Term Exposure Limit
TCLP	Toxicity Characteristics Leaching Procedure
TLV	Threshold Limit Value
TSCA	Toxic Substances Control Act
VOC	Volatile Organic Compounds