



SAFETY DATA SHEET

1. Identification

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| 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 | V1R35Series |
| Other means of identification | |
| Synonyms | HR PA-12 GB Powder |
| Recommended use | Materials to be processed in HP 3D MJF equipment only. |
| Recommended restrictions | None known. |
| Manufacturer/Importer/Supplier/Distributor information | HP Canada Co. 5150 Spectrum Way, Floor 6 Mississauga, Ontario, Canada L4W 5G1 |
| Telephone | 1-905-206-4725 or 1-888-447-4636 |
| 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: | hpcustomer.inquiries@hp.com |
| Emergency Telephone Number | 1-760-710-0048 |
| Supplier | Not available. |

2. Hazard(s) identification

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| 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. |

3. Composition/information on ingredients

Mixtures

| Chemical name | Common name and synonyms | CAS number | % |
|-----------------------------|--------------------------|-------------|-----|
| Polyamide, Modified Polymer | | Proprietary | 100 |

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

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| 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

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| 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

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| 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

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| 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 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 |
|--------------------------------|--|----------|
| V1R35Series | TWA | 10 mg/m3 |
| Comments: | Inhalable particles | |
| Biological limit values | No biological exposure limits noted for the ingredient(s). | |
| Exposure guidelines | Exposure Limit For Dust ACGIH (TWA/TLV): 3 mg/m3 (Respirable Particulate) US CA OEL (TWA/PEL): 10 mg/m3 (Total dust) US CA OEL (TWA/PEL): 5 mg/m3 (Respirable fraction) US OSHA (TWA:Z-3): 50millions of particles per cubic foot of air (Total dust) US OSHA (TWA:Z-3): 15millions of particles per cubic foot of air (Respirable fraction) US OSHA (TWA:Z-3): 5 mg/m3 (Respirable fraction) US OSHA (TWA:Z-3): 15 mg/m3 (Total dust) Glass, oxide, chemicals ACGIH (TWA/TLV): 1 fibers/cm3 (Fiber) F: Respirable fibers: length > 5 micrometers; aspect ration >= 3:1, as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination. US CA OEL (TWA/PEL): .2 fibers/cm3 (Fiber) | |

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

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| Eye/face protection | Wear safety glasses with side shields. |
| Skin protection | |
| Hand protection | Wear impermeable gloves. 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. |

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| Thermal hazards | In thermal processing: Risk of skin burns. Wear appropriate thermal protective clothing, when necessary. |
| General hygiene considerations | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. |

9. Physical and chemical properties

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| Appearance | Powder. Solid. |
| Physical state | Not available. |
| Form | Powder. |
| Color | Grey to white. |
| Odor | Not available. |
| Odor threshold | Not available. |
| pH | Not available. |
| Melting point/freezing point | 363.2 - 368.6 °F (184 - 187 °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. |
| 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 | |
| Explosive properties | Dusts might form explosive mixtures with air. Powder explosivity data: Minimum Ignition Energy (MIE) "dust cloud" w/ Inductance >30mJ. 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

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| 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. |

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| Incompatible materials | Oxidizing materials, acids, strong bases, water and high humidity. |
| Hazardous decomposition products | Decomposition products on thermal decomposition, carbon monoxide, carbon dioxide, Nitrogen oxides (NOx), organic products of decomposition. |

11. Toxicological information

Information on likely routes of exposure

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| 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

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| 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. |
| 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

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| 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

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| 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. |
| Hazardous waste code | Not regulated. |
| 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

All chemical substances in this HP product have been notified or are exempt from notification under chemical substances notification laws in the following countries: US (TSCA), EU (EINECS/ELINCS), Switzerland, Canada (DSL/NDL), Australia, Japan, Philippines, South Korea, New Zealand, and China.

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 # 02

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 Identification: Important information

Explanation of abbreviations

| | |
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| 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 |