1. Identification

Product identifier:  V1R22Series

Other means of identification

Synonyms: HR PA-12 GB Powder

Recommended use: 3D Printing

Recommended restrictions: None known.

Manufacturer/Importer/Supplier/Distributor information

HP Inc.
1501 Page Mill Road
Palo Alto, CA 94304-1112
United States

Telephone: 650-857-5020

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

2. Hazard(s) 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: Not available.
Response: Not available.
Storage: Not available.
Disposal: Not available.

Hazard(s) not otherwise classified (HNOC)

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

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Common name and synonyms</th>
<th>CAS number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyamide, Modified Polymer*</td>
<td>Proprietary*</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
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.

**Indication of immediate medical attention and special treatment needed**
Provide general supportive measures and treat symptomatically.

**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.

**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.

**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 dust formation.
Provide for appropriate exhaust ventilation and dust collection at machinery.
In thermal processing: Risk of skin burns.

**Conditions for safe storage, including any incompatibilities**
Keep containers tightly closed in a dry, cool and well-ventilated place.
Dry powders can build static electricity charges when subjected to the friction of transfer and mixing operations.
If dusts are formed: Take precautionary measures against static charges, keep away from sources of ignition.
Ground container and transfer equipment to eliminate static electric sparks.
Stable under recommended storage conditions.
8. Exposure controls/personal protection

Occupational exposure limits

Also see Exposure guidelines.

<table>
<thead>
<tr>
<th>Material</th>
<th>Type</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>V1R22Series</td>
<td>TWA</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

Comments: Inhalable particles

No biological exposure limits noted for the ingredient(s).

Exposure guidelines

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): 50 millions of particles per cubic foot of air (Total dust)
US OSHA (TWA-Z-3): 15 millions 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 ratio >= 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

In case of thermal processing, provide for extraction of the vapors or adequate ventilation. In case of dust being formed, provide for adequate extraction. Avoid dust formation and control ignition sources. Employ grounding, venting and explosion relief provisions in accordance with accepted engineering practices in any process capable of generating dust and/or static electricity.

To identify additional system design issues with respect to dust hazards, it is recommended to conduct a dust hazard analysis using information and sources provided in the OSHA Fact Sheet on combustible dusts (DSG 3/2008) and addressing enforcement issues identified in the Combustible Dust National Emphasis Program (Reissued) (CPL 03-00-008, 3/11/08).

Individual protection measures, such as personal protective equipment

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

Contact with skin and eyes may result in irritation. It is a good industrial hygiene practice to minimize skin contact. Wash promptly with soap and water if skin becomes contaminated.

Respiratory protection

Avoid breathing dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Respiratory protection programs must comply with 29 CFR § 1910.134.

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

Appearance

Powder.
Solid.

Physical state

Not available.

Form

Powder.

Color

Grey to white.

Odor

Odorless.

Odor threshold

Not available.

pH

Not available.

Melting point/freezing point

363.2 - 368.6 °F (184 - 187 °C)
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial boiling point and boiling range</td>
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</tr>
<tr>
<td>Flash point</td>
<td>Not available.</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Upper/lower flammability or explosive limits</td>
<td></td>
</tr>
<tr>
<td>Flammability limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Flammability limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - lower (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Explosive limit - upper (%)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Vapor pressure</td>
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</tr>
<tr>
<td>Vapor density</td>
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</tr>
<tr>
<td>Solubility(ies)</td>
<td></td>
</tr>
<tr>
<td>Solubility (water)</td>
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</tr>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not available.</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
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</tr>
<tr>
<td>Decomposition temperature</td>
<td>$&gt; 662 , ^\circ F (&gt; 350 , ^\circ C)$</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available.</td>
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<td>Other information</td>
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<tr>
<td>Explosive properties</td>
<td>Not explosive. Dusts might form explosive mixtures with air.</td>
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<tr>
<td>Flammability (flash back)</td>
<td>This product is not flammable.</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>Not oxidizing.</td>
</tr>
</tbody>
</table>

### 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**: Keep away from heat, spark, open flames and other sources of ignition.
- **Incompatible materials**: None known.
- **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

- **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.

- **IARC Monographs. Overall Evaluation of Carcinogenicity**
  - Not listed.

  - Not regulated.

- **US. National Toxicology Program (NTP) Report on Carcinogens**
  - Not listed.

- **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

- **Ecotoxicity**
  - No information available.

- **Persistence and degradability**
  - Not available.

- **Bioaccumulative potential**
  - No data 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.

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

- **US federal regulations**
  - US EPA TSCA Inventory: All chemical substances in this product comply with all rules or orders under TSCA.
  - All ingredients are listed or exempt
  - US TSCA 12(b): Does not contain listed chemicals.

  - **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
    - Not regulated.

  - **CERCLA Hazardous Substance List (40 CFR 302.4)**
    - Not listed.

  - **SARA 304 Emergency release notification**
    - Not regulated.

    - Not regulated.
### Hazard categories
- Immediate Hazard - No
- Delayed Hazard - No
- Fire Hazard - No
- Pressure Hazard - No
- Reactivity Hazard - No

### SARA 302 Extremely hazardous substance
- Not listed.

### SARA 311/312 Hazardous chemical
- No

### Other federal regulations
- **Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**
  - Not regulated.
- **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**
  - Not regulated.
- **Safe Drinking Water Act (SDWA)**
  - Not regulated.

### Regulatory information
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/NDSL), Australia, South Korea, New Zealand, and China.

### 16. Other information, including date of preparation or last revision

<table>
<thead>
<tr>
<th>Issue date</th>
<th>27-Nov-2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revision date</td>
<td>09-Dec-2017</td>
</tr>
<tr>
<td>Version #</td>
<td>02</td>
</tr>
</tbody>
</table>

**Other information**
This SDS was prepared in accordance with USA OSHA Hazard Communications regulation (29 CFR 1910.1200).

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