MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product identifier: Kuraray Poval
Version #: 01
Issue date: 16-June-2014
Revision date: -
Supersedes date: -
MSDS Number: -
Synonym(s): Product grades covered by this safety data sheet see below:
* 4-98, 4-98 LA, 6-98, 10-98, 15-99, 20-98, 28-99, 28-99 LA,
* 30-98, 56-98, 56-98 LA

Manufacturer
Manufacturer/Supplier: Kuraray America, Inc.
2625 Bay Area Blvd, Suite 600
Houston, TX 77058-1551
Telephone: +001-800-423-9762
Emergency: +001-800-423-9762

2. Hazards Identification

Emergency overview: Low hazard for usual industrial or commercial handling by trained personnel. Exposure to powder or dusts may be irritating to eyes, nose and throat.

Potential health effects
Routes of exposure: Eye contact. Inhalation. Skin contact.
Eyes: Dust or powder may irritate eye tissue.
Skin: Dust or powder may irritate the skin.
Inhalation: Inhalation of dusts may cause respiratory irritation.
Ingestion: No harmful effects expected in amounts likely to be ingested by accident.

Target organs: Eyes. Respiratory system. Skin.
Chronic effects: Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.

Signs and symptoms: Coughing.
Potential environmental effects: Not regarded as an environmental hazard under current legislation.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polyvinyl alcohol, fully saponified</td>
<td>9002-89-5</td>
<td>&gt;93</td>
</tr>
</tbody>
</table>

Composition comments: All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures
Eye contact: Do not rub eye. Rinse with water. Get medical attention if irritation develops and persists.
Skin contact: Rinse skin with water. Get medical attention if irritation develops and persists.
Inhalation: If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.
Ingestion: Rinse mouth. If ingestion of a large amount does occur, call a poison control center immediately.
Notes to physician: Provide general supportive measures and treat symptomatically.
General advice: If you feel unwell, seek medical advice (show the label where possible).
5. Fire Fighting Measures

Flammable properties

The product may form dust and can accumulate electrostatic charges, which may cause an electrical spark (ignition source). Use proper grounding procedures.

Extinguishing media

Suitable extinguishing media

Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

Protection of firefighters

Specific hazards arising from the chemical

During fire, gases hazardous to health may be formed.

Protective equipment for firefighters

Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace. Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Fire fighting equipment/instructions

Use standard firefighting procedures and consider the hazards of other involved materials.

Explosion data

Sensitivity to static discharge

Not sensitive.

Sensitivity to mechanical impact

Not sensitive.

Hazardous combustion products

Carbon oxides.

General fire hazards

The product is not flammable. The product may form dust and can accumulate electrostatic charges, which may cause an electrical spark (ignition source). Use proper grounding procedures.

6. Accidental Release Measures

Personal precautions

Avoid inhalation of dust and contact with skin and eyes. Wear appropriate personal protective equipment.

Environmental precautions

Environmental manager must be informed of all major spillages.

Methods for cleaning up

Avoid dust formation. Collect dust or particulates using a vacuum cleaner with a HEPA filter. Do not use compressed air when cleaning. For waste disposal, see Section 13 of the MSDS.

7. Handling and Storage

Handling

Avoid inhalation of dust and contact with skin and eyes. Wear appropriate personal protective equipment. Wash hands after handling. Observe good industrial hygiene practices. Maintenance: Use work methods which minimize dust production. Use only in well-ventilated areas. Take precautionary measures against static discharges when there is a risk of dust explosion.

Storage

Keep in original container. Store in a cool, dry, well-ventilated place. Store away from incompatible materials. Read and follow manufacturer's recommendations.

8. Exposure Controls / Personal Protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust (CAS -)</td>
<td>TWA</td>
<td>3 mg/m3</td>
<td>Respirable particles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m3</td>
<td>Inhalable particles.</td>
</tr>
</tbody>
</table>

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

<table>
<thead>
<tr>
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<td>Respirable particles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m3</td>
<td>Total particulate.</td>
</tr>
</tbody>
</table>

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust (CAS -)</td>
<td>TWA</td>
<td>3 mg/m3</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m3</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>
Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

<table>
<thead>
<tr>
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<th>Form</th>
</tr>
</thead>
<tbody>
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<td>3 mg/m³</td>
<td>Respirable particles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m³</td>
<td>Inhalable particles.</td>
</tr>
</tbody>
</table>

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust (CAS -)</td>
<td>TWA</td>
<td>3 mg/m³</td>
<td>Respirable particles.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10 mg/m³</td>
<td>Inhalable</td>
</tr>
</tbody>
</table>

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust (CAS -)</td>
<td>TWA</td>
<td>10 mg/m³</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust (CAS -)</td>
<td>PEL</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
</tbody>
</table>

US. OSHA Table Z-3 (29 CFR 1910.1000)

<table>
<thead>
<tr>
<th>Components</th>
<th>Type</th>
<th>Value</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dust (CAS -)</td>
<td>TWA</td>
<td>5 mg/m³</td>
<td>Respirable fraction.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 mg/m³</td>
<td>Total dust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>50 millions of particle</td>
<td>Total dust.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>15 millions of particle</td>
<td>Respirable fraction.</td>
</tr>
</tbody>
</table>

Engineering controls

Provide sufficient ventilation for operations causing dust formation. Follow above occupational exposure limit values for dusts. Ventilate as needed to control airborne dust. Use explosion-proof electrical equipment if airborne dust levels are high.

Personal protective equipment

Eye / face protection
Risk of contact: Wear approved safety goggles.

Skin protection
Wear suitable protective clothing. It is a good industrial hygiene practice to minimize skin contact. For prolonged or repeated skin contact use suitable protective gloves.

Respiratory protection
In case of inadequate ventilation or risk of inhalation of dust, use suitable respiratory equipment with particle filter. Use a NIOSH/MSHA approved air purifying respirator as needed to control exposure. Consult with respirator manufacturer to determine respirator selection, use, and limitations. Use positive pressure, air-supplied respirator for uncontrolled releases or when air purifying respirator limitations may be exceeded. Follow respirator protection program requirements (OSHA 1910.134 and ANSI Z88.2) for all respirator use.

9. Physical & Chemical Properties

Appearance  Granules.
Physical state  Solid.
Form  Granules.
Color  White.
Odor  Odorless.
Odor threshold  Not available.
pH  4.5 - 7
Vapor pressure  Not available.
Vapor density  Not available.
Boiling point  Not applicable
Melting point/Freezing point  Not available.
Solubility (water)  Not available.
Flash point  > 199.4 °F (> 93.0 °C)
Flammability limits in air, upper, % by volume  Not available.
Flammability limits in air, lower, % by volume: Not available.
Auto-ignition temperature: Not available.
Evaporation rate: Not applicable.
Viscosity: Not applicable.
Percent volatile: < 5 % w/w
Bulk density: 400 - 600 kg/m³
Molecular formula: (C₂-H₄-O)ₓ

10. Chemical Stability & Reactivity Information
Chemical stability: Material is stable under normal conditions.
Conditions to avoid: Contact with incompatible materials. Avoid dust close to ignition sources.
Incompatible materials: Strong oxidizing agents. Strong acids.
Hazardous decomposition products: Carbon oxides.
Possibility of hazardous reactions: Hazardous polymerization does not occur.

11. Toxicological Information
Toxicological information:
Dusts or powder may irritate the respiratory tract, skin and eyes.
Acute effects:
Dusts may irritate the respiratory tract, skin and eyes.
Sensitization:
Not a skin sensitizer.
Local effects:
Dust may irritate the eyes. Inhalation of dusts may cause respiratory irritation.
Chronic effects:
Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. Prolonged and repeated overexposure to dust can lead to pneumoconiosis. Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure to this product.
Carcinogenicity:
Not classified.

IARC Monographs. Overall Evaluation of Carcinogenicity
Polyvinyl alcohol, fully saponified (CAS 9002-89-5): Not classifiable as to carcinogenicity to humans.
Mutagenicity:
Not expected to be mutagenic.
Reproductive effects:
Not classified.
Symptoms and target organs:
Dust may irritate throat and respiratory system and cause coughing. Direct contact with eyes may cause temporary irritation.
Epidemiology:
Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases.
Further information:
Pre-existing skin and respiratory conditions including dermatitis, asthma and chronic lung disease might be aggravated by exposure.

12. Ecological Information
Ecotoxicity:
The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Environmental effects:
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Persistence and degradability:
No data available.
Bioaccumulation / Accumulation:
No data available.
Partition coefficient:
No data available.
Mobility in environmental media:
No data available.

13. Disposal Considerations
Disposal instructions:
Dispose of in accordance with local regulations.
Waste from residues / unused products:
Dispose of in accordance with local regulations.
Contaminated packaging:
Dispose of in accordance with local regulations.
14. Transport Information

TDG
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

15. Regulatory Information

Canadian regulations
This product is not classified according to WHMIS classification criteria.

WHMIS status
Non-controlled

Inventory status

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>No</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Recommended use

Further information
HMIS® is a registered trade and service mark of the NPCA. The substance is classified based on test data for physical hazards. The classification for health and environmental hazards is derived by a combination of calculation methods and test data, if available. For details, refer to Sections 9, 11 and 12.

NFPA ratings
Health: 1
Flammability: 1
Instability: 0

Disclaimer
This information is provided without warranty. The information is believed to be correct. This information should be used to make an independent determination of the methods to safeguard workers and the environment.