# Phase Change Material

## PRODUCT IDENTIFICATION

<table>
<thead>
<tr>
<th>Name:</th>
<th>PC-21</th>
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</thead>
<tbody>
<tr>
<td>UN No.:</td>
<td>None allocated</td>
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<tr>
<td>CAS Registry No.:</td>
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<td>Dangerous Goods Class:</td>
<td>Non dangerous</td>
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<td>Hazchem Code:</td>
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<td>EPG:</td>
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<td>IMDG:</td>
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<tr>
<td>Packaging Group:</td>
<td>None allocated</td>
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## PHYSICAL DESCRIPTION AND PROPERTIES

| Appearance: | White-cream crystalline solid. Clear to milky white above melting point. |
| Composition: | Hydrated sodium and calcium chloride (min. 90%) Proprietary salts (max. 10%) |
| Melting Point: | -21°C |
| Boiling point: | >1600°C (anhydrous) |
| Vapour pressure: | NA |
| Flammability Limits LEL: | Not applicable |
| UEL: | Not applicable |
| Autoignition temperature: | NA |
| Solubility: | Soluble in water and slightly soluble in some alcohols. |
| pH: | 6-10 |
1. Acute Health Effects

Ingestion
Single dose oral toxicity is low. Ingestion may cause gastrointestinal irritation, diarrhea and nausea. (Acute oral LD$_{50}$ for rats is > 3500mg/kg)

Eye
May cause mild to moderate irritation and some corneal injury in the most severe and untreated cases.

Skin
Short single exposure is unlikely to cause skin irritation. Prolonged or repeated skin exposure may cause mild or moderate skin irritation.

Inhalation
Vapours do not pose an acute health risk due to non volatility of salts. Dust may cause irritation to upper respiratory tract.

2. Chronic Health Effects

The components are not listed by IARC, NTP or PHSA as carcinogens for hazard communication purposes.

3. First Aid

Swallowing
If swallowed give plenty of water. Treat symptomatically and consult a physician.

Eye
Irrigate with water immediately and continuously for at least 15 minutes. Consult a physician.

Skin
Wash affected area with water either locally or under shower. If irritation persists consult a physician.

Inhalation
In the event of dust inhalation remove patient to well ventilated fresh air area. Rinse mouth and gargle with water. Consult physician if irritation persists.

PRECAUTIONS FOR USAGE

1. Exposure standards
   Exposure limits have not been established on TLV basis for continuously working with the product.

2. Engineering Controls.
   Ensure adequate ventilation and standard dust control provisions.

3. Personal Protection
   No special PPG equipment is required for the handling of PC-21. However, good manufacturing practice will include: safety glasses and gloves, and a dust mask if solid product is being broken down mechanically. The product has a negligible vapour pressure.

4. Flammability
   The product is not combustible and no special precautions are required in this respect.
SAFE HANDLING INFORMATION

1. **Storage and Transportation**
   Transport and store the product under dry and cool conditions - ideally below 30°C. Container should be sealed to air tightness. The containers should be suitably flexible to retain containment integrity with a variation in volume of the product of ~10% between its solid and liquid phases above and below -21°C.

2. **Spills and Disposal**
   Recovery of spilt solids or liquid should be placed in suitable, labeled containers for re-use. Wash down affected area with excess water. Where it is not possible to reuse the recovered product then disposal should observe all local, state and federal regulations governing the disposal of calcium and sodium chlorides.

3. **Fire and Explosion Hazard**
   If it heated sufficiently due to proximity to a fire, it can decompose to give off noxious gases containing hydrogen chloride and chlorine. Where possible the product should be removed from the proximity to a fire.

4. **Packaging and Labeling**
   There are no labeling requirements specified by regulatory authorities for PC-21

   **Safety phrase recommended include:**
   - Keep out of reach of children
   - Avoid contact with skin and eyes
   - If swallowed seek medical advice

Disclaimer:

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