MATERIAL SAFETY DATA SHEET

SECTION 1

HAZARDOUS INGREDIENTS

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>%</th>
<th>CURRENT TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica - Quartz</td>
<td>1-3%</td>
<td>0.1 mg/m3 TWA Respirable Dust</td>
</tr>
<tr>
<td>Manganese Oxide</td>
<td>6%</td>
<td>5 mg/m3 TWA Manganese Dust and Compounds</td>
</tr>
</tbody>
</table>

PHYSICAL DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance (Solid, Liquid, Gas)</td>
<td>Solid brown to dark brown powder</td>
</tr>
<tr>
<td>Molecular Weight (M/W)</td>
<td>N/A</td>
</tr>
<tr>
<td>Melt Point (M.P)</td>
<td>N/A</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>3.1-3.8</td>
</tr>
<tr>
<td>Vapor Density (AR=1)</td>
<td>N/A</td>
</tr>
<tr>
<td>Color</td>
<td>Brown</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>N/A</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Odor</td>
<td>None</td>
</tr>
<tr>
<td>% Volatile by Volume</td>
<td>N/A</td>
</tr>
</tbody>
</table>

FIRE & EXPLOSION DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point (Method Used)</td>
<td>If exposed to open flame, umber will smolder</td>
</tr>
<tr>
<td>Flammable Limit</td>
<td>LEL N/A</td>
</tr>
<tr>
<td>UEL N/A</td>
<td></td>
</tr>
<tr>
<td>Extinguishing Media</td>
<td>As appropriate for surrounding combustibles</td>
</tr>
</tbody>
</table>

SPECIAL FIRE FIGHTING PROCEDURES

Firefighters should wear self-contained breathing apparatus

UNUSUAL FIRE OR EXPLOSION HAZARDS

None

HEALTH HAZARD DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50, Oral (Ingestion)</td>
<td>N/A</td>
</tr>
<tr>
<td>LD50, Dermal (Skin Contact)</td>
<td>N/A</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
<tr>
<td>Remove to fresh air. Get medical help for any breathing difficulty.</td>
<td></td>
</tr>
<tr>
<td>Fish, LD50 (Lethal Concentration)</td>
<td>N/A</td>
</tr>
<tr>
<td>TLV (Units) (Threshold Limit Value)</td>
<td></td>
</tr>
<tr>
<td>Skin Irritation</td>
<td></td>
</tr>
<tr>
<td>Wash from skin with mild soap and water.</td>
<td></td>
</tr>
</tbody>
</table>

EFFECTS TO EYE

Flush thoroughly with plenty of water for at least 15 minutes. Get medical help if irritation persists.

EFFECTS TO LUNG

May cause mechanical irritation to the respiratory tract.

EMERGENCY AND FIRST AID PROCEDURES, EFFECTS OF OVER EXPOSURE

Ingestion: If conscious, give large quantities of water to induce vomiting. Get medical attention.

Long term overexposure to silica causes silicosis, a form of pulmonary fibrosis. Continued exposure to silica can lead to cardiopulmonary impairment. Crystalline silica which may be present in quantities greater than 0.1% has been reviewed by IARC. IARC found limited evidence for carcinogenicity of crystalline silica in humans and sufficient evidence in experimental animals.
**REACTIVITY DATA**

<table>
<thead>
<tr>
<th>Storable</th>
<th>Conditions to Avoid</th>
<th>None</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stable</td>
<td>Conditions to Avoid</td>
<td>None</td>
</tr>
</tbody>
</table>

**POLYMERIZATION**

Hazardous polymerization will not occur.

**COMPATIBILITY (MATERIALS TO AVOID)**

MnO₂ is a powerful oxidizer. It must not be heated or rubbed against easily oxidizable matter. Should not be combined with flammable materials.

**HAZARDOUS DECOMPOSITION PRODUCTS**

None

**SPILL OR LEAK PROCEDURE**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Those involved in clean-up of spills should use respiratory protection for airborne dust. Vacuum or scoop up spilled materials for recovery or disposal, avoiding dusting conditions and using good ventilation. Wetting the spill with a water spray may help to keep the airborne dust levels down.

**WASTE DISPOSAL METHOD**

Should not be classified as a hazardous waste. Refer to any local, State or Federal regulations for specific disposal information.

**SPECIAL PROTECTION DATA**

**RESPIRATOR TYPE**

**EYE PROTECTION**

Safety glasses with side shields or dust tight goggles.

**GLOVES**

Leather or rubber gloves.

**OTHER PROTECTIVE EQUIPMENT**

**SPECIAL PRECAUTIONS & STORAGE DATA**

**STORAGE TEMPERATURE**

<table>
<thead>
<tr>
<th>MIN. Ambient</th>
<th>MAX. Ambient</th>
<th>AVERAGE SHELF LIFE</th>
</tr>
</thead>
</table>

**SPECIAL SENSITIVITY (HEAT, LIGHT, MOISTURE)**

None

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Store at ambient temperature away from food & drink.

**SHIPPING DATA**

**D.O.T. SHIPPING NAME**

N/A

**TECHNICAL SHIPPING NAME**

Inorganic Oxide

**D.O.T. HAZARD CLASSIFICATION**

PRIMARY: Non-regulated

**SECONDARY:**

**D.O.T. LABELS REQUIRED**

N/A

**FREIGHT CLASSIFICATION**

Iron Oxide, NOI

**REASON FOR ISSUE:**

29 CFR PART 1910.1200

**TSCA REGISTRY:** YES

**APPROVED BY:**

[Signature]

**TITLE:**

V.P.

**DATE APPROVED:** 10/2/91
MATERIAL SAFETY DATA SHEET

Issue Date: March 1991  MSDS Number: UCI 3

MANUFACTURER

CONTINENTAL AEROSPACE
2101 Stinson Blvd. NE
Minneapolis, MN 55413
(612) 331-9332

PRODUCT IDENTIFICATION

PRODUCT NAME: Aerogem, Calcium Carbonate
CHEMICAL NAME: Calcium Carbonate or Whiting
CHEMICAL FAMILY: Limestone, Marble, Dolomite
FORMULA: CaCO₃ + impurities; CaCO₃ + MgCO₃ + impurities
DESCRIPTION: A fine mineral powder

SECTION I - INGREDIENTS

<table>
<thead>
<tr>
<th>MINERAL OR CHEMICAL</th>
<th>WEIGHT %</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>CAS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium Carbonate</td>
<td>&gt;98.0</td>
<td>10 mg/m³ (1)</td>
<td>10 mg/m³</td>
<td>471-34-1</td>
</tr>
<tr>
<td>Quartz</td>
<td>&lt;2.0</td>
<td>0.1 mg/m³ (1)</td>
<td>0.1 mg/m³</td>
<td>1408-60-7</td>
</tr>
</tbody>
</table>

The ACGIH TLV (1) for this mixture is 3.4 mg/m³ utilizing the general formula: TLV of mixture = 1/(1/aTLV + 1/bTLVB)

NOTES:

(1) Respirable dust, TWA for 8 hour shift/40 hour week.

Calcium carbonate contains crystalline silica at levels between 0.01% and 2.0% and varies naturally. IARC states that there is sufficient evidence of the carcinogenicity of crystalline silica in animals and there is limited evidence of the carcinogenicity of crystalline silica in humans. Accordingly, exposures should be reduced to the lowest level possible. Revisions to the stated exposure limits for crystalline silica are under study and may be made in the near future.

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

*** EMERGENCY ***

ROCKY MOUNTAIN POISON CONTROL CENTER (24 HOURS) - (303) 823-5716

EYE CONTACT: For direct contact, flush the affected eye(s) with clean water while holding the eyelids open. If irritation or redness develops, seek medical attention.

SKIN CONTACT: Usually of no general concern. Broken skin can be cleansed with mild soap and water. If irritation or redness develops and persists, seek medical attention.

INHALATION (BREATTHING): Primary route of entry. If irritation of nose or throat develops, move away from source of exposure and into fresh air. If irritation persists, seek medical attention. If victim is not breathing or breathing difficulties develop, artificial respiration or oxygen should be administered by qualified personnel. Seek immediate medical attention.

INGESTION (SWALLOWING): No treatment necessary.
SECTION III - POTENTIAL ADVERSE HEALTH EFFECTS

EYE CONTACT: As with most dusts of particulate materials, calcium carbonate can cause temporary discomfort and irritation if accidentally introduced into the eye.

SKIN CONTACT: No adverse effects are known as a consequence of application to unbroken skin.

INHALATION (BREATHING): Primary route of entry. Symptoms of acute accidental exposure would be non-specific and similar to the inhalation of any dust. Such symptoms might include paroxysmal coughing, wheezing, difficult breathing, and upper respiratory tract irritation.

INGESTION (SWALLOWING): No adverse affects expected.

CARCINOGENICITY: Calcium carbonate contains crystalline silica in varying amounts. IARC states that there is sufficient evidence of the carcinogenicity of crystalline silica in animals and there is limited evidence of the carcinogenicity of crystalline silica in humans. OSHA has declined to regulate crystalline silica as a carcinogen pending further study.

EFFECTS OF REPEATED OVERDOSE: Repeated and prolonged occupational exposure to calcium carbonate dust containing silica may cause silicosis. There are no reported health effects associated with prolonged exposure to pure calcium carbonate. Cough from smoking, shortness of breath, wheezing, or impaired pulmonary function may be aggravated by inhalation of dust. IARC states that there is limited evidence of carcinogenic effects in humans from inhalation of crystalline silica.

NOTES TO PHYSICIAN: There are no specific antidotes for acute overexposure. Treatment should be directed at the control of the symptoms and clinical condition. Individuals with active pulmonary disease should not be assigned to a heavy calcium carbonate dust environment. Medical monitoring may be appropriate for those with long-term exposure to materials containing crystalline silica. See Section IX for further information.

SECTION IV - SPECIAL PROTECTION INFORMATION

VENTILATION: Appropriate engineering controls and work practices should be used to minimize exposure.

RESPIRATORY PROTECTION: Avoid inhalation of dust. Use a NIOSH approved respirator as appropriate to minimize exposure.

PROTECTIVE CLOTHING: Safety glasses should be worn at all times. Other items of protective clothing are recommended for workers who suffer from dermatitis, for workers who are susceptible to irritation and dry skin, or as otherwise appropriate.

OTHER PROTECTIVE EQUIPMENT: Eye wash stations or a source of clean water should be available in work area for flushing eyes. Areas where employees may be exposed to high levels of dust, and the approaches to such areas, should bear appropriate warning signs.

TRAINING: Employees should be informed as to the presence of crystalline silica in this product and trained in the proper use of this product as required under applicable regulations.

SECTION V - PHYSICAL DATA

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOILING POINT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>FREEZING POINT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>EVAPORATION POINT</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>% VOLATILE</td>
<td>Slight (moisture)</td>
</tr>
<tr>
<td>VAPOR DENSITY</td>
<td>None</td>
</tr>
<tr>
<td>VAPOR PRESSURE</td>
<td>None</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY</td>
<td>2.70-2.71</td>
</tr>
<tr>
<td>ph</td>
<td>(5% slurry) : 8.9-9.2</td>
</tr>
<tr>
<td>% SOLUBLE IN WATER</td>
<td>Slightly</td>
</tr>
<tr>
<td>ODOR</td>
<td>Odorless</td>
</tr>
<tr>
<td>APPEARANCE</td>
<td>White to off white in color</td>
</tr>
</tbody>
</table>
SECTION VI - REACTIVITY DATA

STABILITY
Calcium carbonate is stable

HAZARDOUS DECOMPOSITION PRODUCT: None

HAZARDOUS POLYMERIZATION: Will not occur

CONDITIONS TO AVOID: None

INCOMPATIBILITY
Incompatible with alum or ammonium salts. Reacts with strong acids to liberate carbon dioxide. Mixture with aluminum may explode on heating. Mixture with magnesium may explode when heated in a current of hydrogen gas. Contact with fluorine may cause violent reaction on ignition.

SECTION VII - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT
None

FLAMMABILITY LIMITS
None

EXTINGUISHING MEDIA
None required

FIRE AND EXPLOSION HAZARDS: None
FIRE FIGHTING PROCEDURES: None required

SECTION VIII - SPILL OR LEAK PROCEDURES

HOUSEKEEPING:
All surfaces should be maintained as free as practicable of accumulations of dusts.

STEPS TO BE TAKEN IN RELEASE OR SPILL:
Minimize the generation of dust during cleanup. Respiratory protection should be worn during cleanup. Wet surfaces may become slippery.

WASTE DISPOSAL METHOD:
Dispose of in accordance with federal and state regulations. Calcium carbonate is not a hazardous waste under RCRA criteria (40 CRF Part 261).

COMMUNITY RIGHT TO KNOW:
Calcium carbonate is regulated under EPCRA (SARA Title III); reports should be made as required under that act. Respirable crystalline silica is listed as a carcinogen under California's "Proposition 65."

SECTION IX - SPECIAL PRECAUTIONS

Surfaces subject to spills or dusting with this product can become slippery. Keep all floors, workstations, stairs and handrails clean and dry.

Respirable dust levels should be monitored on a regular basis.

ACGIH suggests that periodic physical examinations be given to those employees who may be exposed to crystalline silica concentrations greater than 50% of the TLV. Additional or increased medical surveillance should be implemented as appropriate.

SECTION X - TRANSPORTATION REQUIREMENTS

Department of Transportation classification: Not hazardous by DOT regulations.

DOT proper shipping name: Not regulated.

SECTION XI - ADDITIONAL INFORMATION

Calcium carbonate is on the TSCA Chemical Substance Inventory.

This product does not contain quantifiable concentrations of asbestos, asbestiform or non-asbestiform tremolite, actinolite, or anthophyllite. This material contains crystalline silica.
Sources used in the preparation of this MSDS include; the ACGIH TLV and Biological Exposure Indices for 1988-1989; 29 CFR Part 1910, 1000 (July 1, 1988) (as modified by 54 FR 2499 (January 19, 1989)); Supplemental 7 (1987) to IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Nos. 1 to 42.

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Date Issued: March, 1991