MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

Manufacturer's name and address: ARDEX Americas
400 Ardex Park Drive
Aliquippa, PA, US 15001
Information Telephone No. : (724) 203-5000
Visit our Website: http://www.ardexamericas.com
24 Hr. Emergency Tel #: CHEM-TEL: 1-800-255-3924 OR 1-813-248-0585 (call collect)
Product Identifier : ARDEX FL™ Grout

Chemical Name : N/Ap  Chemical Family : N/Ap
Chemical Formula : N/Ap  Trade Name/Synonyms : ARDEX FL Grout
Molecular Weight : N/Ap  Material Use : Rapid Setting Flexible Sanded Grout

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Pigmented powder. No odor.

DANGER!
Corrosive. Causes eye burns. May cause skin burns. Contact with wet material, or moist areas of the skin, causes skin burns. Symptoms may be delayed. May cause respiratory irritation.

Contains material which can cause lung damage. Possible cancer hazard - contains material which may cause cancer.

WHMIS Classification : Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material); Class E (Corrosive Material)
OSHA Classification : This material is classified as hazardous under OSHA regulations (29CFR 1910.1200).

***POTENTIAL HEALTH EFFECTS***

Target organs : Lungs; Eyes; Skin.

Routes of exposure : Inhalation: YES  Skin Absorption: NO  Skin & Eyes: YES  Ingestion: YES

Signs and symptoms of short-term (acute) exposure

Inhalation : May cause severe irritation to the nose, throat and respiratory tract. Symptoms may include coughing, shortness of breath, wheezing and reduced lung function.

Skin : Direct contact may cause mild to severe irritation with possible burns. Contact with wet material, or moist areas of the skin, causes skin burns. Skin thickening, cracking, or fissuring may also occur. Symptoms may be delayed.

Eyes : Direct contact may strongly irritate or burn the eyes. Could cause blindness.

Ingestion : May cause severe irritation to the mouth, throat and stomach. Symptoms may include burning pain, vomiting and diarrhea.

Effects of long-term (chronic) exposure :
Prolonged inhalation may cause adverse lung effects with symptoms including coughing, mucus production and difficulty breathing. Repeated or prolonged inhalation of fine dusts may cause severe scarring of the lungs, a disease called silicosis, and alveolar proteinosis (lower lung disease). Symptoms may include coughing, shortness of breath and eventually severe respiratory impairment.

Conditions aggravated by overexposure :
Pre-existing skin, eye and respiratory disorders.

Carcinogenic status : Cancer hazard. See TOXICOLOGICAL INFORMATION, Section 11.

Additional health hazards : See TOXICOLOGICAL INFORMATION, Section 11.

Potential environmental effects : See ECOLOGICAL INFORMATION, Section 12.

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS
## SECTION 4 - FIRST AID MEASURES

### Inhalation
If inhaled, move to fresh air. If breathing is difficult, give oxygen by qualified medical personnel only. If not breathing, clear airway and start artificial respiration. Seek immediate medical attention/advice.

### Skin contact
Remove/Take off immediately all contaminated clothing. Flush affected skin with gently flowing lukewarm water for at least 20 minutes. Seek immediate medical attention/advice.

### Eye contact
Immediately flush eyes thoroughly with running water for at least 20 to 30 minutes. Seek immediate medical attention/advice.

### Ingestion
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting. Have victim drink one to two glasses of water. Seek immediate medical attention/advice.

### Notes For Physician
Treat symptomatically.

## SECTION 5 - FIRE FIGHTING MEASURES

### Fire hazards/conditions of flammability
Not flammable under normal conditions of use. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure. Contact with water may cause hydration, and formation of caustic alkaline material.

### Flammability classification (OSHA 29 CFR 1910.1200)
- **Flash point**: Not applicable.
- **Flash point Method**: Not applicable.
- **Lower flammable limit (% by vol.)**: Not applicable.
- **Oxidizing properties**: None.
- **Flame Projection Length**: Not applicable.
- **Auto-ignition temperature**: N/A
- **Upper flammable limit (% by vol.)**: Not applicable.
- **Flashback observed**: Not applicable.
Explosion data: Sensitivity to mechanical impact / static discharge

- Not available.

Suitable extinguishing media:

- Dry chemical, carbon dioxide and foam. Do not use water. Contact with water may cause hydration, and formation of caustic alkaline material.

Special fire-fighting procedures/equipment:

- Firefighters should wear proper protective equipment and self-contained breathing apparatus with full face piece operated in positive pressure mode. Move containers from fire area if safe to do so. Water spray may be useful in cooling equipment exposed to heat and flame. After fires have been extinguished, carefully clean all equipment and surfaces exposed to fumes.

Hazardous combustion products:

- Calcium oxide; vinyl acetate; acetic acid; Aldehydes; Carbon oxides.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Personal precautions:

- Corrosive! Wear chemically resistant personal protective equipment during cleanup. Restrict access to area until completion of clean-up. All persons dealing with clean-up should wear the appropriate chemically protective equipment. Refer to Section 8 on this Safety Data Sheet, EXPOSURE CONTROLS / PERSONAL PROTECTION, for additional information on acceptable personal protective equipment.

Environmental precautions:

- Do not allow product to enter waterways. Do not allow material to contaminate ground water system.

Spill response/cleanup:

- Ventilate area of release. Eliminate all ignition sources. Stop spill or leak at source if safely possible. Contain material, preventing it from entering sewer lines or waterways. Using HEPA vacuum, or other dustless methods, gather up spilled material and place in suitable container for later disposal (see section 13). Avoid adding water, material becomes alkaline when wet. Notify the appropriate authorities as required.

Prohibited materials:

- Avoid adding water, material becomes alkaline when wet.

Special spill response procedures:

- If a spill/release in excess of the EPA reportable quantity is made into the environment, immediately notify the national response center in the United States (phone: 1-800-424-8002).

  US CERCLA Reportable quantity (RQ): None reported.

SECTION 7 - HANDLING AND STORAGE

Safe Handling procedures:

- Corrosive! Wear chemically resistant protective equipment during handling. Use in a well-ventilated area. Training the workers on the potential health hazards associated with product vapor, dust or fume is important. Secondary inhalation exposures could occur when cleaning equipment, or when removing or laundering the clothing. Do not breathe vapors/dust. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Avoid wet or humid conditions. Keep away from acids and incompatibles. Avoid and control operations which create dust. Keep containers tightly closed when not in use. Wash thoroughly after handling.

Storage requirements:

- Store in a cool, dry, well-ventilated area. No smoking in the area. Do not store near any incompatible materials (see Section 10). Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Protect against physical damage.

Incompatible materials:

- See Section 10.

Special packaging materials:

- Always keep in containers made of the same materials as the supply container.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTION

Ventilation and engineering measures:

- Use general or local exhaust ventilation to maintain air concentrations below recommended exposure limits.

Respiratory protection:

- Respiratory protection is required if the concentrations exceed the TLV. If the TLV is exceeded, a NIOSH/MSHA-approved respirator is advised.

Skin protection:

- Impervious gloves must be worn when using this product. Advice should be sought from glove suppliers.

Eye / face protection:

- Chemical goggles must be worn to prevent dusts from entering the eyes.

Other protective equipment:

- Where extensive exposure to product is possible, use resistant coveralls, apron and boots to prevent contact. An eyewash station and safety shower should be made available in the immediate working area.
ARDEX FL™ Grout

MSDS Preparation Date (dd/mm/yyyy): 31/08/2013

General hygiene considerations
- Avoid contact with eyes, skin and clothing. Do not breathe vapors/dust. Do not eat, drink or smoke when using this product. Clean all equipment and clothing, and shower with mild soap and water to remove dusts, at end of each work shift.

Permissible exposure levels
- For individual ingredient exposure levels, see Section 3.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

**Physical state** - fine powder (Solid)  
**Appearance** - Pigmented powder.

**Odor** - No odor.  
**Odor threshold** - N/Av

**pH** - 10 - 12

**Boiling point** - N/Av  
**Specific gravity** - 2.7 - 3.1

**Melting/Freezing point** - N/Av  
**Coefficient of water/oil distribution** - N/Av

**Vapor pressure (mmHg @ 20°C / 68°F)** - N/Av

**Vapor density (Air = 1)** - N/Av  
**Evaporation rate (n-Butyl acetate = 1)** - N/Av

**Volatile organic Compounds (VOC's)** - N/Av  
**Volatile (% by weight)** - N/Av

**Particle size** - N/Av  
**General Info.** - Weight / Gallon: N/Av

SECTION 10 - REACTIVITY AND STABILITY DATA

**Stability and reactivity** - Stable under the recommended storage and handling conditions prescribed. Contact with water may cause hydration and formation of caustic calcium hydroxide.

**Hazardous polymerization** - Hazardous polymerization does not occur.

**Conditions to avoid** - Avoid wet or humid conditions. Extreme heat.

**Materials To Avoid And Incompatibility** - Acids; Oxidizing agents; Ammonium salts; Water. Avoid contact with aluminum.

**Hazardous decomposition products** - None known, refer to hazardous combustion products in Section 5.

SECTION 11 - TOXICOLOGICAL INFORMATION

**Toxicological data** - There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>LC50 (4hr) inh, rat</th>
<th>LC50 oral</th>
<th>LD50 dermal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium aluminate</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
<tr>
<td>Portland cement</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
<tr>
<td>Vinyl acetate copolymer</td>
<td>N/Av</td>
<td>&gt; 1000 mg/kg (rat)</td>
<td>N/Av</td>
</tr>
<tr>
<td>Crystalline silica, quartz</td>
<td>N/Av</td>
<td>N/Av</td>
<td>N/Av</td>
</tr>
<tr>
<td>Lithium carbonate</td>
<td>&gt; 2.17 mg/L</td>
<td>710 mg/kg (rat)</td>
<td>N/Av</td>
</tr>
<tr>
<td>Titanium Dioxide, TiO₂</td>
<td>&gt; 6.82 mg/L</td>
<td>&gt; 24,000 mg/kg (rat)</td>
<td>&gt; 10,000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Iron Oxide, Fe₂O₄</td>
<td>N/Av</td>
<td>&gt; 5,000 mg/kg (rat)</td>
<td>N/Av</td>
</tr>
<tr>
<td>Chromium (III) Oxide, Cr₂O₃</td>
<td>&gt; 5.41 mg/L</td>
<td>&gt; 5,000 mg/kg (rat)</td>
<td>N/Av</td>
</tr>
<tr>
<td>Iron (III) Oxide, Fe₂O₃</td>
<td>N/Av</td>
<td>&gt; 5,000 mg/kg (rat)</td>
<td>5,500 mg/kg (rat)</td>
</tr>
</tbody>
</table>

**Carcinogenic status** - This product contains Crystalline silica - Quartz. Crystalline silica - Quartz is classified as carcinogenic by IARC (Group 1), ACGIH (Group A2), NTP (Group 1) and OSHA (OSHA Select carcinogen).

**Reproductive effects** - None known.

**Teratogenicity** - None known.

**Mutagenicity** - None known.

**Epidemiology** - Not available.

**Sensitization to material** - Portland Cement may cause an allergic skin reaction, in hypersensitive individuals possibly due to trace amounts of chromium.

**Synergistic materials** - N/Av
SECTION 12 - ECOLOGICAL INFORMATION

Environmental effects: The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.

Important environmental characteristics:
- N/A
- Ecotoxicological: No data is available on the product itself.

SECTION 13 - DISPOSAL CONSIDERATIONS

Handling for Disposal: Handle waste according to recommendations in Section 7.
Methods of Disposal: Dispose in accordance with all applicable federal, state, provincial and local regulations. Contact your local, state, provincial or federal environmental agency for specific rules.

RCRA: If this product, as supplied, becomes a waste in the United States, it may meet the criteria of a hazardous waste as defined under RCRA, Title 40 CFR 261. It is the responsibility of the waste generator to determine the proper waste identification and disposal method. For disposal of unused or waste material, check with local, state and federal environmental agencies.

SECTION 14 - TRANSPORTATION INFORMATION

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>UN Number</th>
<th>Shipping Name</th>
<th>Class</th>
<th>Packing Group</th>
<th>Label</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDG</td>
<td>None</td>
<td>Not regulated.</td>
<td>Not regulated</td>
<td>none</td>
<td>![Label]</td>
</tr>
<tr>
<td>TDG Additional information</td>
<td>None.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>49CFR/DOT</td>
<td>None</td>
<td>Not regulated.</td>
<td>Not regulated</td>
<td>none</td>
<td>![Label]</td>
</tr>
<tr>
<td>49CFR/DOT Additional information</td>
<td>None.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SECTION 15 - REGULATORY INFORMATION

Canadian Information:

Canadian WHMIS Classification: This product is a WHMIS Controlled Product. It meets one or more of the criteria for a controlled product provided in Part IV of the Controlled Products Regulations (CPR). Refer to Section 2 for a WHMIS Classification for this product.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

Canadian Environmental Protection Act (CEPA) information: All ingredients listed appear on the Domestic Substances List (DSL).

Ingredient Disclosure List (IDL): The following components appear on the Canadian Hazardous Products Act, Ingredient Disclosure List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>Minimum Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crystalline Silica</td>
<td>14808-60-7</td>
<td>1%</td>
</tr>
<tr>
<td>Chromium (III) Oxide (may contain)</td>
<td>1308-38-9</td>
<td>1%</td>
</tr>
<tr>
<td>Iron (III) Oxide, Fe₂O₃ (may contain)</td>
<td>1309-37-1</td>
<td>1%</td>
</tr>
</tbody>
</table>
US Federal Information:

TSCA: All listed ingredients appear on the Toxic Substances Control Act (TSCA) inventory.

CERCLA Reportable Quantity (RQ) (40 CFR 117.302): None reported.

SARA TITLE III: Sec. 313, Toxic Chemicals Notification, 40 CFR 372: This material is subject to SARA notification requirements, due to the presence of Chromium (III) Oxide [CAS No. 1308-38-9] in some shades.

US State Right to Know Laws:
California Proposition 65: This product contains chemicals known to the State of California to cause cancer and/or reproductive harm.

The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No.</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland Cement</td>
<td>65997-15-1</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Crystalline Silica</td>
<td>14808-60-7</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Lithium Carbonate</td>
<td>554-13-2</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Titanium Dioxide (may contain)</td>
<td>13463-67-7</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Chromium Oxide (may contain)</td>
<td>1308-38-9</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Iron Oxide, Fe₂O₃ (may contain)</td>
<td>1309-37-1</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

SECTION 16 - OTHER INFORMATION

Legend:
- ACGIH: American Conference of Governmental Industrial Hygienists
- CAS: Chemical Abstract Services
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act of 1980
- CFR: Code of Federal Regulations
- DOT: Department of Transportation
- DSL: Domestic Substances List
- EPA: Environmental Protection Agency
- IARC: International Agency for Research on Cancer
- Inh: Inhalation
- N/Av: Not Available
- N/Ap: Not Applicable
- NIOSH: National Institute of Occupational Safety and Health
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PEL: Permissible exposure limit
- RCRA: Resource Conservation and Recovery Act
- SARA: Superfund Amendments and Reauthorization Act
- STEL: Short Term Exposure Limit
- TLV: Threshold Limit Values
- TSCA: Toxic Substance Control Act
- TWA: Time Weighted Average
- WHMIS: Workplace Hazardous Materials Identification System

References:
1. ACGIH, Threshold Limit Values and Biological Exposure Indices for 2013.
3. Canadian Centre for Occupational Health and Safety, CCInfoWeb databases, 2012 (Chempendium and RTECs).
4. Material Safety Data Sheet from manufacturer.
5. US EPA Title III List of Lists - October 2012 version.
DISCLAIMER OF LIABILITY

The Information presented herein is supplied as a guide to those who handle or use this product and has been prepared in good faith by technically knowledgeable personnel. It is not intended to be all-inclusive. The manner and conditions of use and handling may involve other and additional considerations. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product.

No warranty of any kind is given or implied. ARDEX Engineered Cements will not be liable for any damages, losses, injuries or consequential damages which may result from the use or reliance on any information contained herein. This Material Safety Data Sheet is valid for three (3) years.

Prepared By:
ARDEX Engineered Cements
400 Ardex Park Drive
Aliquippa, PA, US
15001
(724) 203-5000 or (888) 512-7339
Visit our Website: http://www.ardexamericas.com

MSDS Preparation Date (dd/mm/yyyy)
: 31/08/2013

END OF DOCUMENT