

MATERIAL SAFETY DATA SHEET

Section 1 - Identification

Manufacturer's name and address:



ARDEX Engineered Cements

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Product Identifier : **ARDEX GS-4**

Chemical Name : N/Ap

Chemical Family : N/Ap

Chemical Formula : N/Ap

Trade Name/Synonyms : ARDEX GS-4

Molecular Weight : N/Ap

Material Use : Underlayment

Supplier's name and address:

Refer to Manufacturer

SECTION 2 - HAZARDS IDENTIFICATION

Classification : WHMIS classification:
Class D2A (Materials Causing Other Toxic Effects, Very Toxic Material);
Class E (Corrosive Material).

OSHA: This material is classified as hazardous under OSHA regulations (29CFR 1910.1200). Hazardous classification:

Acute Health Hazard;
Chronic Health Hazard.

Emergency overview: : White powder. No odour.
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.

POTENTIAL HEALTH EFFECTS:

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, mucous 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.

Carcinogenic status : 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

Ingredients	CAS #	Wt.%
Portland cement	65997-15-1	3.00 - 7.00
Vinyl acetate copolymer	24937-78-8	1.00 - 5.00
Calcium carbonate	1317-65-3	5.00 - 10.00
Crystalline silica, quartz	14808-60-7	30.00 - 60.00
Calcium sulfate	7778-18-9	30.00 - 60.00

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)

- : Non-flammable.

Oxidizing properties

- : None.

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; Carbon oxides; Acrolein; acetic acid; vinyl acetate; Sulphur oxides .

NFPA Rating

- 0 - Minimal 1 - Slight 2 - Moderate 3 - Serious 4 - Severe
: *Health: 2 Flammability: 1 Instability: 1 Special Hazards: None*

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 point 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 vapours/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. Recommended storage temperature: < 32.2°C (90°F).
- 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

Exposure Limits

Ingredients	ACGIH TLV		OSHA PEL	
	TWA	STEL	PEL	STEL
Portland cement	10 mg/m ³	N/Av	15 mg/m ³ (Total dust); 5 mg/m ³ (respirable)	N/Av
Vinyl acetate copolymer	*10 mg/m ³ (inhalable); 3 mg/m ³ (respirable)	N/Av	*15 mg/m ³ (total dust); 5 mg/m ³ (respirable dust)	N/Av
Calcium carbonate	N/Av	N/Av	15 mg/m ³ (total dust); 5 mg/m ³ (respirable fraction)	N/Av
Crystalline silica, quartz	0.025 mg/m ³	N/Av	0.1 mg/m ³ (final rule limit)	N/Av
Calcium sulfate	10 mg/m ³ (inhalable fraction)	N/Av	15 mg/m ³ (total dust); 5 mg/m ³ (respirable fraction)	N/Av

*Note: The OSHA PEL's and ACGIH TLV's listed above for Vinyl acetate copolymers are for 'Particulates Not Otherwise Specified / Regulated'.

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.

General hygiene considerations

: Avoid contact with eyes, skin and clothing. Do not breathe vapours/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.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical state	: fine powder (Solid)	Appearance	: White powder
Odour	: No odour.	Odour threshold	: N/Av
pH	: N/Av		
Boiling point	: N/Av	Specific gravity	: 1.2
Melting/Freezing point	: N/Av	Coefficient of water/oil distribution	: N/Av
Vapour pressure (mmHg @ 20° C / 68° F)	: N/Av	Solubility in water	: < 50 g/1000 cm ³
Vapour density (Air = 1)	: N/Av	Evaporation rate (n-Butyl acetate = 1)	: N/Av
Volatile organic Compounds (VOC's)	: N/Av	Volatiles (% by weight)	: N/Av
Particle size	: N/Av	General Info.	: Weight / Gallon: N/Av
Flash point	: Not applicable.		
Flash point Method	: Not applicable.	Auto-ignition temperature	: Not available.
Lower flammable limit (% by vol.)	: Not applicable.	Upper flammable limit (% by vol.)	: Not applicable.
Flame Projection Length	: Not applicable.	Flashback observed	: Not applicable.

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 polymerisation 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. Refer to Section 5 for additional 'Hazardous combustion products'.

SECTION 11 - TOXICOLOGICAL INFORMATION

Target organs	: Lungs; eyes; Skin.
Routes of exposure	: <i>Inhalation</i> : YES <i>Skin Absorption</i> : NO <i>Skin & Eyes</i> : YES <i>Ingestion</i> : YES
Toxicological data	: There is no available data for the product itself, only for the ingredients. See below for individual ingredient acute toxicity data.

Ingredients	LC₅₀(4hr) inh, rat	LD₅₀	
		oral	dermal
Portland cement	N/Av	N/Av	N/Av
Vinyl acetate copolymer	N/Av	N/Av	N/Av
Calcium carbonate	N/Av	6450 mg/kg (rat)	N/Av
Crystalline silica, quartz	N/Av	N/Av	N/Av
Calcium sulfate	N/Av	> 3000 mg/kg (rat)	N/Av

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. No data available to indicate product or components may be respiratory sensitizers.
Synergistic materials	: Not available.
Irritancy	: Moderately irritating to corrosive.
other important hazards	: See Section 3 for additional information.
Conditions aggravated by overexposure	: Pre-existing skin, eye and respiratory disorders.



SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity	: No data is available on the product itself. The product should not be allowed to enter drains or water courses, or be deposited where it can affect ground or surface waters.
Mobility	: No data is available on the product itself.
Persistence	: No data is available on the product itself.
Bioaccumulation potential	: No data is available on the product itself.
Other Adverse Environmental effects	: None known.

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

Regulatory Information	UN Number	Shipping Name	Class	Packing Group	Label
TDG	None	Not regulated.	Not regulated	none	
TDG Additional information	None.				
49CFR/DOT	None	Not regulated.	Not regulated	none	
49CFR/DOT Additional information	None.				

SECTION 15 - REGULATORY INFORMATION

Canadian Information:

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

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 Canadian 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.

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 not subject to SARA notification requirements, since it does not contain any Toxic Chemical constituents above de minimus concentrations.

US State Right to Know Laws:

California Proposition 65: This product contains a chemical known to the State of California to cause cancer. Contains: Crystalline silica, quartz.

Other U.S. State "Right to Know" Lists: The following chemicals are specifically listed by individual States: Portland cement (MA, MN, NJ, PA, RI); Calcium carbonate (MA, MN, NJ, PA, RI); Crystalline silica, quartz (MA, MN, NJ, PA, RI); Calcium sulfate (MA, MN, NJ, PA).

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
- LC: Lethal Concentration
- LD: Lethal Dose
- MA: Massachusetts
- MN: Minnesota
- N/Av: Not Available
- N/Ap: Not Applicable
- NIOSH: National Institute of Occupational Safety and Health
- NJ: New Jersey
- NTP: National Toxicology Program
- OSHA: Occupational Safety and Health Administration
- PA: Pennsylvania
- PEL: Permissible exposure limit
- RCRA: Resource Conservation and Recovery Act
- RI: Rhode Island
- SARA: Superfund Amendments and Reauthorization Act
- STEL: Short Term Exposure Limit
- TDG: Canadian Transportation of Dangerous Goods Act & Regulations
- 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 2009.
2. International Agency for Research on Cancer Monographs, searched 2009.
3. Canadian Centre for Occupational Health and Safety, CCIInfoWeb databases, 2009 (Chempendium and RTECs).
4. Material Safety Data Sheet from manufacturer.
5. US EPA Title III List of Lists - October 2006 version.
6. California Proposition 65 List - September 11, 2009 version.

DISCLAIMER OF LIABILITY

ARDEX GS-4

MSDS Revision Date (dd/mm/yyyy): 15/07/2011

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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.

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