



Material Safety Data Sheet for ASH GROVE DURABASE®

(Manufactured at Foreman, Arkansas)

Section I - Identity

Manufacturer's name and address: Ash Grove Cement Company
P.O. Box 25900
Overland Park, KS 66225

Emergency Telephone Number: (913) 451-8900

Information Telephone Number: (913) 451-8900

Chemical Name and Synonyms: Cement Kiln Dust; CKD

Chemical Name and Synonyms: A mixture of sulfates, chlorides, carbonates, and oxides of sodium, potassium and calcium; quartz (CAS No. 01-4808-60-7), limestone (CAS No. 1317-65-3), fly ash, dolomite, feldspars, and iron oxides; glasses of silicon dioxide, aluminum oxide and iron oxide; and cement compounds (CAS No. 65997-15-1). ASH GROVE DURABASE® is a partially calcined mineral mixture collected by or in electrostatic precipitators (ESPs) or by other air pollution control devices (APCDs).

When waste-derived fuels comprise a part of the fuel source, ASH GROVE DURABASE® may contain 200-2000 ppm lead and traces of other heavy metals, including, but not limited to, arsenic, chromium, cadmium, antimony, barium, beryllium, silver, mercury, thallium, selenium and nickel.

Calcium oxide may also be present in freshly generated ASH GROVE DURABASE®. If ASH GROVE DURABASE® is mixed with water, the calcium oxide will hydrate to form calcium hydroxide.

Revision Date: January 2007

Section II - Hazardous Ingredients

	OSHA PEL	ACGIH TLV	Carcinogen Status
Inert or Nuisance Dust			
Respirable Fraction	5 mg/m ³	3 mg/m ³	Not
Total Dust	15 mg/m ³	10 mg/m ³	Applicable
Calcium oxide, Quicklime, CaO	5 mg/m ³	2 mg/m ³	Not Applicable
Hydrated Lime, Ca(OH) ₂ :Total:	15 mg/m ³	5 mg/m ³ (Total)	Not Applicable
Respirable:	5 mg/m ³		
Respirable Quartz, Free Silica, SiO ₂	$\frac{10 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$	0.05 mg/m ³	NTP - Yes IARC - Yes OSHA - No
Total Quartz, Free Silica, SiO ₂	$\frac{30 \text{ mg/m}^3}{\% \text{ SiO}_2 + 2}$	Not Applicable	NTP - Yes IARC - Yes OSHA - No

ASH GROVE DURABASE® contains greater than 0.1% crystalline silica

Section II - Hazardous Ingredients (Continued)

Metals - Representative Exposure Limits			
	OSHA PEL	ACGIH - TLV	Carcinogen Status
Arsenic	0.01 mg/m ³	0.01 mg/m ³	OSHA - Yes IARC - Yes NTP - Yes
Chromium	1.0 mg/m ³	0.50 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Cadmium	0.005 mg/m ³	0.01 mg/m ³	OSHA - Yes IARC - Yes NTP - Yes
Lead	0.05 mg/m ³	0.05 mg/m ³	OSHA - No IARC - Yes NTP - No
Antimony	0.50 mg/m ³	0.50 mg/m ³	OSHA - No IARC - No NTP - No
Barium	0.50 mg/m ³	0.50 mg/m ³	OSHA - No IARC - No NTP - No
Beryllium	2 g/m ³	0.002 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Silver	0.01 mg/m ³	0.01 mg/m ³	OSHA - No IARC - No NTP - No
Mercury	C* = 0.1 mg/m ³	0.025 mg/m ³ SKIN **	OSHA - No IARC - Yes NTP - No
Thallium	0.1 mg/m ³	0.1 mg/m ³ , SKIN**	OSHA - No IARC - No NTP - No
Selenium	0.20 mg/m ³	0.20 mg/m ³	OSHA - No IARC - Yes NTP - Yes
Nickel	1 mg/m ³	0.1 mg/m ³	OSHA - No IARC - Yes NTP - Yes

*C = Ceiling

** SKIN = can be absorbed through skin

Section III - Physical/Chemical Characteristics

Chemical Family:	Inorganic Base with mixed inorganic oxides and salts
Specific Gravity:	2.82
Vapor Pressure(mm Hg):	N/A
Vapor Density:	(Air=1) N/A
Evaporation Rate:	NA
Solubility in Water:	1.0 to 12%
Appearance and Odor:	Buff colored powder; odorless
Melting Point:	N/A

Section IV - Fire and Explosion Hazard Data

Flash Point (method used): N/A; ASH GROVE DURABASE® is non-combustible and not explosive.

Flammable or Explosive Limits: LEL: NA UEL: NA

Extinguishing Media: N/A

Special Fire Fighting Procedures: ASH GROVE DURABASE® is non-combustible

Firefighting Media: N/A

CAUTION: Saturated water solutions of ASH GROVE DURABASE® can have pH of 12-12.5. See Section VII for appropriate precautions.

Unusual Fire and Explosion Hazards: None

Section V - Health Hazard Data

Emergency Overview:

Exposure of sufficient duration to wet ASH GROVE DURABASE® can cause serious, potentially irreversible tissue (skin or eye) damage in the form of chemical (caustic) burns, including third degree burns. The same type of tissue damage can occur if wet or moist areas of the body are exposed for sufficient duration to dry ASH GROVE DURABASE®.

Route(s) of Entry of ASH GROVE DURABASE®: Inhalation; skin; eyes; ingestion

1. Inhalation:

- a. **Acute exposure:** Freshly generated ASH GROVE DURABASE® may be corrosive to damp moist skin if calcium oxide and calcium hydroxide are present. Inhalation of this dust may cause sore throat, coughing, choking, and dyspnea.
- b. **Chronic exposure:** Bronchial irritation with chronic cough may occur. ASH GROVE DURABASE® can contain crystalline silica in the respirable size range of particulate. Chronic long term exposure to respirable crystalline silica without the use of a proper respirator can cause silicosis. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure. NTP and IARC list respirable quartz crystalline silica as a carcinogen; OSHA does not.

Section V - Health Hazard Data (Continued)

2. **Skin contact:**
- Acute exposure:** Freshly generated ASH GROVE DURABASE® may be corrosive in contact with unprotected skin, due to the content of calcium oxide and calcium hydroxide (lime). Solutions of lime can penetrate the skin slowly, producing soft, necrotic, deeply penetrating areas on contact; these are potentially serious burns. **NOTE: ASH GROVE DURABASE® may also be shipped hot (approximately 200⁰ F) and could cause thermal burns to unprotected skin.**
 - Chronic exposure:** A chronic dermatitis may follow repeated contact.
 - First aid:** Remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large amounts of water until no evidence of ASH GROVE DURABASE® remains (approximately 15-20 minutes). In the case of chemical burns, due to the lime content of ASH GROVE DURABASE®, cover the affected areas with sterile, dry dressing. Bandage securely, but not too tightly. Get medical attention.
3. **Eye contact: Freshly generated ASH GROVE DURABASE® may be corrosive to moist tissue around the eyes**
- Acute exposure:** Direct contact with the freshly generated solid or aqueous solutions may cause conjunctival edema and/or corneal damage; can lead to and cause blindness.
 - Chronic exposure:** Prolonged contact may cause conjunctivitis.
 - First aid:** Wash eyes immediately with large amounts of water, occasionally lifting the upper and lower lids, until no evidence of ASH GROVE DURABASE® remains (approximately 15-20 minutes). Get medical attention immediately. Qualified medical personnel should perform administration of drugs to the eyes.
4. **Ingestion:** corrosive. If ingested, consult a physician immediately. Do not induce vomiting.

Hazard Information about Trace Metals in ASH GROVE DURABASE®:

Arsenic – Routes of entry: inhalation, absorption, skin and/or eye contact, ingestion. Ulceration of nasal septum, dermatitis, gastrointestinal disturbances, peripheral neuritis, respiratory system irritation; hyperpigmentation of skin. Target organs are liver, kidneys, skin, lungs and lymphatic system. Arsenic is associated with lung and lymphatic cancer.

Chromium – Routes of entry: inhalation, ingestion, skin and/or eye contact. Chromium compounds are associated with eye irritation, allergic contact dermatitis and in some cases lung fibrosis. Target organs are the eyes, skin, and respiratory system.

Cadmium – Routes of entry: inhalation and ingestion. Cadmium dust may cause pulmonary edema and shortness of breath. Can result in cough, chest tightness, substernal pain, headache, chills, muscle aches, nausea, vomiting, diarrhea, loss of the sense of smell, emphysema, proteinuria and mild anemia. The target organs are the respiratory system, kidneys, prostate and blood. Cadmium is associated with prostatic and lung cancer.

Lead – Routes of entry: inhalation, ingestion, skin and/or eye contact. Lead is associated with weakness, fatigue, insomnia, facial pallor, anorexia, low weight, constipation, abdominal pain, anemia, lead line on gums, tremors, wrist paralysis, brain alterations, kidney disease, eye irritation and hypotension. The target organs are the GI tract, CNS, kidneys, blood and gingival tissue.

Antimony – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes irritation of eyes, skin, nose, throat and mouth; dizziness; headache; nausea; vomiting; diarrhea; stomach cramps; insomnia; anorexia; unable to smell properly. The target organs are the eyes, skin, respiratory system and CVS.

Barium – Routes of entry: inhalation, ingestion. Barium compounds can cause severe eye burns and skin irritation. It can cause muscle stimulation followed by paralysis with symptoms including nausea, vomiting, colic and diarrhea. Target organs are the skin, eyes and muscle system.

Beryllium – Routes of entry: inhalation and skin and/or eye contact. Chronic exposure causes berylliosis: anorexia, low weight, weakness, chest pain, cough, clubbing of fingers, cyanosis, and pulmonary insufficiency; also causes eye irritation and dermatitis. The target organs are the eyes, respiratory system, and skin. Beryllium is associated with lung cancer.

Silver – Routes of entry: inhalation, ingestion, skin and/or eye contact. Can cause blue-gray discoloration of skin, eyes and mucous membranes; may cause irritation and ulceration of skin and GI tract disturbances. Target organs are nasal septum, skin and eyes.

Mercury – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes skin and eye irritation; cough, chest pain, shortness of breath, bronchial pneumonitis; tremors, insomnia, irritability, indecision, headache, fatigue, weakness, inflammation of the mouth, salivation, GI tract disturbances, anorexia, weight loss and protein in the urine.

Thallium – Routes of entry: inhalation, absorption, ingestion, skin and/or eye contact. Causes nausea and vomiting, diarrhea and abdominal pain; eyelid drooping, loss of binocular vision, peripheral neuritis, tremors; retrosternal tightness, chest pain, pulmonary edema; seizures, involuntary body movements, psychosis; liver and kidney damage; hair loss, tingling in the legs. Target organs are eyes, respiratory system, CNS, liver, kidneys, GI tract, body hair.

Selenium – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes eye, skin, nose and throat irritation; visual disturbances; headache; chills, fever; shortness of breath, bronchitis; metallic taste, garlic breath, GI tract disturbances; dermatitis; eye and skin burns. In animals causes: anemia; liver necrosis and cirrhosis; kidney and spleen damage. Target organs are the eyes, skin, respiratory system, liver, kidneys, blood, spleen.

Nickel – Routes of entry: inhalation, ingestion, skin and/or eye contact. Causes allergic dermatitis, allergic asthma, pneumonitis. Target organs are nasal cavities, lungs, skin. Nickel is associated with lung and nasal cancer.

Section VI - Reactivity Data

Stability: Calcium oxide and calcium hydroxide, if present in ASH GROVE DURABASE®, will gradually absorb carbon dioxide when exposed to air, forming calcium carbonate. ASH GROVE DURABASE® consolidates when mixed with water. The resulting dry material sets loosely, preventing the material from becoming airborne. With excess water, calcium oxide and calcium hydroxide which may be present in freshly generated ASH GROVE DURABASE® can form a corrosive solution, pH 12-12.5.

Incompatibility (Materials to avoid): Contact with mineral acids will cause evolution of carbon dioxide with production of heat.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: Skin, eye, or respiratory system exposure to dry ASH GROVE DURABASE® during handling, conveying, or placement of ASH GROVE DURABASE®. Use protection as described in Section IX.

Section VII - Precautions for Safe Handling and Use

Handling: Use protective equipment as described in Section IX. ASH GROVE DURABASE® has beneficial properties, and when managed properly may be used in many construction applications as a direct replacement or substitute for other materials. Users need to exercise good environmental management practices to ensure the material will not create an environmental water quality problem. Good environmental management practices include: avoid placement of the material where there is potential for it to come into direct contact with

groundwater, or direct contact with surface water bodies; utilize up-slope storm water diversions to prevent unnecessary contact of storm water with ASH GROVE DURABASE®; incorporate ASH GROVE DURABASE® into the final grade, site soils or road base as promptly as practicable to minimize exposure to storm water; avoid delivery of the material in saturated or near saturated condition to a site; prevent exposure to precipitation by ceasing activities when rainfall is anticipated and covering the material when stockpiled; avoid placement of material on steep slopes where erosion is likely.

Storing: ASH GROVE DURABASE® should be stored in an area that is dry and where contact with storm, surface, or ground water can be avoided. When stored outdoors, the pile should be covered to reduce contact with precipitation and to minimize emissions to the air. Good environmental management practices should be followed.

Section VIII - Spill Procedures

Steps to be taken in case material is spilled: Use dry cleanup methods that do not disperse the dust into the air. Avoid breathing the dust. Emergency procedures are not required.

Disposal Method: Small amounts of material can be returned to the container for later use if it is not contaminated. Dispose of waste material in accordance with Federal, State and local requirements. ASH GROVE DURABASE® is not a hazardous waste as defined by the Resource Conservation and Recovery Act (40CFR 261).

Section IX - Control Measures

Respiratory Protection: In dusty conditions or when exposures exceed applicable PELs or TLVs, use a NIOSH approved (under 42 CFR 84) respirator. Respirator must be effective in preventing exposure to respirable particulate composed of crystalline silica, lime and heavy metals at trace concentrations.

Firefighting: Self-contained breathing apparatus with a full facepiece operated in pressure-demand or positive-pressure mode.

Protective Gloves: Gauntlet type work gloves; if handling ASH GROVE DURABASE® in combination with water, chemical resistant gloves must be worn.

Eye Protection: When engaged in activities where ASH GROVE DURABASE® or wet ASH GROVE DURABASE® could contact the eye, wear safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with wet ASH GROVE DURABASE®.

Other Protective Equipment: Wear impervious clothing with long sleeves and pants to eliminate skin contact. If walking or working in dry or wet ASH GROVE DURABASE®, wear impervious boots taped at the top to the pant legs to keep dust or liquid from entering the boot. If clothing becomes saturated with wet ASH GROVE DURABASE®, it should be removed and replaced with clean dry clothing.

Work/Hygienic Practices: Immediately after working with ASH GROVE DURABASE®, workers should shower with soap and water.

This product neither contains nor is directly manufactured with any controlled ozone depleting substances, Class I and II.