



MATERIAL SAFETY DATA SHEET

All cement products sold to the Buyer are subject to the terms and conditions on page 10.

SECTION 1 - IDENTIFICATION

Product: Portland Cement
Manufacturer: GCC of America.
130 Rampart Way, Suite 205
Denver, Colorado 80230

Emergency Telephone No: For Hazardous Materials [or Dangerous Goods] Incident
Spill, Leak, Fire, Exposure, or Accident
Call CHEMTREC Day or Night
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

Date: November 19, 2012

Chemical Family

Calcium compounds. Calcium silicate compounds and other calcium compounds containing iron and aluminum make up the majority of this product.

Major compounds are:

$3\text{CaO}\cdot\text{SiO}_2$	Tricalcium silicate (CAS# 12168-85-3)
$2\text{CaO}\cdot\text{SiO}_2$	Dicalcium silicate (CAS# 10034-77-2)
$3\text{CaO}\cdot\text{Al}_2\text{O}_3$	Tricalcium aluminate (CAS# 12042-78-3)
$4\text{CaO}\cdot\text{Al}_2\text{O}_3\cdot\text{Fe}_2\text{O}_3$	Tetracalcium aluminoferrite (CAS# 12068-35-8)
$\text{CaSO}_4\cdot 2\text{H}_2\text{O}$	Calcium sulfate dihydrate or Gypsum (CAS# 13397-24-5)

Chemical name and synonyms

Portland Cement
Oil Well Cement

Formula

This product consists of finely ground portland cement clinker mixed with a small amount of gypsum.

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SECTION 2 - COMPONENTS

Hazardous ingredients

Portland cement (CAS# 65997-15-1) - approximately 60% by weight
ACGIH TLV-TWA (1995-1996) = 10 mg total dust/m³
OSHA PEL (8-hour TWA) = 50 million particles/ft³

Gypsum (CAS# 7778-18-9) - approximately 3-5% by weight
ACGIH TLV-TWA(1995-1996) = 10 mg total dust/m³
OSHA PEL (8-hour TWA) = 10 mg total dust/m³
OSHA PEL (8-hour TWA) = 5 mg respirable dust/m³

Other ingredients - trace elements

CaCO₃ plus small amounts of CaO, MgO, K₂SO₄ and Na₂SO₄ may be present. GCCA's cement is made from materials mined from the earth and is processed using energy provided by fossil fuels. Trace elements of naturally occurring chemicals might be detected during analysis.

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview

Portland cement is a light gray powder that poses little immediate hazard. A single short term exposure to the dry powder is not likely to cause serious harm. However, exposure of sufficient duration to wet portland cement can cause serious, potentially irreversible tissue (skin or eye) destruction in the form of chemical (caustic) burns, including third degree burns. The same type of tissue destruction can occur if wet or moist areas of the body are exposed for sufficient duration to portland cement.

Potential Health Effects

* **Relevant Routes of Exposure:**

Eye contact, skin contact, inhalation, and ingestion.

* **Effects resulting from eye contact:**

Exposure to airborne dust may cause immediate or delayed irritation or inflammation.

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Eye contact by larger amounts of dry powder or splashes of wet portland cement may cause effects ranging from moderate eye irritation to chemical burns and blindness. Such exposures require immediate first aid (see section 4) and medical attention to prevent significant damage to the eye.

* **Effects resulting from skin contact:**

Discomfort or pain cannot be relied upon to alert a person to a hazardous skin exposure. Consequently, the only effective means of avoiding skin injury or illness involves minimizing skin contact, particularly contact with wet cement. Exposed persons may not feel discomfort until hours after the exposure has ended and significant injury has occurred.

Exposure to dry portland cement may cause drying of the skin with consequent mild irritation or more significant effects attributable to aggravation of other conditions. Dry portland cement contacting wet skin or exposure to moist or wet portland cement may cause more severe skin effects including thickening, cracking or fissuring of the skin. Prolonged exposure can cause severe skin damage in the form of caustic burns. Some individuals may exhibit an allergic response upon exposure to portland cement, possibly due to trace amounts of chromium. The response may appear in a variety of forms ranging from mild rash to severe skin ulcers. Persons already sensitized may react to their first contact with the product. Other persons may first experience this affect after years of contact with portland cement products.

* **Effects resulting from inhalation:**

Exposure to portland cement may cause irritation to the moist mucous membranes of the nose, throat and upper respiratory system. It may also leave unpleasant deposit in the nose.

* **Effects resulting from ingestion:**

Although small quantities of dust are not known to be harmful, ill effects are possible if larger quantities are consumed. Portland cement should not be eaten.

* **Carcinogenic potential:**

Portland cement is not listed as a carcinogen by NTP, OSHA or IARC. It may, however, contain trace amounts of substances listed as carcinogens by these organizations.

* **Medical conditions which may be aggravated by inhalation or dermal exposure:**

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Pre-existing upper respiratory and lung diseases.

Unusual (hyper) sensitivity to hexavalent chromium (chromium ⁺⁶) salts.

SECTION 4 - FIRST AID

Eyes

Immediately flush eyes thoroughly with water. Continue flushing eye for at least 15 minutes, including under the lids, to remove all particles. Call physician immediately.

Skin

Wash skin with cool water and pH-neutral soap or mild detergent intended for use on skin. Seek medical treatment in all cases of prolonged exposure to wet cement, cement mixtures, liquids from fresh cement products, or prolonged wet skin exposure to dry cement.

Inhalation of Airborne Dust

Remove to fresh air. Seek medical help if coughing and other symptoms do not subside. ("Inhalation of gross amounts of portland cement requires immediate medical attention.")

Ingestion

Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION 5 - FIRE & EXPLOSION DATA

- Flash point None
- Lower Explosive Limit..... None
- Upper Explosive Limit..... None
- Auto ignition temperature..... Not combustible
- Extinguishing media Not combustible
- Special fire fighting procedures None.

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Although portland cement poses no fire-related hazards, a self-contained breathing apparatus is recommended to limit exposure to combustion products when fighting any fire.

Hazardous combustion products.....None

Unusual fire and explosion hazards.....None

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Collect dry material using a scoop. Avoid actions that cause dust to become airborne. Avoid inhalation of dust and contact with skin. Wear appropriate personal protective equipment as described in Section 8.

Scrape up wet material and place in an appropriate container. Allow the material to dry before disposal. Do not attempt to wash portland cement down drains.

Dispose of waste material according to local, state and federal regulations.

SECTION 7 - HANDLING AND STORAGE

Keep portland cement dry until used. Normal temperatures and pressures do not affect the material.

Promptly remove dusty clothing or clothing which is wet with cement fluids and launder before reuse. Wash thoroughly after exposure to dust or wet cement mixtures or fluids.

SECTION 8 - EXPOSURE CONTROLS - PERSONAL PROTECTION

Skin protection

Prevention is essential to avoiding potentially severe skin injury. Avoid contact with unhardened (wet) portland cement products. If contact occurs, promptly wash affected area with soap and water. Where prolonged exposure to unhardened portland cement products might occur, wear impervious clothing and gloves to eliminate skin contact. Where required, wear boots that are impervious to water to eliminate foot or ankle exposure.

Do not use barrier creams in place of gloves.

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Periodically wash areas contacted by dry portland cement or by wet cement or concrete fluids with a pH neutral soap. Wash again at the end of the work. If irritation occurs, immediately wash the affected area and seek treatment. If clothing becomes saturated with wet concrete, it should be removed and replaced with dry clothing.

Respiratory protection

Avoid actions that cause dust to become airborne. Use local or general ventilation to stay below exposure limits.

Use NIOSH/MSHA-approved (under 30 CFR 11) or NIOSH-approved (under 42 CFR 84) respirators in poorly ventilated areas, if an applicable exposure limit is exceeded, or when dust causes discomfort or irritation. (Advisory: Respirators and filters purchased after July 10, 1998, must be certified under 42 CFR 84.)

Ventilation

Use local exhaust or general dilution ventilation to control exposure within applicable limits.

Eye protection

When engaged in activities where cement dust or wet cement or concrete could contact the eye, wear approved safety glasses with side shields or goggles. In extremely dusty environments and unpredictable environments, wear unvented or indirectly vented approved goggles to avoid eye irritation or injury. Contact lenses should not be worn when working with portland cement or fresh cement products.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

- Appearance.....Gray or white powder
- Odor.....No distinct odor
- Physical state.....Solid (powder)
- pH (in water) (ASTM D 1293-5).....12 to 13
- Solubility in water.....Slightly soluble (0.1 to 1.0%)
- Vapor pressure.....Not applicable

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Vapor density.....Not applicable
Boiling point.....Not applicable (i.e., >1000°C)
Melting point.....Not applicable
Specific gravity (H₂O = 1.0).....3.15
Evaporation rate.....Not applicable

SECTION 10 - STABILITY AND REACTIVITY

Stability Stable.
Conditions to avoid Unintentional contact with water.
Incompatibility Wet portland cement is alkaline. As such it is incompatible with acids, ammonium salts and aluminum metal.
Hazardous decomposition Will not spontaneously occur. Adding water results in hydration and produces (caustic) calcium hydroxide.
Hazardous polymerization Will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

For a description of available, more detailed toxicological information, contact supplier or manufacturer.

SECTION - 12 ECOLOGICAL INFORMATION

Ecotoxicity

No recognized unusual toxicity to plants or animals.

Relevant physical and chemical properties

(See Sections 9 and 10.)

MATERIAL SAFETY DATA SHEET

Boundary Dam Fly Ash (CAS# 68131-74-8) - External Use Document

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Boundary Dam Fly Ash (CAS# 68131-74-8) - External Use Document (Note that the only differences between this document and the internal document are the contact information, the addition of "product use" information, and the reference (in Section 2) to additional information with respect to thermal issues to be provided / available from SaskPower Fly Ash Sales.)
Product Description:	Natural fly ash from Boundary Dam Power Station (BDPS), located near Estevan, Saskatchewan, Canada.
Product Use:	This product is used primarily as a partial cement replacement in the production of ready-mixed concrete and the manufacture of products such as concrete blocks, pipe, and paving stones.
Manufacturer/Supplier:	SaskPower 2025 Victoria Avenue Regina, Saskatchewan, Canada S4P 0S1
Phone Number:	1-800-667-8022 toll free - SaskPower, Fly Ash Order Desk
Emergency Phone: (24-hour)	IN CASE OF A DANGEROUS GOODS EMERGENCY call CANUTEC at 613-996-6666 (collect calls accepted) (This includes workplace emergencies.)
Date of Preparation:	April 20, 2011

Section 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

DANGER

CORROSIVE MATERIAL - may cause burns, particularly in contact with moist tissues.

TOXIC - harmful by inhalation (contains crystalline silica, quartz).

IRRITANT - may cause eye, skin and inhalation irritation.

Note that, to some extent, burns may be thermal as well as caustic due to the heat released by the reaction of ash components (e.g., available calcium oxide or calcium hydroxide) with moisture (e.g., eyes, mucus membranes, sweat).

Although it is a transient rather than inherent characteristic of the fly ash, note that fly ash withdrawn directly from an electrostatic precipitator (ESP) hopper, fly ash storage (sales) silo, or encountered elsewhere in – or recently exited from – other power plant process equipment may be very hot due to retained heat originating from the coal combustion process. **Consequent to the loading of hot fly ash from a silo, fly ash transport trailers may contain, transport, and subsequently deliver hot ash. Temperatures may be high enough to cause serious burns and to damage materials or equipment that come into contact with the ash. Additionally, the chemical reactivity of the hot fly ash – for example, the reaction of alkaline ash constituents with water – may be greatly enhanced** relative to that of the ash at ambient temperatures, potentially generating additional heat, even higher temperatures, and – in the case of contact with water – flashing some of the water to steam.

SaskPower Fly Ash Sales will provide additional information to existing customers - and to prospective customers as may be necessary or appropriate - by email or other means. If you require, but have not received, such communication - or to obtain more information - please contact the Fly Ash Order Desk at 1-800-667-8022, toll free.

Potential Health Effects: See Section 11 for more information.

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Boundary Dam Fly Ash (CAS# 68131-74-8) - External Use Document

Likely Routes of Exposure: Skin contact, eye contact, inhalation, and ingestion.

- Eye:** May cause serious chemical burns. Causes irritation (possibly severe).
- Skin:** May cause skin irritation. May cause burns in the presence of moisture.
- Ingestion:** May be harmful if swallowed. May cause stomach distress, nausea or vomiting. May cause burning of mouth, throat and esophagus.
- Inhalation:** Harmful by inhalation. May cause respiratory tract irritation. Prolonged or repeated exposure may lead to lung or other diseases.

Chronic Effects: Respirable crystalline silica in the form of quartz or cristobalite from occupational sources is listed by the International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) as a lung carcinogen.

Prolonged exposure to respirable crystalline silica has been known to cause silicosis, a lung disease, which may be disabling. While there may be a factor of individual susceptibility to a given exposure to respirable silica dust, the risk of contracting silicosis and the severity of the disease is clearly related to the amount of dust exposure and the length of time (usually years) of exposure.

Signs and Symptoms: Severe irritation, redness and pain. May cause burns in the presence of moisture. Redness. Pain. Blisters. Serious skin burns. Abdominal pain. Burning sensation. Shock or collapse.

Medical Conditions Aggravated By Exposure: Asthma. Allergies. Pre-existing lung disease.

Target Organs: Skin, eyes, gastrointestinal tract, respiratory system.

This product is a hazardous chemical as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Potential Environmental Effects: May cause long-term adverse effects in the aquatic environment. See Section 12 for more information.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	CAS #	Wt. %
Silica, amorphous, fumed	7631-86-9	30 - 60
Aluminum oxide	1344-28-1	10 - 30
Calcium oxide	1305-78-8	10 - 30
Silica, crystalline, quartz	14808-60-7	5 - 10 or 7 - 13 *
Disodium oxide	1313-59-3	5 - 10
Ferric oxide	1309-37-1	3 - 7 or 5 - 10 †
Magnesium oxide	1309-48-4	1 - 5
Dipotassium oxide	12136-45-7	0.5 - 1.5
Titanium dioxide	13463-67-7	0.5 - 1.5
Barium oxide	1304-28-5	0.5 - 1.5
Phosphoric anhydride	1314-56-3	0.1 - 1

Refer to the text below with respect to interpretation of the ingredient table.

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The coal ash originates as a result of the high-temperature conversion (in the presence of air) of the mineral matter originally present in the coal – plus those elements which may be incorporated into, or associated with, the organic structure of the coal – during the combustion process in the boiler furnace. Coal ash compositions (except for trace elements) are conventionally expressed as the oxides. However, for the most part – the major exception normally being a portion of the SiO_2 – the actual concentrations of the various ash elements as these discrete or uncombined oxides is normally believed to be low (or in some cases, perhaps even nil); most ** of the ash constituents are believed to exist as a complex mixture of silicates and aluminosilicates. (** However, for example, some free or available CaO – or Ca(OH)_2 – and iron oxides (possibly including Fe_3O_4) may also be present; 2010 November samples indicated an available lime concentration, expressed as Ca(OH)_2 , of 0.5 - 0.8%.) The composition of the fly ash is subject to variation, depending especially on the characteristics of the coal being delivered / burned at any given time and, to a lesser extent, boiler furnace operating conditions / performance. There may also be hopper-to-hopper variation in fly ash composition and physical characteristics - e.g., particle size - within an ESP that may not be evident in the aggregated (e.g., storage silo) fly ash.

Trace amounts of various elements including arsenic, antimony, carbon, lead, nickel, manganese, chromium, boron, mercury, selenium, beryllium, cadmium, vanadium, and uranium may be detected in the fly ash as a result of their presence in the source coal. Sulphur, at a level of approximately 0.5 - 5% w/w expressed as sulphate (SO_4^{2-}) is typically also present in the fly ash. Some of the sulphur may be incorporated into the complex silicate / aluminosilicate ash matrix while some may be present in discrete compounds. The sulphur present in discrete compounds – if any – is likely present primarily as sulphate (SO_4^{2-}).

Similarly, phosphorus may be present – if present at all in a discrete compound form (unknown) – primarily as phosphate – PO_4^{3-} – rather than the highly reactive phosphoric anhydride (P_2O_5), which is the convention used for reporting the phosphorus (i.e., elemental "P") content of the fly ash in the composition table in Section 3.

* Current data indicates less than 10% w/w crystalline silica as quartz present in the fly ash; it is believed that some or much of the crystalline silica content of the source coal is fluxed by the high alkaline constituent content of the ash and thereby converted to amorphous silicates; however, due to variability in the mined coal and the combustion process and limitations in measurement, it is possible that crystalline silica content may vary considerably, with the possibility to exceed 10% w/w crystalline silica, quartz, at least on occasion. Crystalline silica as quartz (CAS# 14808-60-7) is listed in the ingredient table, above, as 5 – 10% or 7 – 13% w/w.

Crystalline silica as quartz was reported (two laboratories) as 1.0 – 2.3% (lab 1, five 2010/11/09, 11/16, 11/23 composite samples and one 2010/11/16, 11/23 composite sample) and 4.2 – 6.2% (lab 2, three 2010/11/09, 11/16, 11/23 composite samples and one 2010/11/16, 11/23 composite sample).

The possible presence in the fly ash of crystalline silica in the form of cristobalite (CAS# 14464-46-1) or tridymite (CAS# 15468-32-3) is not known; these forms of crystalline silica were not detected (one laboratory) (lab 2, three 2010/11/09, 11/16, 11/23 composite samples and one 2010/11/16, 11/23 composite sample).

† 2010 composite samples analyzed yielded values of 3 - 4%; historically, however, ferric oxide values have been slightly higher, within the 5 - 10% range.

Appearance: Gray to tan-gray to tan solid in the form of a fine powder.

Section 4: FIRST AID MEASURES

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, including under lids. If easy to do, remove contact lenses, if worn. Get medical attention immediately.

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Skin Contact: If irritation occurs, flush skin with plenty of water. In some cases - e.g., large amounts of fly ash still present on skin - before wetting the product / skin, it may be advisable or appropriate to gently brush - **AVOID** the generation of dust - the bulk of the fly ash from the skin. Get medical attention if irritation persists.

Inhalation: Remove person to fresh air. If symptoms persist, obtain medical attention.

Ingestion: If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If conscious (and not in immediate risk of losing consciousness) and capable of swallowing, rinse mouth thoroughly with water and then drink plenty of water to dilute the material in the stomach. Get medical attention immediately.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or MSDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE FIGHTING MEASURES

Flammability: Not flammable by WHMIS/OSHA criteria.

Means of Extinction:

Suitable Extinguishing Media: Treat for surrounding material.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: None.

Explosion Data:

Sensitivity to Mechanical Impact: Not available.

Sensitivity to Static Discharge: Not available.

Protection of Firefighters: Keep upwind of fire. Wear full fire fighting turn-out gear (full Bunker gear) and respiratory protection (SCBA).

Section 6: ACCIDENTAL RELEASE MEASURES

Precautions: Restrict access to the area. Ensure clean-up is conducted by trained personnel only. Wear adequate protective clothing and equipment. Clean-up personnel need protection against contact with skin and eyes, as well as **AGAINST INHALATION OF DUST** (see Section 8). Prevent accidental contact between the spilled product and water, and **AVOID generating dust**.

Methods for Clean-Up: Contain the spill or leak. Do not touch the spilled material. This material is a water pollutant: prevent the material from entering drains, sewers, ditches, or waterways.

Small spills: Carefully shovel into clean, dry, labelled containers and cover. **AVOID or minimize the production of dust**. Sweeping, the use of compressed air, or the use of a non-HEPA vacuum are therefore to be AVOIDED. The use of a HEPA vacuum may be acceptable. Under certain conditions, and under the advisement and supervision of a knowledgeable authority, it may be appropriate to carefully wet down the spilled material to avoid the production of dust; in this circumstance, prevent the wetting water and fly ash from entering drains, sewers, ditches, or waterways; note that contact of the fly ash with water may generate heat; note that contact with the fly ash will strongly elevate the pH of the wetting water (see Section 9); don't let the wetting water come into contact with skin or eyes; don't let the wetting water (either prior or subsequent to contact with the spilled fly ash) come into contact with stored fly ash (i.e., fly ash that is not part of the accidental release).

Large spills: Contact the appropriate emergency services and product supplier (see Section 1) for advice.

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Notify environmental authorities in the event of any reportable release of this product to the environment.

Other Information: Not available.

Section 7: HANDLING AND STORAGE

Handling:

Avoid contact with skin and eyes. Do not swallow. **Do not breathe dust.** Wear appropriate PPE (see Section 8). When using do not eat or drink. Wash hands before eating, drinking, or smoking.

Use dust-tight containers and keep containers closed when not in use. Prevent accumulation of dust.

Avoid generating dust. Protect containers from physical damage. Prevent water from contacting stored product. Empty containers may contain residues which are hazardous.

Good housekeeping is important to prevent accumulation of dust. **Avoid generating dust.** The use of compressed air for cleaning clothing, equipment, etc, is not recommended.

Storage:

Store in dust-tight, dry, labelled containers. Keep containers closed when not in use. Avoid any dust buildup by frequent cleaning and suitable construction of the storage area. Do not store in an area equipped with emergency water sprinklers. Use corrosion-resistant structural materials and lighting and ventilation systems in the storage area.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

See Section 3 regarding fly ash composition.

Exposure to this material can be controlled in many ways. The measures appropriate for a particular work site depend on how this material is used and on the extent of exposure.

Exposure Guidelines

Ingredient	Exposure Limits	
	OSHA-PEL	ACGIH-TLV
Silica, amorphous, fumed	80 mg/m ³ / %SiO ₂	10 mg/m ³
Aluminum oxide	15 mg/m ³ (total); 5 mg/m ³ (resp)	10 mg/m ³
Calcium oxide	5 mg/m ³	2 mg/m ³
Silica, crystalline, quartz	((10 mg/m ³)/(%SiO ₂ +2) (resp)); ((30 mg/m ³)/(%SiO ₂ +2) (total)); ((250)/(%SiO ₂ +5) mppcf (resp))	0.025 mg/m ³
Disodium oxide	Not available.	Not available.
Ferric oxide	10 mg/m ³	5 mg/m ³ (iron oxide fume; dust as Fe)
Magnesium oxide	15 mg/m ³	10 mg/m ³
Dipotassium oxide	Not available.	Not available.
Titanium dioxide	15 mg/m ³ (total)	10 mg/m ³
Barium oxide	0.5 mg/m ³ (Ba) *	0.5 mg/m ³ (Ba) **
Phosphoric anhydride	1 mg/m ³	1 mg/m ³

* - soluble barium compounds; the actual form(s) of barium present in the ash, and therefore its (their) solubility in water, is not known.

** - barium and soluble barium compounds; the actual form(s) of barium present in the ash, and therefore its (their) solubility in water, is not known.

Engineering Controls: When using product, provide local and general exhaust ventilation to keep airborne dust concentrations below exposure limits. Use wet methods, if appropriate, to reduce the generation of dust.

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Personal Protective Equipment:

Eye/Face Protection: Wear approved eye protection (properly fitted dust- or splash-proof chemical safety goggles) and face protection (face shield).

Hand Protection: Wear suitable gloves.

Skin and Body Protection: Wear suitable protective clothing, including appropriate boots, boot covers, overshoes, etc., as may be appropriate.

Respiratory Protection: In case of insufficient ventilation to maintain airborne fly ash levels below the exposure limits, wear suitable NIOSH-approved, properly fitted respiratory equipment. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance, and inspection.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Opaque fine powder.
Color:	Gray to tan-gray to tan.
Odour:	No odor.
Odour Threshold:	Not applicable.
Physical State:	Solid (fine powder).
pH (water slurry):	≥ 11.7 (for a 20 g + 80 mL water slurry)
Viscosity:	Not applicable.
Freezing Point:	Not available.
Boiling Point:	Not available.
Flash Point:	Not available.
Evaporation Rate:	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapor Pressure:	Not available.
Vapor Density:	Not applicable.
Specific Gravity:	Six 2010 November composite samples had values of 2.5 – 2.7 @ 20 °C. Possible range not available; historically stated as 2.8 - 3.4 @ 20 °C.
Solubility in Water:	Mostly insoluble; however, reacts to form highly alkaline solution with pH ≥ 11.7 for a 20 g + 80 mL water slurry.
Coefficient of Water/Oil Distribution:	Not available.
Auto-ignition Temperature:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.

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Section 10: STABILITY AND REACTIVITY

Stability: Stable under normal storage conditions. Keep dry in storage.

Incompatible Materials: Moisture (reaction may generate heat). Strong acids. Boric oxide. Boron trifluoride. Phosphorus pentoxide*. Chlorates. Chlorine trifluoride. Chlorine. Ammonium salts. Fluorine. Hydrogen sulfide. Carbon dioxide. Hydroxylamine. Nitrogen tetroxide. Triuranium octoxide. Ammonia. Hydrogen fluoride. Oxygen difluoride. Chloroform. Potassium. Propargyl alcohol. Sodium carbonate. Sodium hydroxide.

Hazardous Decomposition Products: None.

Hazardous Polymerization: Does not occur.

Corrosivity to Metals: The fly ash, itself – particularly if moist or wet – or solutions that are or have been in contact with the fly ash may be corrosive to metals, especially including aluminum metal.

Reactivity: See Section 2 with respect to the possibility of enhanced chemical reactivity of the fly ash when it is hot.

Note that the incompatible materials listed are largely based on the presence of the fly ash components as listed in the composition table in Section 3. Recall, however, that the listed composition follows a particular convention for the expression of fly ash elemental composition and that some of the compounds listed may only be present (in that form) to a limited extent (or even not at all). Therefore, the incompatible materials listing may be somewhat conservative in that **some** of the incompatible materials listed **may not necessarily** have any particularly troublesome level of interaction with the fly ash. Conversely, however, some of the incompatible materials listed may indeed have a troublesome level of interaction with the fly ash, up to and including very violent reaction.

* Note that the phosphorus pentoxide (phosphoric anhydride) listed in the composition table in Section 3, above, is per the convention used for reporting the phosphorus (i.e., elemental "P") content of the fly ash; the phosphorus in the fly ash – if present at all in a discrete compound form (unknown) – may be present primarily as phosphate – PO_4^{3-} – rather than the highly reactive phosphoric anhydride (P_2O_5).

Section 11: TOXICOLOGY INFORMATION

EFFECTS OF ACUTE EXPOSURE

Component Analysis

Ingredient	LD ₅₀ (oral)	LC ₅₀
Silica, amorphous, fumed	5000 mg/kg, rat	>2.2 mg/L 1hr, rat
Aluminum oxide	> 5000 mg/kg, rat	Not available.
Calcium oxide	500 mg/kg, rat	Not available.
Silica, crystalline, quartz	500 mg/kg, rat	Not available.
Disodium oxide	Not available.	Not available.
Ferric oxide	> 10000 mg/kg, rat	Not available.
Magnesium oxide	Not available.	Not available.
Dipotassium oxide	Not available.	Not available.
Titanium dioxide	> 10000 mg/kg, rat	Not available.
Barium oxide	Not available.	Not available.
Phosphoric anhydride	Not available.	1217 mg/m ³ 1hr, rat

Note that, to some extent, burns may be thermal as well as caustic due to the heat released by the reaction of ash components (e.g., available calcium oxide or calcium hydroxide) with moisture (e.g., eyes, mucus membranes, sweat) or due to contact with hot ash (see Section 2).

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- Eye:** May cause serious chemical burns. Causes irritation (possibly severe). Severe irritation, redness and pain. May cause burns in the presence of moisture.
- Skin:** May cause skin irritation. May cause burns in the presence of moisture. Redness. Pain. Blisters. Serious skin burns.
- Ingestion:** May be harmful if swallowed. May cause stomach distress, nausea or vomiting. May cause burning of mouth, throat and esophagus. Abdominal pain. Burning sensation. Shock or collapse.
- Inhalation:** Harmful by inhalation. May cause respiratory tract irritation. Prolonged or repeated exposure may lead to lung or other diseases.

EFFECTS OF CHRONIC EXPOSURE

Target Organs: Eyes, skin, respiratory system, gastrointestinal tract.

Chronic Effects: Repeated exposure to calcium oxide has been shown to cause ulceration of the nasal septum, bronchitis and pneumonia. Chronic inhalation of silica quartz may cause autoimmune disease. Chronic exposure to an ingredient in this mixture has been reported to cause renal injury and adverse effects on visual acuity.

This product contains crystalline silica, quartz possibly up to 10% (or 13%) by weight. Due to variability in the mined coal and the combustion process and limitations in measurement, it is possible that crystalline silica content may vary considerably, with the possibility to exceed 10% (or 13%) w/w crystalline silica, quartz, at least on occasion.

Respirable crystalline silica in the form of quartz or cristobalite from occupational sources is listed by the International Agency for Research on Cancer (IARC) and National Toxicology Program (NTP) as a lung carcinogen.

Prolonged exposure to respirable crystalline silica has been known to cause silicosis, a lung disease, which may be disabling. While there may be a factor of individual susceptibility to a given exposure to respirable silica dust, the risk of contracting silicosis and the severity of the disease is clearly related to the amount of dust exposure and the length of time (usually years) of exposure.

Carcinogenicity: Hazardous by WHMIS/OSHA criteria.

Ingredient	Chemical Listed as Carcinogen or Potential Carcinogen *
Silica, amorphous, fumed	I-3
Aluminum oxide	Not listed.
Calcium oxide	Not listed.
Silica, crystalline, quartz	G-A2, I-1, N-1, CP65
Disodium oxide	Not listed.
Ferric oxide	G-A4, I-3
Magnesium oxide	G-A4
Dipotassium oxide	Not listed.
Titanium dioxide	G-A4, I-2B
Barium oxide	Not listed.
Phosphoric anhydride	Not listed.

* See Section 15 for more information.

Mutagenicity: Not hazardous by WHMIS/OSHA criteria.

Reproductive Effects: Not hazardous by WHMIS/OSHA criteria.

Developmental Effects:

Teratogenicity: Not hazardous by WHMIS/OSHA criteria.

Embryotoxicity: Not hazardous by WHMIS/OSHA criteria.

MATERIAL SAFETY DATA SHEET

Boundary Dam Fly Ash (CAS# 68131-74-8) - External Use Document

Respiratory Sensitization: Not hazardous by WHMIS/OSHA criteria.

Skin Sensitization: Not hazardous by WHMIS/OSHA criteria.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: May cause long-term adverse effects in the aquatic environment.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions:

This product, if discarded as supplied, is not considered a hazardous waste under Federal Waste Regulations 40 CFR 261. If processing, use, or contamination alters the material, the waste must be tested using methods described in 40 CFR 261 to determine if it meets applicable definition of hazardous waste. Dispose according to all relevant Federal, provincial, state, and local regulations. Notify environmental authorities in the event of any reportable release of this product to the environment.

Section 14: TRANSPORTATION INFORMATION

Ground shipment of this material is not regulated as a hazardous material / dangerous good under US D.O.T. or Canadian TDG regulations. This material IS REGULATED as a hazardous material / dangerous good, however, for the purpose of transport by aircraft.

IATA Classification:

Corrosive Solid, Basic, Inorganic, n.o.s. (Calcium oxide); UN3262; Class 8; PGIII

Section 15: REGULATORY INFORMATION

Federal Regulations

Canadian: This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

US: MSDS prepared pursuant to the Hazard Communication Standard (CFR29 1910.1200).

SARA Title III

Ingredient	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313
Silica, amorphous, fumed	Not listed.	Not listed.	Not listed.	Not listed.
Aluminum oxide	Not listed.	Not listed.	Not listed.	313
Calcium oxide	Not listed.	Not listed.	Not listed.	Not listed.
Silica, crystalline, quartz	Not listed.	Not listed.	Not listed.	Not listed.
Disodium oxide	Not listed.	Not listed.	Not listed.	Not listed.
Ferric oxide	Not listed.	Not listed.	Not listed.	Not listed.
Magnesium oxide	Not listed.	Not listed.	Not listed.	Not listed.
Dipotassium oxide	Not listed.	Not listed.	Not listed.	Not listed.
Titanium dioxide	Not listed.	Not listed.	Not listed.	Not listed.
Barium oxide	Not listed.	Not listed.	Not listed.	Not listed.
Phosphoric anhydride	Not listed.	Not listed.	Not listed.	Not listed.

Section 311-312: Delayed (chronic) health hazard.

MATERIAL SAFETY DATA SHEET

Boundary Dam Fly Ash (CAS# 68131-74-8) - External Use Document

State Regulations

California Proposition 65:

This product contains a chemical known to the State of California to cause cancer (Silica, crystalline, quartz).

Global Inventories

Ingredient	Canada DSL/NDSL	USA TSCA
Silica, amorphous, fumed	DSL	Yes.
Aluminum oxide	DSL	Yes.
Calcium oxide	DSL	Yes.
Silica, crystalline, quartz	DSL	Yes.
Disodium oxide	DSL	Yes.
Ferric oxide	DSL	Yes.
Magnesium oxide	DSL	Yes.
Dipotassium oxide	DSL	Yes.
Titanium dioxide	DSL	Yes.
Barium oxide	DSL	Yes.
Phosphoric anhydride	DSL	Yes.

HMIS - Hazardous Materials Identification System

Health - 2* Flammability - 0 Physical Hazard - 1 PPE - B

NFPA - National Fire Protection Association:

Health - 2 Fire - 0 Reactivity - 1

Hazard Rating: 0 = minimal, 1 = slight, 2 = moderate, 3 = severe, 4 = extreme

WHMIS Classification(s):

- Class D2A - Carcinogenicity
- Class D2A - Chronic Toxic Effects
- Class D2B - Skin/Eye Irritant
- Class E - Corrosive Material

WHMIS Hazard Symbols:



SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

- OSHA (O)** Occupational Safety and Health Administration.
- ACGIH (G)** American Conference of Governmental Industrial Hygienists.
A1 - Confirmed human carcinogen.
A2 - Suspected human carcinogen.
A3 - Animal carcinogen.
A4 - Not classifiable as a human carcinogen.
A5 - Not suspected as a human carcinogen.
- IARC (I)** International Agency for Research on Cancer.
1 - The agent (mixture) is carcinogenic to humans.
2A - The agent (mixture) is probably carcinogenic to humans; there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals.
2B - The agent (mixture) is possibly carcinogenic to humans; there is limited evidence of carcinogenicity in humans in the absence of sufficient evidence of carcinogenicity in experimental animals.
3 - The agent (mixture, exposure circumstance) is not classifiable as to its carcinogenicity to humans.
4 - The agent (mixture, exposure circumstance) is probably not carcinogenic to humans.
- NTP (N)** National Toxicology Program.
1 - Known to be carcinogens.
2 - Reasonably anticipated to be carcinogens.

MATERIAL SAFETY DATA SHEET

Boundary Dam Fly Ash (CAS# 68131-74-8) - External Use Document

Section 16: OTHER INFORMATION

Disclaimer:

The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. It is the user's responsibility to satisfy oneself as to the suitability and completeness of this information for the user's own particular use. To the best of Saskatchewan Power Corporation's knowledge, it is believed that the information contained herein is accurate; however, Saskatchewan Power Corporation makes no guarantees with respect to such accuracy and assumes no liability in connection with the use of the information contained herein. In addition, this information may be used in a manner beyond Saskatchewan Power Corporation's knowledge and control. The information is therefore provided without any representation or warranty expressed or implied.

Expiry Date: April 20, 2014

Version #: 3.0

Prepared by: Nexreg Compliance Inc.
Phone: (519) 488-5126
www.nexreg.com

W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: ADVA® 140
MSDS ID Number: D-06476

MSDS Date: 01/20/2009

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: ADVA® 140
MSDS Number: D-06476
Cancelled MSDS Number: D-06398
MSDS Date: 01/20/2009
Chemical Family Name: Carboxylated Polyether
Product Use: Concrete Additive
Chemical Formula: Mixture-NA
CAS # (Chemical Abstracts Service Number): Mixture-NA
Manufactured by:
W.R.Grace & Co.-Conn. Grace Canada, Inc.
62 Whittemore Avenue 294 Clements Road West
Cambridge, MA 02140 Ajax, Ontario L1S 3C6

In Case of Emergency Call:

In USA: (617) 876-1400 In Canada: (905) 683-8561

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS#	Percent (max)
2-Propenoic acid, polymer with methyloxirane polymer..., Sodium salt	220849-25-2	1-10
Ethylene oxide-Propylene oxide copolymer monobutyl ether	009038-95-3	1-10

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview:

Caution!

Causes eye irritation.
Causes skin irritation.
May be harmful if ingested.

HMIS Rating:

Health: 1
Flammability: 1
Reactivity: 0
Personal Protective Equipment: B (See Section 8)

Potential Health Effects:

Inhalation: If inhaled as a vapor or mist, causes respiratory tract irritation. If prolonged exposure occurs effects may be more severe resulting in coughing and breathing difficulties.

Effects include: No other effects expected unless listed below.

Eye Contact: Eye contact causes irritation.

Skin Contact: Skin contact causes irritation.

Prolonged skin contact can result in irritation causing redness and itching.

May cause sensitization.

Skin Absorption: Not expected to be harmful if absorbed through the skin.

Ingestion: Harmful if ingested.

Effects include: Nausea, pain, vomiting, diarrhea and digestive tract irritation.

SECTION 4 - FIRST AID MEASURES:

Skin Contact: Wash with soap and water.

If discomfort or irritation persists, consult a physician.

Remove contaminated clothing and wash before reuse.

Eye Contact: Flush eyes with water for at least 15 minutes while holding eyelids open.

If discomfort or irritation persists, consult a physician.

Ingestion: Do not induce vomiting.

Never give anything by mouth to an unconscious person.

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Product Name: ADVA® 140
MSDS ID Number: D-06476

MSDS Date: 01/20/2009

If discomfort or irritation persists, consult a physician.

Inhalation: If symptoms develop, get fresh air. If symptoms persist, consult a physician.

If breathing has stopped, give artificial respiration then oxygen if needed.

SECTION 5 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: >200°F
Flash Point Method: Estimated (Aqueous solution)
Lower Explosion Limit: Not Available
Upper Explosion Limit: Not Available
Auto-Ignition Temperature: Not Available

NFPA Rating:

Health: 1
Flammability: 1
Reactivity: 0

Extinguishing Media: In case of fire, use water spray, dry chemical, Carbon dioxide or foam.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and complete personal protective equipment when potential for exposure to vapors or products of combustion exist. Water may be used to cool containers to prevent pressure build-up and possible auto-ignition or explosion. Avoid breathing hazardous vapors or products of combustion, keep upwind. Isolate area and keep unnecessary people away. Prevent run-off from fire control or dilution from entering streams or drinking water supplies.

Unusual Fire and Explosion Hazards: None unless noted below.

SECTION 6 - ACCIDENTAL RELEASE MEASURES:

Spills/Leaks: Use proper personal protective equipment. Do not flush to sewer or allow to enter waterways. Keep unnecessary people away.

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container. For large spills, dike area and pump waste material into closed containers for disposal or reclamation.

SECTION 7 - HANDLING AND STORAGE

Precautionary Measures: Avoid contact with eyes, skin and clothing.

Do not take internally.

Practice good personal hygiene to avoid ingestion.

Use only with adequate ventilation.

Wash clothing before reuse.

FOR PROFESSIONAL USE ONLY. KEEP OUT OF CHILDREN'S REACH.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT

EXPOSURE GUIDELINES (US)

Ingredient	ACGIH TLV			OSHA PEL			Other
	TWA	STEL	Ceiling	TWA	STEL	Ceiling	
2-Propenoic acid, polymer with methyloxirane polymer ..., Sodium salt	-	-	-	-	-	-	-
Ethylene oxide-Propylene oxide copolymer monobutyl ether	-	-	-	-	-	-	-

EXPOSURE GUIDELINES (CANADA)

Employers should consult local Provincial regulatory limits for exposure guidelines which may vary locally.

Engineering Controls:

Not generally required.

Personal Protective Equipment:

Respiratory Protection: Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge is required at or above the applicable exposure limits (Consult above Exposure Guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Skin Protection: Rubber or other impervious gloves should be worn to prevent skin contact.

W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: ADVA® 140
 MSDS ID Number: D-06476

MSDS Date: 01/20/2009

Eye Protection: At minimum, safety glasses with side shields should be worn where exposure to excessive dust or spray is likely.

Work/Hygienic Practices: Use good personal hygiene practices.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance/Odor:	Orange Colored liquid with a slight odor of Acrylic Acid.
Odor Threshold: (ppm)	Not Determined
pH:	6-8
Vapor Pressure: (Mm Hg)	Not Determined
Vapor Density: (Air = 1)	Not Determined
Solubility In Water:	Miscable
Specific Gravity: (Water = 1)	~1.1
Evaporation Rate: (Butyl Acetate = 1)	Unknown
Boiling Point:	>212°F/100°C
Viscosity:	Unknown
Bulk Density: (Pounds/Cubic Foot)(Pcf)	Not Applicable
% Volatiles (gr/L): (70°F) (21°C)	~ 80% as water

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions To Avoid:	None known for this product.
Hazardous Polymerization:	Will not polymerize.
Hazardous Decomposition Products:	None known for this product.

SECTION 11 - TOXICOLOGICAL INFORMATION

<u>Ingredient(No data unless listed.)</u>	<u>CAS Number</u>	<u>LD50 and LC50</u>
Ethylene oxide-Propylene oxide copolymer monobutyl ether	009038-95-3	>500 mg/kg

Carcinogenicity:

Ingredient	IARC Group 1	IARC Group 2A	IARC Group 2B	NTP Known	NTP Suspect	OSHA
2-Propenoic acid, polymer with methyloxirane polymer ..., Sodium Salt	No	No	No	No	No	No
Ethylene oxide-Propylene oxide copolymer monobutyl ether	No	No	No	No	No	No

Mutagenicity:	Not applicable.
Teratogenicity:	Not applicable.
Reproductive Toxicity:	Not applicable.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate:	No data available for product.
Ecotoxicity:	No data available for product.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Procedures: Consult all regulations (federal, state, provincial, local) or a qualified waste disposal firm when characterizing waste for disposal. According to EPA (40 CFR § 261), waste of this product is not defined as hazardous. Dispose of waste in accordance with all applicable regulations.

SECTION 14 - TRANSPORTATION INFORMATION

Proper Shipping Name:	Not Applicable
UN/NA Number:	Not Applicable
Domestic Hazard Class:	Nonhazardous
Surface Freight Classification:	Concrete/Masonry Plasticizer and water reducing compound.
Label/Placard Required:	Not Applicable

W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: ADVA® 140

MSDS ID Number: D-06476

MSDS Date: 01/20/2009

SECTION 15 - REGULATORY INFORMATION

REGULATORY CHEMICAL LISTS:

CERCLA (Comprehensive Response Compensation and Liability Act):

(None present unless listed below)

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>	<u>CERCLA RQ</u>
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SARA Title III (Superfund Amendments and Reauthorization Act)

SARA Section 312/Tier I & II Hazard Categories:

Health Immediate (acute)	Yes
Health Delayed (chronic)	No
Flammable	No
Reactive	No
Pressure	No

302 Reportable Ingredients (Identification Threshold 1%):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>	<u>SARA 302 TPQ</u>
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313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
Nitrate compounds	RR-01770-9	.0077

National Volatile Organic Compound Emission Standards For Architectural Coatings:

Volatile Organic Content: (gr/L) Not Applicable

WHMIS Classification(s): D2 B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR). This MSDS contains all the information required by the CPR.

State Regulatory Information:

California Proposition 65: WARNING! This product contains substances known to the state of California to cause cancer, birth defects or other reproductive harm.

Massachusetts Hazardous Substance List(Identification threshold 0.001%(1ppm)):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
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New Jersey Hazardous Substance List(Identification threshold (0.1%)):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
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Pennsylvania Hazardous Substance List(Identification threshold 0.01%):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
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CHEMICAL INVENTORY STATUS:

All chemicals in this product are listed or exempt from listing in the following countries:

US	CANADA		EUROPE	AUSTRALIA	JAPAN	KOREA	PHILIPPINES
TSCA	DSL	NDSL	EINECS/ELINCS	AICS	ENCS	ECL	PICCS
Yes	Yes	No	Yes	Yes	Not Determined	Not Determined	No

SECTION 16 - OTHER INFORMATION

Non-Hazardous Ingredient Disclosure:

<u>Chemical Name</u>	<u>CAS Number</u>
Water	007732-18-5
Sodium gluconate	000527-07-1

Prepared by: EH&S Department

Approved by: EH&S Department

Approved Date: 01/20/2009

Disclaimer:

"The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection."

1 Identification of the substance/mixture and of the company/undertaking**Product identifier**Trade name: **DARAVAIR 1400**

MSDS ID Number: D-06832

Replaces MSDS ID Number: D-06422

Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

W.R. Grace & Co. -Conn.
62 Whittemore Avenue
Cambridge, MA 02140 USA

Other Country Contact Information:

For products distributed beyond the country Manufacturer/Supplier identified above
Consult Section 16 for additional emergency contact information.

Information department:

Environmental Health & Safety
USA: +1-617-876-1400 (24 hours)
+1-800-354-5414 (8AM - 5PM) Not functional within Massachusetts

Transport Emergency: Chemtrec +1-800-424-9300 (24 hours)**2 Composition/information on ingredients****Chemical characterization: Mixtures****Description:** Mixture of the substances listed below with nonhazardous additions.**Hazardous components:** Not applicable.**3 Hazards identification****Special labelling of certain preparations:**

Contains Rosin; colophony. May produce an allergic reaction.

Inhalation: May cause respiratory tract irritation.**Eye Contact:** May cause eye irritation. Permanent eye injury may result from exposure.**Skin Contact:** May be irritating to the skin on prolonged contact.**Skin Absorption:** Not expected to be harmful if absorbed through the skin.**NFPA ratings (scale 0 - 4)**

Health = 2
Fire = 1
Reactivity = 0

(Cont. on page 2)

USA

Material Safety Data Sheet

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Trade name: *DARAVAIR 1400*

HMIS-ratings (scale 0 - 4)

(Cont. from page 1)

HEALTH	2	Health = *2
FIRE	1	Flammability = 1
REACTIVITY	0	Reactivity = 0

4 First aid measures**General information:**

No special measures required.

After skin contact:

Immediately wash contaminated skin with soap or mild detergent and water. If this chemical soaks clothing, immediately remove clothing and wash skin.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: Do not induce vomiting; immediately call for medical help.

5 Firefighting measures

Special hazards arising from the substance or mixture No further relevant information available.

Additional information Collect contaminated fire fighting water separately. It must not enter the sewage system.

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Methods and material for containment and cleaning up:

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container.

Sweep up spilled product into receptacles.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

USA

(Cont. on page 3)

Material Safety Data Sheet

Printing date 03/02/2012

Version Number 1.0

Reviewed on 03/02/2012

Trade name: *DARAVAIR 1400*

(Cont. from page 2)

7 Handling and storage**Handling:****Precautions for safe handling**

Open and handle receptacle with care.
 Avoid contact with eyes, skin and clothing.
 Do not take internally.
 Practice good personal hygiene to avoid ingestion.
 Use only with adequate ventilation.
 Wash clothing before reuse.
FOR PROFESSIONAL USE ONLY. KEEP OUT OF CHILDREN'S REACH.

Information about protection against explosions and fires:

Empty containers may retain hazardous residue, both liquid and vapor.

Storage:

Information about storage in one common storage facility: No special measures required.

Further information about storage conditions: Keep receptacle tightly sealed.

Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: The lists that were valid during the creation were used as basis.

Personal protective equipment:

General protective and hygienic measures: Avoid contact with the eyes and skin.

Breathing equipment:

Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge and a prefilter for dusts/mists is required at or above the applicable exposure limits (consult exposure guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Protection of hands:

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product. Rubber or other impervious gloves should be worn to prevent skin contact.

Material of gloves

Gloves should be impermeable and resistant to the product. Selection of material should be considered before use.

(Cont. on page 4)

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Reviewed on 03/02/2012

Trade name: *DARAVAIR 1400*

(Cont. from page 3)

Eye protection:

Safety glasses with side shield protection.



A face shield should also be worn if there is potential exposure to splash or spray.

Body protection: Protective work clothing**9 Physical and chemical properties****General Information****Appearance:**

Form:	Liquid
Color:	According to product specification
Odor:	Characteristic
Odour threshold:	Not determined.

pH-value at 20°C (68 °F): 10**Change in condition**

Melting point/Melting range:	Undetermined.
Flash point:	Not applicable.

Flammability (solid, gaseous): Not applicable.**Decomposition temperature:** Not determined.**Auto igniting:** Product is not selfigniting.**Danger of explosion:** Product does not present an explosion hazard.**Explosion limits:**

Lower:	Not determined.
Upper:	Not determined.
VOC Content (max):	Not determined.

Vapor pressure: Not determined.**Density at 20°C (68 °F):** 1.025 g/cm³ (8.554 lbs/gal)**Vapour density:** Not determined.**Evaporation rate:** Not determined.**Solubility in / Miscibility with****Water:**
Segregation coefficient (n-octanol/water): Not determined.**Viscosity:**

Dynamic:	Not determined.
Kinematic:	Not determined.

(Cont. on page 5)

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Reviewed on 03/02/2012

Trade name: *DARAVAIR 1400*

(Cont. from page 4)

Other information

No further relevant information available.

10 Stability and reactivity**Thermal decomposition:** No decomposition if used according to specifications.**Possibility of hazardous reactions** No dangerous reactions known.**Incompatible materials:** No further relevant information available.**Hazardous decomposition products:** Carbon monoxide and carbon dioxide**Additional information:** See section 7 for information on handling, storage and conditions to be avoided.**11 Toxicological information****Acute toxicity:****Primary irritant effect:****on the skin:** May be irritating to the skin on prolonged contact**on the eye:** May be irritating to the eyes.**Sensitization:** Sensitization possible through skin contact.**Additional toxicological information:**

The product is not subject to classification according to internally approved calculation methods for preparations:

12 Ecological information**Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Behavior in environmental systems:****Bioaccumulative potential** No further relevant information available.**13 Disposal considerations****Waste treatment methods** Comply with Federal, State and local regulations.**Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

(Cont. on page 6)

USA

Material Safety Data Sheet

Printing date 03/02/2012

Version Number 1.0

Reviewed on 03/02/2012

Trade name: *DARAVAIR 1400*

(Cont. from page 5)

Uncleaned packagings:**Recommendation:** Disposal must be made according to official regulations.**14 Transport information**

UN-Number DOT, ADR, ADN, IMDG, IATA	Not applicable.
UN proper shipping name DOT, ADR, ADN, IMDG, IATA	Not applicable.
Transport hazard class(es) DOT, ADR, ADN, IMDG, IATA Class	Not applicable.
Packing group DOT, ADR, IMDG, IATA	Not applicable.
Environmental hazards: Marine pollutant:	No
Special precautions for user	Not applicable.
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information: DOT Remarks:	Not Regulated.

15 Regulatory information**SARA (Superfund Amendments and Reauthorization Act)****Section 302/304 (extremely hazardous substances):**

None of the ingredients is listed.

Section 313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

None of the ingredients is listed.

SARA Section 312/Tier I & II Hazardard Catagories:

Health Immediate (acute)	Yes
Health Delayed (chronic)	Yes
Flammable	No
Reactive	No
Pressure	No

(Cont. on page 7)

USA

Material Safety Data Sheet

Printing date 03/02/2012

Version Number 1.0

Reviewed on 03/02/2012

Trade name: *DARAVAIR 1400*

(Cont. from page 6)

North America Chemical Inventory Status**TSCA (Toxic Substances Control Act - United States):**

All ingredients are listed or exempt from listing unless otherwise noted below.

CEPA (Canadian DSL):

All ingredients are listed or exempt from listing unless otherwise noted below.

California Proposition 65**Chemicals known to cause cancer:**

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

Carcinogenicity Categories**EPA (Environmental Protection Agency)**

None of the ingredients is listed.

**IARC (International Agency for Research on Cancer) Human Carcinogenicity:
Group 1- Positive, Group 2A- Probable, Group 2B- Possible, Group 3- Not Classifiable**

None of the ingredients is listed.

NTP (National Toxicology Program)**K-Known to be carcinogenic, R-May reasonably be anticipated to be carcinogenic**

None of the ingredients is listed.

TLV-ACGIH (THE American Conference of Governmental Industrial Hygienists)**Human Carcinogen - A1 Confirmed, A2 Suspected, A3 Unknown Relevance, A4 Not Classifiable**

None of the ingredients is listed.

NIOSH-Cancer (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

OSHA-Cancer (Occupational Safety & Health Administration)

None of the ingredients is listed.

Volatile Organic Compounds (VOC) reported per the Emission Standards for Architectural Coatings:

If no g/L value is provided this product is not subject to above standard.

International Chemical Inventory Status**European EINECS**

Inventory listing could not be confirmed for one or more substances.

Philippines Inventory of Chemicals and Chemical Substances PICCS

Inventory listing could not be confirmed for one or more substances.

Inventory of Existing Chemical Substances manufactured or imported in China IECSC

All ingredients are listed.

(Cont. on page 8)

USA

Material Safety Data Sheet

Printing date 03/02/2012

Version Number 1.0

Reviewed on 03/02/2012

Trade name: *DARAVAIR 1400*

(Cont. from page 7)

Australian Inventory of Chemical Substances AICS

Inventory listing could not be confirmed for one or more substances.

Japan Existing and New Chemical Substance List ENCS

Inventory listing could not be confirmed for one or more substances.

Korean Existing Chemical Inventory

Inventory listing could not be confirmed for one or more substances.

Non-hazardous Ingredients

85409-27-4	Rosin, maleated, potassium salt
61790-50-9	Resin acids and rosin acids, potassium salts
7732-18-5	Water

16 Other information

"The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection."

USA

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

1 Identification of the substance/mixture and of the company/undertaking**Product identifier**Trade name: **DARACCEL**

MSDS ID Number: D-06808

Details of the supplier of the safety data sheet**Manufacturer/Supplier:**

W.R. Grace & Co. -Conn.
62 Whittemore Avenue
Cambridge, MA 02140 USA

Other Country Contact Information:

For products distributed beyond the country Manufacturer/Supplier identified above
Consult Section 16 for additional emergency contact information.

Information department:

Environmental Health & Safety
USA: +1-617-876-1400 (24 hours)
+1-800-354-5414 (8AM - 5PM) Not functional within Massachusetts

Transport Emergency: Chemtrec +1-800-424-9300 (24 hours)

2 Composition/information on ingredients**Chemical characterization: Mixtures**

Description: Mixture of the substances listed below with nonhazardous additions.

Hazardous components:		
10043-52-4	Calcium chloride	25-30%
102-71-6	Triethanolamine	1.0-2.0%

3 Hazards identification**Classification of the substance or mixture**

Harmful if swallowed.

Information concerning hazards for human and environment:

Irritating to eyes, respiratory system and skin.

Safety phrases:

Do not breathe gas/fumes/vapor/spray.

Avoid contact with skin.

In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Wear suitable gloves.

Inhalation: Causes respiratory tract irritation.

(Cont. on page 2)

USA

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 1)

Eye Contact:

Irritating effect.

Prolonged eye contact can result in tissue damage.

Skin Contact:

Irritant to skin and mucous membranes.

May cause sensitization.

Skin Absorption: Not expected to be harmful if absorbed through the skin.**Ingestion:**

Amines contained in this product have been associated with the following effects: lung damage, liver and kidney damage, blood effects, developmental toxicity and teratogenic effects.

Additional target organ effects:

May cause liver damage

May cause kidney damage

May cause blood effects

NFPA ratings (scale 0 - 4)

Health = 2

Fire = 1

Reactivity = 0

HMIS-ratings (scale 0 - 4)

HEALTH	2
FIRE	1
REACTIVITY	0

Health = *2

Flammability = 1

Reactivity = 0

4 First aid measures**General information:** No special measures required.**After inhalation:**

If symptoms develop, supply fresh air. If required, provide artificial respiration and seek immediate medical treatment.

After skin contact:

If skin irritation continues, consult a doctor.

If symptoms persist, consult a physician.

After eye contact: Rinse opened eye for several minutes under running water.**After swallowing:** Do not induce vomiting; immediately call for medical help.**5 Firefighting measures****Suitable extinguishing agents:**CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.**Special hazards arising from the substance or mixture** No further relevant information available.

(Cont. on page 3)

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Material Safety Data Sheet

Printing date 11/09/2011

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Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 2)

Additional information Collect contaminated fire fighting water separately. It must not enter the sewage system.**6 Accidental release measures****Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Methods and material for containment and cleaning up:

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container.

Sweep up spilled product into receptacles.

Dispose contaminated material as waste according to section 13 of the MSDS.

Reference to other sections

See Section 7 for information on safe handling.

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling:****Precautions for safe handling**

Open and handle receptacle with care.

Prevent formation of aerosols.

Information about protection against explosions and fires:

Empty containers may retain hazardous residue, both liquid and vapor.

Storage:**Information about storage in one common storage facility:** No special measures required.**Further information about storage conditions:** Keep receptacle tightly sealed.**Specific end use(s)** No further relevant information available.**8 Exposure controls/personal protection****Additional information about design of technical systems:** No further data; see item 7.**Components with limit values that require monitoring at the workplace:**

102-71-6 Triethanolamine

TLV | 5 mg/m³**Additional information:** The lists that were valid during the creation were used as basis.

(Cont. on page 4)

USA

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 3)

Personal protective equipment:

General protective and hygienic measures: Avoid contact with the eyes and skin.

Breathing equipment:

Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge and a prefilter for dusts/mists is required at or above the applicable exposure limits (consult exposure guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Protection of hands:

Gloves should be worn to prevent skin contact and should be impermeable and resistant to the product.

Material of gloves

Gloves should be impermeable and resistant to the product. Selection of material should be considered before use.

Eye protection:

Safety glasses with side shield protection.



A face shield should also be worn if there is potential exposure to splash or spray.

Body protection: Protective work clothing

9 Physical and chemical properties**General Information****Appearance:**

Form:	Liquid
Color:	According to product specification
Odor:	Characteristic
Odour threshold:	Not determined.

pH-value at 20°C (68 °F): ~9

Change in condition

Melting point/Melting range:	Undetermined.
Flash point:	180 Degrees C

Flammability (solid, gaseous): Not applicable.

Decomposition temperature: Not determined.

Auto igniting: Product is not selfigniting.

Danger of explosion: Product does not present an explosion hazard.

Explosion limits:

Lower: Not determined.

(Cont. on page 5)

USA

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 4)

Upper: VOC Content (max):	Not determined. Not determined.
Vapor pressure:	Not determined.
Density at 20°C (68 °F):	~1.4 g/cm ³ (~11.683 lbs/gal)
Vapour density	Not determined.
Evaporation rate	Not determined.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Other information	No further relevant information available.

10 Stability and reactivity**Thermal decomposition:** No decomposition if used according to specifications.**Incompatible materials:** No further relevant information available.**Hazardous decomposition products:** Carbon monoxide and carbon dioxide**Additional information:** See section 7 for information on handling, storage and conditions to be avoided.**11 Toxicological information****Acute toxicity:****LD/LC50 values relevant for classification:**

10043-52-4 Calcium chloride

Dermal	LD50	1000 mg/kg (rat)
--------	------	------------------

Primary irritant effect:**on the skin:** Irritating to skin.**on the eye:** Irritating to eyes.**inhalation:** Irritating to respiratory system.**Additional toxicological information:**

Amines contained in this product have been associated with the following effects: skin sensitization, lung damage, liver and kidney damage, blood effects, developmental toxicity and teratogenic effects.

12 Ecological information**Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.

(Cont. on page 6)

USA

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 5)

Behavior in environmental systems:

Bioaccumulative potential No further relevant information available.

13 Disposal considerations**Waste treatment methods** Comply with Federal, State and local regulations.**Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:**Recommendation:** Disposal must be made according to official regulations.**14 Transport information****UN-Number**

DOT, ADR, ADN, IMDG, IATA

Not applicable.

UN proper shipping name

DOT, ADR, ADN, IMDG, IATA

Not applicable.

Transport hazard class(es)

DOT, ADR, ADN, IMDG, IATA

Class

Not applicable.

Packing group

DOT, ADR, IMDG, IATA

Not applicable.

Environmental hazards:

Marine pollutant:

No

Special precautions for user

Not applicable.

Transport in bulk according to Annex II of**MARPOL73/78 and the IBC Code**

Not applicable.

Transport/Additional information:

DOT

Remarks:

Not Regulated.

USA

(Cont. on page 7)

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 6)

15 Regulatory information**SARA (Superfund Amendments and Reauthorization Act)****Section 302/304 (extremely hazardous substances):**

None of the ingredients is listed.

Section 313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

None of the ingredients is listed.

SARA Section 312/Tier I & II Hazardard Catagories:

Health Delayed (chronic)	Yes
Health Immediate (acute)	Yes
Flammable	No
Reactive	No
Pressure	No

North America Chemical Inventory Status**TSCA (Toxic Substances Control Act - United States):**

All ingredients are listed or exempt from listing unless otherwise noted below.

CEPA (Canadian DSL):

All ingredients are listed or exempt from listing unless otherwise noted below.

California Proposition 65**Chemicals known to cause cancer:**

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

WHMIS Classification(s):

D2B - Toxic material causing other toxic effects

**Carcinogenicity Categories****EPA (Environmental Protection Agency)**

None of the ingredients is listed.

IARC (International Agency for Research on Cancer) Human Carcinogenicity:

Group 1- Positive, Group 2A- Probable, Group 2B- Possible, Group 3- Not Classifiable

None of the ingredients is listed.

(Cont. on page 8)

USA

Material Safety Data Sheet

Printing date 11/09/2011

Version Number 1.3

Reviewed on 11/09/2011

Trade name: *DARACCEL*

(Cont. from page 7)

NTP (National Toxicology Program)**K**–Known to be carcinogenic, **R**–May reasonably be anticipated to be carcinogenic

None of the ingredients is listed.

TLV-ACGIH (THE American Conference of Governmental Industrial Hygienists)**Human Carcinogen - A1 Confirmed, A2 Suspected, A3 Unknown Relevance, A4 Not Classifiable**

None of the ingredients is listed.

NIOSH-Cancer (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

OSHA-Cancer (Occupational Safety & Health Administration)

None of the ingredients is listed.

Volatile Organic Compounds (VOC) reported per the Emission Standards for Architectural Coatings:

If no g/L value is provided this product is not subject to above standard.

International Chemical Inventory Status**European EINECS**

Inventory listing could not be confirmed for one or more substances.

Philippines Inventory of Chemicals and Chemical Substances PICCS

Inventory listing could not be confirmed for one or more substances.

Inventory of Existing Chemical Substances manufactured or imported in China IECSC

Inventory listing could not be confirmed for one or more substances.

Australian Inventory of Chemical Substances AICS

Inventory listing could not be confirmed for one or more substances.

Japan Existing and New Chemical Substance List ENCS

Inventory listing could not be confirmed for one or more substances.

Korean Existing Chemical Inventory

Inventory listing could not be confirmed for one or more substances.

Non-hazardous Ingredients

7447-40-7	Potassium chloride	2.0-5.0%
7647-14-5	Sodium chloride	1.0-2.0%
7732-18-5	Water	50-100%

16 Other information

"The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection."

USA

W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: WRDA 64 CR-2409
MSDS ID Number: D-06535

MSDS Date: 06/19/2009

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: WRDA 64 CR-2409
MSDS Number: D-06535
Cancelled MSDS Number: New
MSDS Date: 06/19/2009
Chemical Family Name: Aqueous Solution of Lignosulfonate, Amine, and Compound Carbohydrates
Product Use: Concrete Water Reducer/Retarder
Chemical Formula: Mixture-NA
CAS # (Chemical Abstracts Service Number): Mixture-NA

Manufactured by:

W.R.Grace & Co.-Conn. 62 Whittemore Avenue Cambridge, MA 02140	Grace Canada, Inc. 294 Clements Road West Ajax, Ontario L1S 3C6
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In Case of Emergency Call:

In USA: (617) 876-1400 In Canada: (905) 683-8561

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS#	Percent (max)
Triethanolamine	000102-71-6	1-10

SECTION 3 - HAZARDS IDENTIFICATION

Emergency Overview:

Caution!
Causes eye irritation.
Causes respiratory tract irritation.
May be harmful if ingested.
May cause liver and kidney damage.

HMIS Rating:

Health:	2
Flammability:	1
Reactivity:	0
Personal Protective Equipment:	B (See Section 8)

Potential Health Effects:

Inhalation: Causes respiratory tract irritation.
If prolonged exposure to vapor or mist occurs, effects maybe more severe resulting in coughing and breathing difficulties.
Eye Contact: Eye contact causes irritation.
Prolonged eye contact can result in tissue damage.
Skin Contact: Acute skin contact is not expected to result in adverse effects.
Prolonged skin contact can result in irritation causing redness and itching.
May cause sensitization.
Skin Absorption: Not expected to be harmful if absorbed through the skin.
Ingestion: Harmful if ingested.
Effects include: Digestive tract irritation.
The following applies to Triethanolamine and associated materials: Triethanolamine has caused blood effects and liver and kidney damage in laboratory animal studies.

SECTION 4 - FIRST AID MEASURES:

Skin Contact: Wash with soap and water.
If discomfort or irritation persists, consult a physician.
Remove contaminated clothing and wash before reuse.
Eye Contact: Flush eyes with water for at least 15 minutes while holding eyelids open.
If discomfort or irritation persists, consult a physician.

W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: WRDA 64 CR-2409

MSDS ID Number: D-06535

MSDS Date: 06/19/2009

Ingestion: Do not induce vomiting.

Never give anything by mouth to an unconscious person.

If discomfort or irritation persists, consult a physician.

Inhalation: If symptoms develop, get fresh air. If symptoms persist, consult a physician.

If breathing has stopped, give artificial respiration then oxygen if needed.

SECTION 5 - FIRE AND EXPLOSION HAZARD DATA

Flash Point: >93°C/200°F

Flash Point Method: Estimated (Aqueous System)

Lower Explosion Limit: Not Available

Upper Explosion Limit: Not Available

Auto-Ignition Temperature: Not Available

NFPA Rating:

Health: 1

Flammability: 1

Reactivity: 0

Extinguishing Media: In case of fire, use water spray, dry chemical, Carbon dioxide or foam.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and complete personal protective equipment when potential for exposure to vapors or products of combustion exist. Water may be used to cool containers to prevent pressure build-up and possible auto-ignition or explosion. Avoid breathing hazardous vapors or products of combustion, keep upwind. Isolate area and keep unnecessary people away. Prevent run-off from fire control or dilution from entering streams or drinking water supplies. Do not scatter spilled material with high pressure water stream. Fog nozzles are preferred if water is used.

Unusual Fire and Explosion Hazards: During fire, oxides of nitrogen may be evolved.

SECTION 6 - ACCIDENTAL RELEASE MEASURES:

Spills/Leaks: Use proper personal protective equipment. Do not flush to sewer or allow to enter waterways. Keep unnecessary people away.

Contain and/or absorb spill with inert material (i.e. sand, vermiculite) then place in a suitable container. For large spills, dike area and pump waste material into closed containers for disposal or reclamation.

SECTION 7 - HANDLING AND STORAGE

Precautionary Measures: Avoid contact with eyes, skin and clothing.

Do not take internally.

Practice good personal hygiene to avoid ingestion.

Use only with adequate ventilation.

Wash clothing before reuse.

FOR PROFESSIONAL USE ONLY. KEEP OUT OF CHILDREN'S REACH.

SECTION 8 - EXPOSURE CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT

EXPOSURE GUIDELINES (US)

Ingredient	ACGIH TLV			OSHA PEL			
	TWA	STEL	Ceiling	TWA	STEL	Ceiling	Substance Specific and Mineral Dust PELs
Triethanolamine	5 mg/m3 TWA	-	-	-	-	-	-

EXPOSURE GUIDELINES (CANADA)

Employers should consult local Provincial regulatory limits for exposure guidelines which may vary locally.

Engineering Controls: Not generally required.

Personal Protective Equipment:

Respiratory Protection: Respiratory protection is not normally required. However, a chemical cartridge respirator with organic vapor cartridge and a prefilter for dusts/mists is required at or above the applicable exposure limits (Consult above Exposure Guidelines). If no limits exist, use an approved respirator whenever a vapor or mist is generated or if respiratory irritation occurs. Supplied air respirator (SCBA) is required at exposure levels above the capabilities of a chemical cartridge respirator.

Skin Protection: Rubber or other impervious gloves should be worn to prevent skin contact.

W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: WRDA 64 CR-2409

MSDS ID Number: D-06535

MSDS Date: 06/19/2009

Eye Protection: At minimum, safety glasses with side shields should be worn where exposure to excessive dust or spray is likely.

Work/Hygienic Practices: Use good personal hygiene practices.

Do not add nitrites to this product. Cancer-causing nitrosamines may be formed.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Liquid
Appearance/Odor:	Dark Brown Liquid
Odor Threshold: (ppm)	Not Determined
pH:	6-8
Vapor Pressure: (Mm Hg)	Unknown
Vapor Density: (Air = 1)	Unknown
Solubility In Water:	Unknown
Specific Gravity: (Water = 1)	1.18-1.22
Evaporation Rate: (Butyl Acetate = 1)	Unknown
Boiling Point:	>212°F/100°C
Viscosity:	Unknown
Bulk Density: (Pounds/Cubic Foot)(Pcf)	Not Applicable
% Volatiles (gr/L): (70°F)(21°C)	Not Available

SECTION 10 - STABILITY AND REACTIVITY

Chemical Stability:	Stable
Conditions To Avoid:	None known for this product.
Hazardous Polymerization:	Will not polymerize.
Hazardous Decomposition Products:	None known for this product.

SECTION 11 - TOXICOLOGICAL INFORMATION

Ingredient(No data unless listed.) **CAS Number** **LD50 and LC50**

Carcinogenicity:

Ingredient	IARC Group 1	IARC Group 2A	IARC Group 2B	NTP Known	NTP Suspect	OSHA
Triethanolamine	No	No	No	No	No	No

Mutagenicity:	Not applicable.
Teratogenicity:	Not applicable.
Reproductive Toxicity:	Not applicable.

SECTION 12 - ECOLOGICAL INFORMATION

Environmental Fate:	No data available for product.
Ecotoxicity:	No data available for product.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Procedures: Consult all regulations (federal, state, provincial, local) or a qualified waste disposal firm when characterizing waste for disposal. According to EPA (40 CFR § 261), waste of this product is not defined as hazardous. Dispose of waste in accordance with all applicable regulations.

SECTION 14 - TRANSPORTATION INFORMATION

Proper Shipping Name:	Not Applicable
UN/NA Number:	Not Applicable
Domestic Hazard Class:	Nonhazardous
Surface Freight Classification:	Not Applicable
Label/Placard Required:	Not Applicable

SECTION 15 - REGULATORY INFORMATION

REGULATORY CHEMICAL LISTS:

CERCLA (Comprehensive Response Compensation and Liability Act):

(None present unless listed below)

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>	<u>CERCLA RQ</u>
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W. R. GRACE
MATERIAL SAFETY DATA SHEET

Product Name: WRDA 64 CR-2409

MSDS ID Number: D-06535

MSDS Date: 06/19/2009

SARA Title III (Superfund Amendments and Reauthorization Act)

SARA Section 312/Tier I & II Hazard Categories:

Health Immediate (acute)	Yes
Health Delayed (chronic)	No
Flammable	No
Reactive	No
Pressure	No

302 Reportable Ingredients (Identification Threshold 1%):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>	<u>SARA 302 TPQ</u>
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313 Reportable Ingredients (Chemicals present below reporting threshold are exempt):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
Diethanolamine	000111-42-2	.00851
Methyl alcohol	000067-56-1	.0072
Nitrate Compounds	RR-03804-0	.0007
Sodium o-phenylphenol	000132-27-4	.07241
Tetrahydro-3,5-dimethyl-2H-1,3,5-thiadiazine-2-thione	000533-74-4	.0432

National Volatile Organic Compound Emission Standards For Architectural Coatings:

Volatile Organic Content: (gr/L) Not Applicable

WHMIS Classification(s): D2 B

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR). This MSDS contains all the information required by the CPR.

State Regulatory Information:

California Proposition 65: WARNING! This product contains substances known to the state of California to cause cancer, birth defects or other reproductive harm.

Massachusetts Hazardous Substance List(Identification threshold 0.0001%(1ppm)):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
Sodium o-phenylphenol	000132-27-4	.07241

New Jersey Hazardous Substance List(Identification threshold (0.1%)):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
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Pennsylvania Hazardous Substance List(Identification threshold 0.01%):

<u>Chemical Name</u>	<u>CAS #</u>	<u>Wt %</u>
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CHEMICAL INVENTORY STATUS:

All chemicals in this product are listed or exempt from listing in the following countries:

US	CANADA		EUROPE	AUSTRALIA	JAPAN	KOREA	PHILIPPINES
TSCA	DSL	NDSL	EINECS/ELINCS	AICS	ENCS	ECL	PICCS
Yes	Yes	No	Not Determined	Not Determined	Not Determined	Not Determined	Not Determined

SECTION 16 - OTHER INFORMATION

Non-Hazardous Ingredient Disclosure:

<u>Chemical Name</u>	<u>CAS Number</u>
Water	007732-18-5
Calcium Lignosulfonate	008061-52-7
Corn Syrup	008029-43-4

Prepared by: EH&S Department

Approved by: EH&S Department

Approved Date: 06/19/2009

Disclaimer:

"The data included herein are presented in accordance with various environment, health and safety regulations. It is the responsibility of a recipient of the data to remain currently informed on chemical hazard information, to design and update its own program and to comply with all national, federal, state and local laws and regulations applicable to safety, occupational health, right-to-know and environmental protection."