

MATERIAL SAFETY DATA SHEET (MSDS)

DURUS INTERNATIONAL CORPORATION
PRODUCT: **DURUS® Asphalt Cement - Dry Mix Part**
MSDS Date: December 11, 2002

SECTION I. Product and Company Identification

Manufacturer: Durus International Corporation
1217 Palolo Avenue
Honolulu, HI 96816
TEL: (808) 733-8682
FAX: (808) 737-1808

Emergency Response Notification: (888) 387-8708 TOLL FREE

Product Name: DURUS® Asphalt Cement - Dry Mix Part
Generic Name: Cementitious Coating
Formula: Type II Low Alkali Portland Cement and Silica Sand

HMIS Hazard Rating	
Health:	1 Slight
Fire:	0 Negligible
Reactivity:	0 Negligible
PPE:	E

Special Hazards: IRRITANT, POSSIBLE CHRONIC HEALTH HAZARD

SECTION II. Hazardous Ingredients/Identification Information

Material or Component	Chemical Formula	CAS #
CRYSTALLINE SILICA (QUARTZ)	SiO ₂	14808-60-7
ACGIH TLV:	.1 mg./m ³ Respirable crystalline silica (quartz) dust. See Threshold Limit Value and Biological Exposure Indices for American Conference of Governmental Industrial Hygienists (latest edition).	
OSHA PEL:	Exposure to airborne crystalline silica shall not exceed an 8-hour time-weighted average limit as stated in 29 CFR S1910.1000 Table Z-1-A, Air Contaminants, specifically: $\frac{10\text{mg}}{\text{m}^3}$ SiO ₂ +2	
Carcinogenicity:	IARC	

Material or Component	Chemical Family	CAS #
SILICATE, PORTLAND CEMENT	Calcium Salts	65997-15-1

Substances similar to the following are known to be present in Portland Cement:
3CaO.SiO₂ (CAS #12168-85-3) 2CaO.SiO₂ (CAS #10034-77-2)
3CaO.Al₂O₃ (CAS #12042-78-3) 4CaO.Al₂O₃.Fe₂O₃ (CAS #12068-35-8)
CaSO₄.XH₂O (CAS #13397-24-5) Additionally small amounts of CaO, MgO, K₂SO₄, Na₃SO₄ may also be present.

SECTION III. Physical Data

Boiling Point:	N/A	Solubility in Water:	Cement - Very Slight
Melting Point:	N/A		Sand - Insoluble
Vapor Pressure (mm Hg.):	N/A	Packing Density:	N/A
Vapor Density (Air=1):	N/A	Percent Volatiles:	N/A
Specific Gravity (Water=1):	N/A	Evaporation Rate (Butyl Acetate=1):	N/A
Appearance:	Gray powder (Portland cement) with white or tan aggregates (silica sand)		
Odor:	None		

MATERIAL SAFETY DATA SHEET (MSDS)

DURUS INTERNATIONAL CORPORATION
PRODUCT: **DURUS® Asphalt Cement - Dry Mix Part**
MSDS Date: December 11, 2002

SECTION IV. Fire and Explosion Hazard Data

Flammability: Portland cements and Crystalline silica (quartz) are non-flammable and non-explosive.
Flash Point: N/A
Extinguishing Media: Use that which is appropriate for surrounding fire
Special Fire Fighting Procedures: N/A
Unusual Fire and Explosion Hazards: None

SECTION V. Health Hazard Data

Health Effects:

Skin Contact: May cause inflammatory skin or tissue irritation at site of contact.
First Aid: Wash skin thoroughly with soap and water. Remove contaminated clothing. If symptoms persist, consult physician.

Eye Contact: May cause mild burn or irritation.
First Aid: Rinse eyes immediately and thoroughly with water for at least 15 minutes. Consult physician.

Ingestion: May cause discomfort to the GI tract such as irritation, nausea, GI disorders, ulceration, diarrhea or constipation, usually resulting from the ingestion of materials.
First Aid: Drink large amounts of water to dilute. Consult physician.

Inhalation: Potential effects may include any combination of the following:
a. Silicosis-a fibrosis (scarring) of the lungs. Silicosis may be progressive; it may lead to disability or death.
b. Cancer-Crystalline silica (quartz) inhaled from occupational sources is classified as carcinogenic to humans.
c. Scleroderma-There is evidence that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of scleroderma, an autoimmune disorder manifested by a fibrosis (scarring) of the skin and internal organs.
d. Tuberculosis-Silicosis increases the risk of tuberculosis.
e. Nephrotoxicity-There several studies suggesting that exposure to respirable crystalline silica or that the disease silicosis is associated with the increased incidence of kidney disorders.
Inhalation can cause irritation to the respiratory tract, dyspnea, pain in the chest, decreased vital capacity, and coughs.
First Aid: Consult physician if irritation of respiratory passages occurs.

SECTION VI. Stability, Reactivity and Polymerization

Stability: Product is stable. Keep dry until used.
Conditions to avoid (Stability): None known
Incompatible Materials: Hydrochloric and Hydrofluoric Acid
Hazardous Polymerization: Will not occur
Hazardous Decomposition Products: None
Conditions to avoid (Polymerization): None known

MATERIAL SAFETY DATA SHEET (MSDS)

DURUS INTERNATIONAL CORPORATION
PRODUCT: **DURUS® Asphalt Cement - Dry Mix Part**
MSDS Date: December 11, 2002

SECTION VII. Spill Procedures and Disposal Considerations
--

Steps to be taken in the event of Spills, Leaks, or Release:

Wear suitable protective equipment. Contain spill, use dustless methods (vacuum) or wet sweeping and transfer into closable containers. Avoid contact and breathing dust.

Waste Disposal Method:

Dispose of in accordance with Federal, State and Local environmental regulations.

Disposal Considerations:

General: The packaging and material may be landfilled; however, material should be covered to minimize generation of airborne dust.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR S261 et seq. The material may be contaminated during use, and it is the responsibility of the user to assess the appropriate disposal of the used material.

SECTION VIII. Control and Protective Measures
--

Respiratory Protection:

NIOSH/MSHA approved dust respirators - Minimum: 10 x PEL or less

Ventilation:

Use sufficient local exhaust to reduce the level of respirable crystalline silica below the PEL. See ACGIH "Industrial Ventilation, A Manual of Recommended Practice (latest edition).

Eye Protection:

Safety glasses or goggles

Skin Protection:

Avoid skin contact. Wear long sleeve shirt and long pants. Chemical resistant rubber or plastic gloves recommended.

SECTION IX. Storage and Handling

Storage and Handling Conditions:

Store in a cool dry area. Keep container tightly closed.

Transportation Information:

Crystalline silica (quartz) and Portland cement are not hazardous materials for purpose of transportation under the U.S.

Department of Transportation Table of Hazardous

Materials, 49

CFR S172.101.

MATERIAL SAFETY DATA SHEET (MSDS)

DURUS INTERNATIONAL CORPORATION
PRODUCT: **DURUS® Asphalt Cement - Liquid Part**
MSDS Date: December 11, 2002

SECTION I. Product and Company Identification

Manufacturer: Durus International Corporation
1217 Palolo Avenue
Honolulu, HI 96816
TEL: (808) 733-8682
FAX: (808) 737-1808

Emergency Response Notification: (888) 387-8708 TOLL FREE

Product Name: DURUS® Asphalt Cement - Liquid Part

Generic Name: Acrylic Polymer
Chemical Family: Aqueous Acrylic Emulsion
Formula Identification: Proprietary Blend

<u>Hazard Rating</u>		<u>Scale</u>
Toxicity:	1	4=Extreme
Fire:	0	3=High
Reactivity:	0	2=Moderate
PPE:	-	1=Slight 0=Insignificant

Special Hazards: IRRITANT

SECTION II. Hazardous Ingredients/Identification Information

<u>Material or Component</u>	<u>CAS REG. #</u>	<u>%</u>
Aqueous Acrylic Emulsion	Non-hazardous	46-48
Individual residual monomers	Not required	+/- .1
Ammonia	7664-41-7	.2 max
Water	7732-18-5	52-54

SECTION III. Typical Physical/Chemical Data

Appearance: Milky Black
Color: Black Color with a Greenish Hue
State: Liquid
Odor Characteristic: Ammonia Odor
pH: 9.5-10
Viscosity: 50 CPS maximum
Specific Gravity (Water=1): 1-1.2
Vapor Density (Air=1): < 1 Water
Vapor Pressure (mm Hg.): 17 mm Hg @ 20°C/68°F Water
Melting Point: 0°C/32°F Water
Boiling Point: 100°C/212°F Water
Solubility in Water: Dilutable
Percent Volatility: 52-54% Water
Evaporation Rate (BAc=1): < 1 Water

MATERIAL SAFETY DATA SHEET (MSDS)

DURUS INTERNATIONAL CORPORATION
PRODUCT: **DURUS® Asphalt Cement - Liquid Part**
MSDS Date: December 11, 2002

SECTION IV. Fire and Explosion Hazard Data

Flash Point: Material can splatter above 100°C/212°F. Polymer film can burn.
Extinguishing Media: Use extinguishing media appropriate for surrounding fire.
Personal Protective Equipment: Wear self-contained breathing apparatus (pressure-demand MSHA/NIOSH approved or equivalent) and full protective gear.

SECTION V. Health Hazard Data

Health Effects:

Inhalation: Inhalation of vapor or mist can cause the following:
- headache - nausea - irritation of nose, throat, and lungs
First Aid: Move subject to fresh air.

Eye Contact: Direct contact with material can cause the following:
- slight irritation
First Aid: Flush eyes with a large amount of water for at least 15 minutes.
Consult physician if irritation persists.

Skin Contact: Prolonged or repeated skin contact can cause the following:
- slight skin irritation, temporary staining
First Aid: Wash affected skin areas thoroughly with soap and water.
Consult a physician if irritation persists.

Ingestion: May cause gastrointestinal irritation, nausea, vomiting, diarrhea.
First Aid: If swallowed, give 2 glasses of water to drink. Consult a physician. Never give anything by mouth to an unconscious person.

SECTION VI. Stability, Reactivity and Polymerization

Stability: This material is considered stable. However, avoid temperatures above 177°C/350°F, the onset of polymer decomposition. Thermal decomposition is dependent on time and temperature.

Hazardous Decomposition Products: Thermal decomposition may yield acrylic monomers.

Hazardous Polymerization: Product will not undergo polymerization.

Incompatible Materials: There are no known materials which are incompatible with this product.

SECTION VII. Spill Procedures and Disposal Considerations

Personal Protection: Appropriate protective equipment must be worn when handling a spill of this material. See PERSONAL PROTECTION MEASURES Section for recommendations. If exposed to material during clean-up operations, see the FIRST AID PROCEDURES Section for actions to follow.

Procedures: Keep spectators away. Floor may be slippery; use care to avoid falling. Contain spills immediately with inert materials (e.g. sand, earth). Transfer liquids and solid diking material to separate suitable containers for recovery or disposal. CAUTION: Keep spills and cleaning runoff out of municipal sewers and open bodies of water.

MATERIAL SAFETY DATA SHEET (MSDS)

DURUS INTERNATIONAL CORPORATION
PRODUCT: **DURUS® Asphalt Cement - Liquid Part**
MSDS Date: December 11, 2002

SECTION VII. Spill Procedures and Disposal Considerations (Continued)

Waste Disposal Method: Coagulate the emulsion by the stepwise addition of ferric chloride and lime. Remove the clear supernatant and flush to a chemical sewer. Incinerate liquid and contaminated solids in accordance with local, state, and federal regulations.

SECTION VIII. Control and Protective Measures

Respiratory Protection: None required if airborne concentrations are maintained below the TWA/TLV's listed in the COMPONENT EXPOSURE INFORMATION Section. For airborne concentrations up to 10 times the TWA/TLV's listed in the COMPONENT EXPOSURE INFORMATION Section wear a MSHA/NIOSH approved (or equivalent) half-mask, air-purifying respirator. Air-purifying respirators should be equipped with organic vapor cartridges.

Eye Protection: Use chemical splash goggles ([ANSI Z87.1](#) or approved equivalent).

Hand Protection: The glove(s) listed below may provide protection against permeation. Gloves of other chemically resistant materials may not provide adequate protection:
- Neoprene

SECTION IX. Storage and Handling

Ventilation: Use local exhaust ventilation with a minimum capture velocity of 100 ft./min. (30 m/min.) at the point of vapor evolution. Refer to the current edition of Industrial Ventilation: A Manual of Recommended Practice published by the American Conference of Governmental Industrial Hygienists for information on the design, installation, use, and maintenance of exhaust systems.

Other Protective Equipment: Facilities storing or utilizing this material should be equipped with an eyewash facility.

Storage Conditions: Keep from freezing; material may coagulate. The minimum recommended storage temperature for this material is 1°C/34°F. The maximum recommended storage temperature for this material is 49°C/120°F.

Handling Procedures: Monomer vapors can be evolved when material is heated during processing operations. See FACILITY CONTROL MEASURES Section for types of ventilation required.