MCA

Material Safety Data Sheet

Asphalt Cements - Performance Graded (PG)

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Asphalt Cements - Performance Graded (PG)
Product Identifier	PG 46-34, PG 46-40, PB 52-28, PG 52-34, PG 52-40, PG 58-22, PG 58-28, PG 58-34, PG 64-22, PG 64-28, PG 64-34, PG 70-22, PG 70-28, PG 58-28 HRD, PG 64-34 HRD, PG 58-34 HRD, PG 58-31 HRD,PG 64V-22, 64E-22, 64E-28, PG 52-34 R
Other Means of Identification	Suffix (AS) indicates anti-strip agent added
Manufacturer / Supplier	McAsphalt Industries Ltd, 8800 Sheppard Ave East, Toronto, Ontario, M1B 5R4
Emergency Contact Information	CANUTEC, (613) 996 - 6666, 24 hours McAsphalt Industries Ltd., 1 - (800) - 268 - 4238, 8AM-5PM Monday to Friday
Use	These products are primarily used for paving applications. However, there are a number of other industrial applications.

2. HAZARDS IDENTIFICATION

Potential Health Effects

Route of Exposure	See toxicological information (Section 11).
Inhalation	Inhalation of this product may cause respiratory tract irritation and Central Nervous System (CNS) Depression, symptoms of which may include' weakness, dizziness, slurred speech, drowsiness, unconciosness and in cases of severe overexposure; coma and death. At higher concentrations (above 10 ppm), hydrgen sulphide is extremely toxic by inhalation, may cause respiratory-tract irritation and respiratory failure, coma and death. Pulmonary edema can occur up to 24 hours after hydrogen sulphide exposure. While hydrogen sulphide emits a strong odour of rotten eggs, detection by smell is not sufficient as a warning property for exposure to this substance, as it may deaden the sense of smell quickly.
Skin Contact	Slightly irritating to the skin. Contact with hot material can cause thermal burns.
Eye Contact	Slightly irritating to the eyes.
Ingestion	No known significant effects or critical hazards.
Effects of Long-Term (Chronic) Exposure	No known significant effects or critical hazards.
Carcinogenicity	An IARC working group has concluded that occupational exposures to straight-run bitumens and their emissions during road paving are 'possibly carcinogenic to humans' (Group 2B).
Teratogenicity / Embryotoxicity	No known significant effects or critical hazards.
Reproductive Toxicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Medical Conditions Aggravated by Exposure	Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated skin exposure can produce local skin destruction or dermatitis see toxicological information (Section11).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration %	Other Identifiers

Asphalt (Bitumen) fume	8052-42-4	88 - 100	
SULFUR	7704-34-9	2 - 6	

Notes Antistripping additive added in quantities < 1% when indicated. Heated product may evolve vapors irritating to the nose, throat and lungs. See section 8 for further information.
There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section. During storage or transit of hot asphalt, hydrogen sulphide may be generated.

4. FIRST AID MEASURES

First Aid Procedures

Inhalation Move victim to fresh air. If breathing is difficult, trained personnel should administer emergency oxygen. Loosen tigh clothing such as collar, tie, belt or waistband. Get medical attention immediately.

Skin Contact For hot asphalt splash, cool affected body part with water immersion or shower. Do not attempt removal of asphalt but split longitudinally if circumferential to avoid tourniquest effect. No attempt should be made to remove firmly adhering bitumen from the skin. Once the bitumen has cooled, it will do no further harm and in fact provide a sterile covering over a burnt area. As healing takes place, the bitumen plaque, the bitumen plaque will detach itself, usually after a few days. For skin soiling without underlying burn, cleanse with mineral oil followed by soap and water. Use olive oil in vicinity of eyes.

Eye Contact If a contact lens is present, DO NOT delay flushing or attempt to remove the lens. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes, while holding the eyelid(s) open.

Ingestion Have victim rinse mouth with water. NEVER give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. DO NOT INDUCE VOMITING.

First Aid Comments If exposed or concerned, see a doctor for medical advice. Some of the first aid procedures recommended here require advanced first aid training.

Note to Physicians No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. FIRE FIGHTING MEASURES

Flammable Properties Flammability of the product: Will burn on prolonged exposure to flame or high temperature.

Suitable Extinguishing Media Not combustible. Use extinguishing agents compatible with product and suitable for surrounding fire.

Unsuitable Extinguishing Media Do not spray water onto tank, vessel containing liquid asphalt as water reacts violently with product at elevated temperatures; risk of steam explosion!

Specific Hazards Arising from the Chemical Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Low fire hazard. This material must be heated before ignition will occur. Hydrogen sulphide may be released if the product is overheated and may accumulate in the tank headspace or any other confined space.
Carbon oxides (CO, CO2), smoke and irritating vapours as products of incomplete combustion.

Protective Equipment and Precautions for Firefighters Firefighters should enter area wearing specialized protective equipment. (Bunker Gear will not provide adequate protection.) chemical protective clothing (e.g. chemical splash suit) and positive pressure SCBA may be necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions No action shall be taken involving any personal risk or without suitable training. Evacuate the area immediately. Isolate the hazard area. Keep out unnecessary and unprotected personnel. Do not touch or walk through spilt material. Avoid breathing vapour or mist. Provide adequate

ventillation. Wear apporpriate respirator when ventillation is inadequate. Put on apporpriate personal protective equipment (see Section 8).

Environmental Precautions Do not allow into any sewer, on the ground or into any waterway. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods for Containment and Clean-up Small spills or leaks: stop or reduce leak if safe to do so. Ventilate the area to prevent the gas from accumulating, especially in confined spaces. Contain and soak up spill with absorbent that does not react with spilled product. Do not use absorbents. Contain spill using noncombustible material such as vermiculite, earth or sand. Do NOT use combustible materials such as sawdust. Cover the spill surface with the appropriate type of foam to reduce the release of vapour. Large spills or leaks: dike spilled product to prevent runoff. Do not direct water at spill or source. Dike and recover contaminated water for appropriate disposal. Let product solidify. Do not return spilled product to its original container. Review Section 13 (Disposal Considerations) of this MSDS. Contact emergency services and manufacturer/supplier for advice.

7. HANDLING AND STORAGE

Handling During storage, transit and cooling of asphalt, solvent vapour and hydrgen sulphide may accumulate in enclosed spaces such as tank cars. Open tank car hatches with caution. Maintain same precautions when guaging and sampling. Do not cut or weld near full/empty containers. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest. Avoid contact with eyes, skin and clothing. Store and use away from heat, sparks, open flames or any other ignition source. Use explosion-proof electrical (ventilating, lighting, and material handling) equipment. Use non-sparking tools. Avoid breathing vapour or mist. Use only with adequate ventilation. Use non-sparking tools. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire of explosion. Use only indirectly heated oil-jacketed equipment. This product is non-combustible. If heated, irritating vapours may be formed. Do not use in areas without adequate ventilation. Wash hands thoroughly after handling.

Storage Store in an area that is: temperature-controlled, dry, an approved, fire-resistant area, secure and separate from work areas. Engineering controls are usually required in the storage area to protect against the product's hazard(s). Review Section 8 (Exposure Controls/Personal Protection) for information. Avoid bulk storage indoors. Protect product from contact with water, including humidity. Prevent rainwater and ground water from reaching storage area.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	**TWA**	**STEL**	**TWA**	**Ceiling**	**8-hr TWA**	**TWA**
Asphalt (Bitumen) fume	0.5 mg/m3 (I) A4 BEI		Not established			
SULFUR	1 ppm	5 ppm				

Exposure Guideline Comments ACGIH® = American Conference of Governmental Industrial Hygienists. TLV® = Threshold Limit Value. TWA = Time-Weighted Average. STEL = Short-term Exposure Limit.

Engineering Controls General ventilation is usually adequate. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Personal Protective Equipment (PPE)

Eye/Face Protection Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin Protection	Wear chemical protective clothing e.g. gloves, aprons, boots. In case of an emergency (e.g. an uncontrolled release): wear heat resistant, impervious gloves i.e., leather or aluminize. Chemical-resistant, imperious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Respiratory Protection	Use a properly fitted, air-purifying or air-fed respirator complying with an apporved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommened: organic vapour filter cartridge or canister with a dust, fume or mist filter (R, or P series) may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Dark black Semi-solid.
Odour	Characteristic asphaltic odour or "rotten egg" odour if H2S present, but odour is an unreliable warning, since it may deaden the sense of smell.
Odour Threshold	Not available
Boiling Point	Not available
Melting Point	Not available
Freezing Point	Not available
Relative Density (water = 1)	Not available
Bulk Density	Not available
Solubility in Water	Insoluble
Solubility in Other Liquids	Soluble in all proportions in common organic solvents.
pH	Not available
Partition Coefficient, n-Octanol/Water	Not available
Viscosity-Kinematic	Not available
Vapour Pressure	Not available
Vapour Density (air = 1)	Not available
Evaporation Rate	Not available
Flash Point	> 230 °C (446 °F) (open cup)
Lower Flammable/Explosive Limit	Not available
Upper Flammable/Explosive Limit	Not available
Auto-ignition Temperature	> 400 °C (752 °F)

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under normal storage conditions.
Conditions to Avoid	Under normal conditions of storage and use, hazardous polymerisation will not occur.
Incompatible Materials	Reactive with oxidising agents.
Hazardous Decomposition Products	May release COx, NOx, SOx, POx, H2S, hydrocarbons, smoke and irritating vapours when heated to decomposition.
Possibility of Hazardous Reactions	Contact between heated Asphalt and water can cause a violent eruption.

11. TOXICOLOGICAL INFORMATION

LC50/LD50 Values

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Asphalt (Bitumen) fume		> 5000 mg/kg (rat)	> 2000 mg/kg (rabbit)
SULFUR	~ 444 ppm (rat) (4-hour exposure) (gas)		

Skin Irritation/Corrosion

Irritating to skin. Signs/symptoms may include localized redness, swelling, and itching. Hot liquid product may cause serious thermal burns on direct contact. Asphalt fumes can increase susceptibility to sunburn.

Eye Irritation/Corrosion

Irritating to eyes. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.Hot liquid product may cause serious thermal burns on direct contact. Hydrogen sulphide may cause eye irritation at 1 - 20 ppm and acute conjunctivitis at higher concentrations. Above 50 ppm H2S, eye irritation may include symptoms of redness, sever swelling, tearing, sensitivity to light and the appearence of 'Halos' around lights.

Effects of Short-Term (Acute) Exposure

Inhalation

At high concentrations: may cause irritation to the respiratory system. Unconsciousness and or death at low concentrations: nose and throat irritation.

Skin Absorption

May cause thermal burns from heat skin to darken.

Ingestion

May cause severe irritation or burns to the mouth, throat and stomach.

Effects of Long-Term (Chronic) Exposure

Effects similar to effects of short-term exposure, as described above.

Respiratory and/or Skin Sensitization

Skin irritation, the symptoms may include redness and itching and swelling it may irritate the respiratory system.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Asphalt (Bitumen) fume	Group 2B	A4		

IARC: 8052-42-4 Group 2B - Possibly carcinogenic to humans. Occupational exposure to hard bitumens and their emissions during mastic asphalt work 8052-42-4 Group 2B - Possibly carcinogenic to humans. Occupational exposure to straight-run bitumens and their fume condensate during road paving.

Teratogenicity / Embryotoxicity

Not available.

Reproductive Toxicity

Not available.

Mutagenicity

Not available.

No information was located for: Effects of Short-Term (Acute) Exposure, Toxicologically Synergistic Materials

12. ECOLOGICAL INFORMATION

General Comments Environmental affects: No known significant effects or critical hazards. Keep out of sewers, drainage areas and waterways. Report spills and releases, as applicable under Federal and Provincial regulations. The information given is based on data available for the material, the components of the material, and similar materials.

Ecotoxicity Studies were not located.

Persistence and Degradability	Not available.
Bioaccumulation / Accumulation	No information was located.
Mobility	Studies are not available.
Other Adverse Effects	There is no information available.

13. DISPOSAL CONSIDERATIONS

Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction. Recycle and reuse product, if possible. The required hazard evaluation of the waste and compliance with the applicable hazardous waste laws are the responsibility of the user. Treat waste in an approved waste disposal facility. Do not reuse empty containers. Dispose of or recycle empty containers through an approved waste management facility.

14. TRANSPORT INFORMATION

Shipping Information

Not regulated under Canadian TDG Regulations.

Regulation	UN No.	Shipping Name	Class	Packing Group
US DOT	3257	Performance Graded Liquid Asphalt (Elevated Temperature Liquid, n.o.s., at or above 100 c and below its flash point)	9	III

Other Transport Information

Special Shipping Information	Please note: For US Shipments Only: ELEVATED TEMPERATURE LIQUID, N.O.S., at or above 100 c and below its flash point, 9, UN3257, PGIII

15. REGULATORY INFORMATION

Canada

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL or are not required to be listed.

USA

US OSHA Regulatory Status

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200 (1994)), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.

Additional USA Regulatory Lists

HCS Classification : Not regulated.

Europe inventory

Not determined

16. OTHER INFORMATION

NFPA Rating	**Health - 1 Flammability - 1 Instability - 0**
MSDS Prepared By	EPC & Risk Management Department
Phone No.	1 (416) 281 - 8181
Date of Preparation	November 10, 2014
Revision Indicators	The following MSDS content was changed on May 07, 2015:

Disclaimer.

Key to Abbreviations

ACGIH® = American Conference of Governmental Industrial Hygienists
AIHA = American Industrial Hygiene Association
HSDB® = Hazardous Substances Data Bank
IARC = International Agency for Research on Cancer
NFPA = National Fire Prevention Association
NIOSH = National Institute for Occupational Safety and Health
OSHA = US Occupational Safety and Health Administration
RTECS® = Registry of Toxic Effects of Chemical Substances

References

CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS). HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS). NIOSH Pocket Guide database. National Institute for Occupational Safety and Health. Available from Canadian Centre for Occupational Health and Safety (CCOHS). Registry of Toxic Effects of Chemical Substances (RTECS®) database. Accelrys, Inc. Available from Canadian Centre for Occupational Health and Safety (CCOHS).

Disclaimer

To the best of our knowledge, the information herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.

Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

HOT MIX ASPHALT

MATERIAL SAFETY DATA SHEET

D. Crupi & Sons Limited

PHONE: 416-291-1986 85 Passmore Avenue P.O. Box 272, Agincourt, Ontario, M1S 3B6 FAX: 416-291-3252

(THIS PRODUCT NOT SUBJECT TO THE CONTROLLED PRODUCTS REGULATIONS)

SECTION I MATERIAL IDENTIFICATION

PRODUCT NAME:	Hot Laid Asphaltic Concrete
SYNONYM:	Driveway, HL 2, HL 3, HL 3A, HL 3 Fine, HL 4, HL 6, HL 8, HDBC, DFC, OFC, RHM
PRODUCT USE:	Paving of roads, parking lots, driveways, etc.
T.D.G. CLASSIFICATION:	NON REGULATED
WHIMIS CLASSIFICATION:	NON REGULATED
EMERGENCY TELEPHONE #:	CANUTEC (613) 996-6666

SECTION II HAZARDOUS INGREDIENTS

COMPONENT	CAS#	%	(BY MASS)	LC_{50} ppm (rat Inhal)	LD_{50} mg/kg (rat oral).

SECTION III PHYSCIAL DATA

Physical State: Semi-Solid
Odour and appearance: Black, viscous semi-solid with characteristic asphaltic odour.
Odour threshold: n/a
Specific gravity: n/a
Coefficient of water/oil distribution: n/a
Vapour pressure (mm Hg): Negligible
Boiling point: n/a
Freezing point: n/a
pH: n/a
Vapour density (air = 1): n/a
Evaporation rate (nBuAcetate = 1): n/a
Volatiles % : 0
Solubility in water: Insoluble

SECTION IV FIRE & EXPLOSION DATA

Flammability: Yes, when heated excessively (to flash point)
Means of extinction: Preferred -Dry Chemical, Other- CO2, Chemical Foam
Sensitivity to mechanical impact/static discharge: n/a
Flash point (method): Open Cup:>175 ° C (350F), ASTM D92, Cleveland
Upper flammable limits % : n/a
Lower flammable limits % : n/a
Auto-ignition temperature: Carbon monoxide, carbon dioxide, oxides of sulphur.
Fire Hazards in Presence of Various Substances: Flash point is dependent on grade of asphalt. Keep asphalt from ignition sources and oxidizing materials such as fluorine.

Special fire fighting instructions: Use dry chemicals, CO2 or chemical foam on small fires. Large fires require the use of water spray, fog or foam. Self-contained breathing apparatus is required to avoid prolonged inhalation of fumes emanating from fire.
Unusual fire and explosion hazards: n/a

SECTION V STABILITY & REACTIVITY DATA

Chemical stability: Stable under normal handling and storage conditions.
Conditions to avoid: Avoid excessive heat approaching flash point.
Incompatible materials: Water (when hot), Strong Acids, Alkalis and Oxidizers.
Corrosive: Non-corrosive to metals.
Hazardous decomposition products: n/a
Hazardous polymerization: n/a

SECTION VI TOXICOLOGICAL PROPERTIES

Route of entry: skin contact, eye contact, and inhalation
Effects of acute exposure to product: Hot material can severely burn skin and eyes on contact. Acute exposure to cool material not expected to produce adverse effects.

Effects of chronic exposure to product: Fumes from hot material may cause nausea, headache, dizziness and irritation to eyes and upper respiratory tract.

Exposure limits: TLV's, asphalt fumes<5mg/m^3, hydrogen sulfide<14mg/m^3.
Irritancy of product: Skin, prolonged exposure to cool material may cause dermatitis.
Carcinogenicity: Not listed by IRAC orACGIH as carcinogen.
Sensitization to Product: n/a
Teratogenicity: n/a
Reproductive Toxicity: n/a
Mutagenicity: n/a
Synergistic Products: n/a

SECTION VII EMERGENCY AND FIRST AID PROCEDURES

Inhalation: Evacuate to fresh air. Apply cardio-pulmonary resuscitation if required. Seek immediate medical attention.

Skin: For hot asphalt splash, cool part by ice-water immersion or cold shower. Do not attempt removal of asphalt. For serious burns, treat for shock by laying victim down, preferably with feet elevated, and keeping him or her warm. IMMEDIATE MEDICAL ATTENTION IS ESSENTIAL. For skin soiling without underlying burn, clean with medical grade mineral oil, baby oil, or edible oil.

Notes to Physician: No attempt should be made to remove firmly adhering bitumen from the skin. Once the bitumen has cooled, it will do no further harm and in *fad* provides a sterile covering over a burnt area. As healing takes place, the bitumen plaque will detach itself, usually after a few days. If solvent treatment is used, follow by washing with soap and water, then apply a proprietary re-fatting agent or skin cleansing cream. Only medically approved solvents may be used to remove bitumen from burns, as other solvents could cause further skin damage.

Eyes: Flush with water for at least 15 minutes, keeping eyelids open. Seek medical aid. Rub gently with medical grade mineral oil.

Ingestion: DO NOT INDUCE VOMITING. Seek medical attention.

SECTION VIII SPILL PROCEDURES

In the event of a spill: Dike and contain, transfer to containers for recovery or disposal. Keep out of sewers.

Waste disposal method: Follow federal, provincial and local regulations regarding disposal.

SECTION IX SPECIAL PROTECTION

Respiratory protection: In emergency situations, use air-supplied respirator
Ventilation: Sufficient ventilation to maintain airborne concentrations of asphalt and sulphide fumes below 5mg/m^3 and 14mg/m^3, respectively.

Protective gloves: Insulated oil-impervious type recommended. Eye protection: safety glasses/splash goggles recommended

Other protective equipment: Long sleeves, loose clothing recommended. Clothing: Long-sleeved shirt, cuff-less pants or overalls

SECTION X SPECIAL PRECAUTIONS

Handling Procedures and Equipment: Emergency shower and eyewash fountains should be available within vicinity of any potential exposure to hot material.

Storage Requirements: Do not store with strong oxidizers or light hydrocarbons in immediate vicinity. Special shipping information: Not regulated by the Transportation of Dangerous Goods Regulations.

Prepared by: Ashwarren Engineering Services Preparation date: 1-Jan-94
Revised Date: 01 - January - 2014

The information contained herein is based on available data and is provided for information only. Ashwarren Engineering Services makes no warranties, guarantees or conditions, expressed or implied, regarding the accuracy of the data or it's use therein.

Ashwarren Engineering Services will not be liable for any damages arising from the use of the information or product described on this data sheet.

ATTACHMENT TO THE MATERIAL SAFETY DATA SHEET FOR HOT LAID ASPHALTIC CONCRETE

NOTE TO PHYSICIAN:

No attempt should be made to remove firmly adhering asphaltic material from the skin. Once the asphaltic material has cooled, it will do no further harm and in fact provides a sterile covering over a burnt area. As healing takes place, the asphalt will detach itself, usually after a few days. If solvent treatment is used, washing with soap and water, then the application of a proprietary refatting agent or skin cleansing cream should follow it. Only medically approved solvents may be used to remove asphaltic material form burns, as other solvents cause further skin damage.

MATERIAL SAFETY DATA SHEET

RECYCLED ASPHALT

D.Crupi & Sons Ltd.

2777- 14th Ave. W. Markham — 477 Brimelv Road. Scarborough

SECTION I: MATERIAL IDENTIFICATION AND USE

Material Name/Identifier: Crushed Concrete
Chemical Name: Not Available
Chemical Family: Carbonate Rock with Hydrocarbons
Chemical Formula: Complex mixture (variable)
Trade Name and synonyms: Crushed Concrete
Molecular Weight: Not available
Material Use: Construction, road base, backfill

SECTION II: HAZARDOUS INGREDIETNS OF MATERIAL

Crushed Concrete & Asphalt: A complex mixture (variable)
C.A.S., N.A. or U.N. Number: Not Available
LD50: Not Available
LC50: Not Available
Crushed Concrete may contain varying concentrations of Quartz (Crystalline Silica).
C.A.S 14808-60-7., **N.A. or U.N. Number:** Not Available
Note: This MSDS is applicable to crushed concrete & Asphalt only when the Quartz concentration is greater than 0.1(%) percent.

SECTION III: PHYSICAL DATA FOR MATERIAL

Physical State: Solid
Odour and Appearance: No odour, angular grey / brown / white particles of varying sizes
Odour Threshold (P .P .M,): Not Applicable
Specific Gravity: 26-28
Vapour Pressure (MM): Not Applicable
Vapour Density (Air 1): Not Applicable
Evaporation Rate: 0
Solubility in Water (20°C): Negligible
Boiling Point (°C): Not Applicable
Freezing Point (°C): Not Applicable
pH: Not Applicable
Percentage Volatile (By Volume): O
Coefficient of Water/Oil Distribution: Not Applicable

SECTION IV: FIRE AND EXPLOSION HAZARD OF MATERIAL

Section Not Applicable

SECTION V: REACTIVITY DATA

Chemical Stability: Yes
Incompatibility to other Substances: No
Reactivity and Under What Conditions: Neutralizing agent for strong acids.
Hazardous Decomposition Products: CO2 may be released on contact with strong acids.

SECTION VI: TOXICOLOGICAL PROPERTIES OF MATERIAL

Route of Entry: Inhalation
Effect of Acute Exposure to Material: Exposure to dust may irritate respiratory system.
Effects of Chronic Exposure to Material:
1. Chronic exposure to respirable crushed concrete dust at levels exceeding exposure limits has caused pneumoconiosis.
2. Chronic exposure to respirable crushed concrete dust contain quartz at levels exceeding exposure limits has caused silicosis a serious and progressive pneumoconiosis which can be disabling and lead to death. Symptoms may appear at anytime; even years after the exposure has ceased. Symptoms of silicosis may include shortness of breath, difficulty in breathing, coughing diminished work capacity, diminished chest expansion, reduction of lung volume and right heart enlargement and/or failure. the only reliable method of detecting silicosis is through a chest X-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

LD^{50} of Material (Specify Species and Route): Not Available
LC^{50} of Material (Specify Species and Route): Not Available
Exposure Limits(Ontario):
1. Crushed Concrete (Total Dust) 10 mg/m^3 (TWAEV)
2. Respirable Silica Dust 0.2 mg/m^3 (TWAEV)

TWAEV -Time Weighted Average Exposure Values
For additional information on the above exposure limits, consult Ontario Regulations 654/86 and 769/83, amended 23/87.
Irritancy of Material: Respiratory System, eyes, skin.
Sensitization of Material: Not available
Synergistic Material: None Known
Carcinogenicity, Reproductive Effects, Teratogenicity, Mutagenicity:
As of date of preparation of this MSDS:
1. Crushed Concrete is not included in the ACGIH, NTP or OSHA lists of potential carcinogens.
2. Silica, in the form of crystalline Quartz and as a component of this material, is listed as a potential carcinogen by IARC. IARC (International Agency for Research on Cancer) has determined that there is limit evidence of the carcinogencity to humans. Limited evidence of Carcinogenicity indicates that casual interpretation is credible, but alternate explanations such as chance, bias or confounding factors could not adequately be excluded. there is no evidence that crushed concrete is a teratogen, amutagen or has a reproductive effect.

SECTION VII: PREVENATIVE MEASURES

Personal Protective equipment: Respiratory protection should be used whenever dust is generated. Refer to the Ontario Regulation 769/83 as amended for respiratory equipment specified for various respirable silica dust levels.
Engineering Controls (Ventilation, Enclosed Process): Where feasible, dust levels should be reduced through wet suppression, dust collection, ventilation, process enclosure and enclosed pressurized employee workstation.
Leak and Spill Procedure: Spilled materials, where dust can be generated, may expose clean up personnel to respirable dust. Wetting of spilled materials and/or used of protective respiratory equipment may be necessary.
Waste Disposal: Re-use clean materials, dispose of waste materials only in accordance with applicable federal, provincial and local laws and regulations.
Handling Procedures and Equipments: Respirable dust may be generated during processing, handling and storage-avoid inhalation. Refer to "Person Protective Equipment Respiratory"
Storage Requirements: Not applicable
Special Shipping Information: Not Applicable

SECTION VII: FIRST AID MEASURES

Dust in Eyes: Flush out eyes with running water for 15 minutes. Contact a physician if irritation persists.
Dust on Skin: Wash with soap and water. Contact a physician if irritation is aggravated.
Dust inhalation: Remove to fresh air. Dust in throat and nasal passage should be cleared spontaneously. Contact physician if irritation persists.

SECTION IX: PREPARATION DATE OF MSDS

Prepared By: DBA Engineering Ltd.
Manufacturer's Name: D.Crupi & Sons Ltd.
Address: 85 Passmore Ave.
Telephone: 291-1986 Fax: 291-3252
Date: February 1, 2014

SECTION X: LABEL INFORMATION

Labelling of bulk products is not required, however label information is as follows.

RECYCLED ASPHALT
CAUTION DUST INHALATION HAZARD
AVOID INHALATION OF DUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT

Additional Notes or References: Physical irritation may result from handling crushed concrete. Work gloves and work clothing are recommended The Company believes that the information contained herein is factual. the data and information presented are without warranty, guarantee or liability on our part, and are presented to the customer for his own consideration, investigation and verification.

MATERIAL SAFETY DATA SHEET

CRUSHED CONCRETE

D. Crupi & Sons Ltd.

2777- 14th Ave. W. Markham — 477 Brimley Road. Scarborough

SECTION I: MATERIAL IDENTIFICATION AND USE

Material Name/Identifier: Crushed Concrete
Chemical Name: Not Available
Chemical Family: Carbonate Rock with Hydrocarbons
Chemical Formula: Complex mixture (variable)
Trade Name and synonyms: Crushed Concrete
Molecular Weight: Not available
Material Use: Construction, road base, backfill

SECTION II: HAZARDOUS INGREDIETNS OF MATERIAL

Crushed Concrete: A complex mixture (variable)
C.A.S., N.A. or U.N. Number: Not Available
LD50: Not Available
LC50: Not Available
Crushed Concrete may contain varying concentrations of Quartz (Crystalline Silica).
C.A.S 14808-60-7., **N.A. or U.N. Number:** Not Available
Note: This MSDS is applicable to crushed concrete & Asphalt only when the Quartz concentration is greater than 0.1(%) percent.

SECTION III: PHYSICAL DATA FOR MATERIAL

Physical State: Solid
Odour and Appearance: No odour, angular grey / brown / white particles of varying sizes
Odour Threshold (P .P .M,): Not Applicable
Specific Gravity: 26-28
Vapour Pressure (MM): Not Applicable
Vapour Density (Air 1): Not Applicable
Evaporation Rate: 0
Solubility in Water (20°C): Negligible
Boiling Point (°C): Not Applicable
Freezing Point (°C): Not Applicable
pH: Not Applicable
Percentage Volatile (By Volume): O
Coefficient of Water/Oil Distribution: Not Applicable

SECTION IV: FIRE AND EXPLOSION HAZARD OF MATERIAL

Section Not Applicable

SECTION V: REACTIVITY DATA

Chemical Stability: Yes
Incompatibility to other Substances: No
Reactivity and Under What Conditions: Neutralizing agent for strong acids.
Hazardous Decomposition Products: CO2 may be released on contact with strong acids.

SECTION VI: TOXICOLOGICAL PROPERTIES OF MATERIAL

Route of Entry: Inhalation
Effect of Acute Exposure to Material: Exposure to dust may irritate respiratory system.
Effects of Chronic Exposure to Material:
1. Chronic exposure to respirable crushed concrete dust at levels exceeding exposure limits has caused pneumoconiosis.
2. Chronic exposure to respirable crushed concrete dust contain quartz at levels exceeding exposure limits has caused silicosis a serious and progressive pneumoconiosis which can be disabling and lead to death. Symptoms may appear at any time; even years after the exposure has ceased. Symptoms of silicosis may include shortness of breath, difficulty in breathing, coughing diminished work capacity, diminished chest expansion, reduction of lung volume and right heart enlargement and/or failure. the only reliable method of detecting silicosis is through a chest X-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

LD^{50} of Material (Specify Species and Route): Not Available
LC^{50} of Material (Specify Species and Route): Not Available
Exposure Limits (Ontario):
1. Crushed Concrete (Total Dust) 10 mg/m^3 (TWAEV)
2. Respirable Silica Dust 0.2 mg/m^3 (TWAEV)

TWAEV -Time Weighted Average Exposure Values
For additional information on the above exposure limits, consult Ontario Regulations 654/86 and 769/83, amended 23/87.
Irritancy of Material: Respiratory System, eyes, skin.
Sensitization of Material: Not available
Synergistic Material: None Known
Carcinogenicity, Reproductive Effects, Teratogenicity, Mutagenicity:
As of date of preparation of this MSDS:
1. Crushed Concrete is not included in the ACGIH, NTP or OSHA lists of potential carcinogens.
2. Silica, in the form of crystalline Quartz and as a component of this material, is listed as a potential carcinogen by IARC. IARC (International Agency for Research on Cancer) has determined that there is limit evidence of the carcinogencity to humans. Limited evidence of Carcinogenicity indicates that casual interpretation is credible, but alternate explanations such as chance, bias or confounding factors could not adequately be excluded. There is no evidence that crushed concrete is a teratogen, amutagen or has a reproductive effect.

SECTION VII: PREVENATIVE MEASURES

Personal Protective equipment: Respiratory protection should be used whenever dust is generated. Refer to the Ontario Regulation 769/83 as amended for respiratory equipment specified for various respirable silica dust levels.
Engineering Controls (Ventilation, Enclosed Process): Where feasible, dust levels should be reduced through wet suppression, dust collection, ventilation, process enclosure and enclosed pressurized employee workstation.
Leak and Spill Procedure: Spilled materials, where dust can be generated, may expose clean up personnel to respirable dust. Wetting of spilled materials and/or used of protective respiratory equipment may be necessary.
Waste Disposal: Re-use clean materials, dispose of waste materials only in accordance with applicable federal, provincial and local laws and regulations.
Handling Procedures and Equipment: Respirable dust may be generated during processing, handling and storage- avoid inhalation. Refer to "Person Protective Equipment Respiratory"
Storage Requirements: Not applicable
Special Shipping Information: Not Applicable

SECTION VII: FIRST AID MEASURES

Dust in Eyes: Flush out eyes with running water for 15 minutes. Contact a physician if irritation persists.
Dust on Skin: Wash with soap and water. Contact a physician if irritation is aggravated.
Dust inhalation: Remove to fresh air. Dust in throat and nasal passage should be cleared spontaneously. Contact physician if irritation persists.

SECTION IX: PREPARATION DATE OF MSDS

Prepared By: DBA Engineering Ltd.
Manufacturer's Name: D. Crupi & Sons Ltd.
Address: 85 Passmore Ave.
Telephone: 291-1986 Fax: 291-3252
Date: February 1, 2014

SECTION X: LABEL INFORMATION

Labelling of bulk products is not required, however label information is as follows.

CRUSHED CONCRETE
CAUTION DUST INHALATION HAZARD
AVOID INHALATION OF DUST WEAR APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT

Additional Notes or References: Physical irritation may result from handling crushed concrete. Work gloves and work clothing are recommended The Company believes that the information contained herein is factual. The data and information presented are without warranty, guarantee or liability on our part, and are presented to the customer for his own consideration, investigation and verification.

Material Safety Data Sheet

Anionic Slow Setting Emulsion

1. PRODUCT / MSDS PREPARATION INFORMATION

Product Manufacturer/Supplier:	McAsphalt Industries Ltd. 8800 Sheppard Ave. East Scarborough, Ontario M1B 5R4 (416) 281-8181
MSDS Prepared By:	Operations Dept.
Product:	SS-1 (C) (H) (P);
Product Use:	Tack Coating
Revision Date:	October 19, 2011
Supercedes:	February 8, 2010
EMERGENCY NUMBER:	CANUTEC – (613) 996-6666
WHMIS:	Not Controlled
TDG:	Not Regulated
Workplace Label:	Health-1 Fire-0 Reactivity – 0 Compliance Center

2. INGREDIENTS / COMPOSITION

COMPONENT(S)	CAS #	% (w/w)	LD_{50}	LC_{50}	PIN
Asphalt	8052-42-4	55-75	N/A	N/A	N/A
Emulsifier	Proprietary	0.8-4	N/A	N/A	N/A
Water	7731-18-5	25-45	N/A	N/A	N/A
Solvent	Proprietary	0-3	N/A	N/A	N/A
Polymer	9003-55-8	0-3	N/A	N/A	N/A
Fuel Oil	68476-30-2	0-1	N/A	N/A	UN1202

3. PHYSICAL DATA

Physical State:	Liquid	**Appearance:**	Black-Brown
Specific Gravity:	1.01	**Odour:**	Asphaltic
Freezing Point:	0°C	**Odour Threshold:**	N/A
Boiling Point:	Approx. 100°C	**Solubility:**	Not water soluble
Vapour Pressure:	N/A	**Evaporation Rate:**	N/A
Vapour Density:	N/A	**pH:**	N/A

4. FIRE & EXPLOSION HAZARD

Flash Point & Method:	>100°C
Lower Flammability Limit:	N/A
Upper Flammability Limit:	N/A
Auto-Ignition Temperature:	N/A
Fire Fighting Media:	Foam, Dry Chemical, Water spray with caution
Explosion/Flammability:	N/A
Hazardous Combustion Products:	CO, NO_x, SO_x, sulfur products

5. REACTIVITY DATA

Stability:	Stable
Incompatible Materials:	Strong acids, alkalis, oxidizing agents
Conditions of Reactivity:	N/A
Hazardous Decomposition Products:	CO, SO_x, NO_x, Sulfur compounds (H_2S)
Synergistic Products:	None

6. HEALTH HAZARD INFORMATION

Skin:	Can cause skin irritation, dermatites. Skin defatting with chronic exposure
Eyes:	Irritant
Inhalation:	Yes, caution in confined spaces
Exposure Limit:	$5mg/M^3$ Asphalt fumes
Ingestion:	Unlikely, should be avoided

No known carcinogenic, teratogenic or reproductive effects.

7. PREVENTATIVE MEASURES

Personal Protective Equipment:	Gloves, goggles, face shield
Handling/Shipping/Storage:	Ensure containers are clean and dry. Do not allow to freeze or heat above 100°C
Ventilation:	Ensure adequate ventilation
Disposal:	See appropriate federal, provincial, municipal regulations
LEAKS AND SPILLS:	Contain with earth or sand, allow cooling and hardening. Eliminate sources of ignition. Notify authorities when in water, or large spills.

8. FIRST AID

SKIN:	**DO NOT REMOVE HOT ASPHALT FROM BURN!** Cool in water and if irritation persists seek medical aid
EYES:	Gently flush with lots of water. Seek Medical Help.
INHALATION:	Remove victim to fresh air. Seek Medical Help.
INGESTION:	Give lots of water to drink. Seek Medical Help.

9. NOTE

The information contained herein relates only to this product or material and may not be valid when used in combination with any other product or material or in any process. If the process is not to be used under conditions, which are normal or reasonably foreseeable, this information cannot be relied upon as complete or applicable. The information contained herein is based upon the information available at the indicated date of preparation, the above supplier assumes no liability whatsoever for the accuracy or completeness of the information.

MCA

Material Safety Data Sheet

Anionic Slow Setting Emulsion

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	Anionic Slow Setting Emulsion
Product Identifier	SS-1 (H) (P)
MSDS No.	0029
Other Means of Identification	Clean Bond Coat
Product Family	Anionic Emulsion
Manufacturer / Supplier	McAsphalt Industries Ltd, 8800 Sheppard Ave East, Toronto, Ontario, M1B 5R4
Supplier	McAsphalt Industries Ltd, 8800 Sheppard Ave East, Toronto, Ontario, M1B 5R4
Other Contact Information	McAsphalt Industries Ltd, 8800 Sheppard Ave East, Toronto, Ontario, M1B 5R4
Emergency Contact Information	CANUTEC, (613) 996 - 6666, 24 hours McAsphalt Industries Ltd., 1 - (800) - 268 - 4238, (8AM-5PM Mon thru Fri)
Use	Tack Coating, Surface Treatment

2. HAZARDS IDENTIFICATION

Potential Health Effects

Route of Exposure	Skin contact; eye contact; inhalation.
Inhalation	Vapors and gases from heated asphalt are obnoxious and toxic containing some hydrogen sulfide. Inhalation of hot asphalt fumes can produce eye and respiratory tract irritation, headache, nausea and nervousness due to the formation of hydrogen sulfide gas.
Skin Contact	SKIN IRRITANT. Symptoms include pain, redness, and swelling. The vapour also irritates the skin. Repeated or prolonged exposure can irritate the skin. Repeated or prolonged exposure can irritate or burn the skin.
Eye Contact	EYE IRRITANT. Hot liquid product may cause thermal burns. The gas irritates or burns the eyes. Permanent damage including blindness can result. Exposure to product vapours or liquid may cause irritation. Symptoms may include intolerance to light, redness, swelling, and tearing. Direct contact with hot material will cause burns.
Ingestion	Not a relevant route of exposure (gas). Can burn the lips, tongue, throat and stomach. In severe cases, symptoms may include fatigue, shortness of breath, bluish lips and skin, headache, nausea, vomiting, irregular heartbeat, dizziness and confusion.
Carcinogenicity	An IARC working group has concluded that occupational exposures to straight-run bitumens and their emissions during road paving are 'possibly carcinogenic to humans' (Group 2B).
Reproductive Toxicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Medical Conditions Aggravated by Exposure	Repeated or prolonged contact with spray or mist may produce chronic eye irritation and severe skin irritation. Repeated skin exposure can produce local skin destruction or dermatitis.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration %	Other Identifiers
Asphalt (Bitumen) fume	8052-42-4	55-75	
Water	7732-18-5	25-45	
Naphtha (petroleum), hydrotreated heavy	64742-48-9	0-3	
Styrene-butadiene copolymers	9003-55-8	0-3	
Emulsifier	Proprietary	0.8-4	

4. FIRST AID MEASURES

First Aid Procedures

Inhalation Move victim to fresh air. Seek Medical Help if not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnnel. Loosen tigh clothing such as collar, tie, belt or waistband. Get medical attention immediately.

Skin Contact Avoid direct contact. Wear chemical protective clothing if necessary. For hot asphalt splash, cool affected body part with water immersion or shower. Do not attempt removal of asphalt but split longitudinally if circumferential to avoid tourniquest effect. No attempt should be made to remove firmly adhering bitumen from the skin. Once the bitumen has cooled, it will do no further harm and in fact provide a sterile covering over a burnt area. As healing takes place, the bitumen plaque, the bitumen plaque will detach itself, usually after a few days. For skin soiling without underlying burn, cleanse with mineral oil followed by soap and water. Use olive oil in vicinity of eyes.

Eye Contact Get medical attention immediately. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes, while holding the eyelid(s) open.

Ingestion Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconcious person. Get medical attention immediately.

Note to Physicians No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. FIRE FIGHTING MEASURES

Flammable Properties Not flammable.

Suitable Extinguishing Media Not combustible. Use extinguishing agent suitable for surrounding fire.

Specific Hazards Arising from the Chemical Heating increases the release of toxic vapour. non combustible materials but under fire conditions this product may emit toxic and/or irritating fumes and gases including carbon monoxide and carbon dioxide.

Protective Equipment and Precautions for Firefighters Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions Keep out unnecessary and unprotected personnel. Wear rubber boots in addition to the recommended protective clothing do not touch or walk through spilt material. No action shall be taken involving any personal risk or without suitable training. Use the Personal Protective Equipment recommended in Section 8 of this MSDS.

Environmental Precautions Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Protect bodies of water by diking, absorbents or absorbent boom, if possible.

Methods for Containment and Clean-up Stop or reduce leak if safe to do so. Ventilate the area to prevent the gas from accumulating, especially in confined spaces. Contain and soak up spill with absorbent that does not react with spilled product. Place used absorbent into suitable, covered, labelled containers for disposal.

Dike spilled product to prevent runoff. Remove or recover liquid using pumps or vacuum equipment. Contact emergency services and manufacturer/supplier for advice.

7. HANDLING AND STORAGE

Handling Avoid generating vapours or mists. Immediately report leaks, spills or failures of the safety equipment (e.g. ventilation system). Wear personal protective equipment to avoid direct contact with this chemical. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Do not ingest.

Storage Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials(see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabled containers. Use appropriate containment to avoid environmental contamination.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	**TWA**	**STEL**	**TWA**	**Ceiling**	**8-hr TWA**	**TWA**
Asphalt (Bitumen) fume	0.5 mg/m3 (I) A4 BEI		Not established			
Styrene-butadiene copolymers	3 mg/m3 (R)					

Engineering Controls If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits. Use only with adequate ventilation. Exhaust ventilation/engineering controls need to keep vapor and gas concentrations below recommended limits and below any lower explosive limits.

Personal Protective Equipment (PPE)

Eye/Face Protection Wear chemical safety goggles. Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts.

Skin Protection Prevent skin contact. Wear chemical protective clothing e.g. gloves, aprons, boots. Wear a chemical splash suit and respiratory protection.

Respiratory Protection Do not breathe in this product. Use a properly fitted, air-purifying or air-fed respirator complying with an apporved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommened: organic vapour filter cartridge or canister with a dust, fume or mist filter (R, or P series) may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air-purifying respirators is limited.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Dark black - brown.
Odour	Characteristic asphaltic odour or "rotten egg" odour if H_2S present, but odour is an unreliable warning, since it may deaden the sense of smell. (Asphalt (Bitumen) fume)
Odour Threshold	Not applicable
Boiling Point	~ 100 °C

Freezing Point	0 °C
Relative Density (water = 1)	Not available
Solubility in Water	Insoluble
pH	8 - 10 (estimated)
Partition Coefficient, n-Octanol/Water	Not applicable
Vapour Pressure	Not applicable
Vapour Density (air = 1)	Not applicable
Evaporation Rate	Not applicable
Flash Point	> 100 °C
Lower Flammable/Explosive Limit	Not applicable
Upper Flammable/Explosive Limit	Not applicable
Auto-ignition Temperature	Not applicable

10. STABILITY AND REACTIVITY

Conditions to Avoid	High temperatures. Sunlight.
Incompatible Materials	Acides. Bases. Oxidizers.
Hazardous Decomposition Products	May release COx, NOx, SOx, POx, H2S, hydrocarbons, smoke and irritating vapours when heated to decomposition.
Possibility of Hazardous Reactions	Not applicable.

11. TOXICOLOGICAL INFORMATION

LC50/LD50 Values

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Asphalt (Bitumen) fume		> 5000 mg/kg (rat)	> 2000 mg/kg (rabbit)
Naphtha (petroleum), hydrotreated heavy	Not available	Not available	Not available

Skin Irritation/Corrosion

Irritating to skin. Signs/symptoms may include localized redness, swelling, and itching. Hot liquid product may cause serious thermal burns on direct contact. Asphalt fumes can increase susceptibility to sunburn.

Eye Irritation/Corrosion

Irritant-to-eye

Effects of Short-Term (Acute) Exposure

Inhalation

Nose and throat irritation.

Effects of Long-Term (Chronic) Exposure

Not available.

Respiratory and/or Skin Sensitization

Skin irritation, the symptoms may include redness and itching and swelling it may irritate the respiratory system.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA

Asphalt (Bitumen) fume	Group 2B	A4		

The International Agency for Research on Canacer (IARC) has determined that occupational exposures to oxide asphalt amd their emissions during roofing operations are "probably carcinogenic to humans" (Group A). IARC concluded that occupational exposures to hard asphalts and their emissions during mastic asphalt work are "possibly carcinogenic to humans" (Group 2B). IARC concluded that occupational exposure to straight-run asphalts and their emissions during paving operations are "possibly carcinogenic to humans" (Group 2B).

Teratogenicity / Embryotoxicity

Not available.

Reproductive Toxicity

Not available.

Mutagenicity

Not available.

Toxicologically Synergistic Materials

Not Available

12. ECOLOGICAL INFORMATION

Ecotoxicity Material - Not expected to be harmful to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

The generation of waste should be avoided or minimized where ever possible. Significant quantities of waste product residue should not be disposed of via the foul sewer but processed in a suitable effluent treatment plan. Dispose of surplus and non-recyclable and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Disposal should be in accordance with applicable gional, national and local laws and regulations. Refer to Section 7: HANDLING AND STORAGE and sections *: EXPOSURE CONTROL/PERSONAL PROTECTION for additional handling information and protection of employees.

The generation of waste should be avoided or minimized where ever possible. Significant quantities of waste product residue should not be disposed of via the foul sewer but processed in a suitable effluent treatment plan. Dispose of surplus and non-recyclable and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

14. TRANSPORT INFORMATION

Shipping Information

Not regulated under Canadian TDG Regulations.

Other Transport Information

Special Shipping Information Not applicable

15. REGULATORY INFORMATION

Canada

WHMIS Classification

Not a WHMIS controlled product.

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

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL or are not required to be listed.

USA

US OSHA Regulatory Status

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200 (1994)), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

16. OTHER INFORMATION

NFPA Rating	**Health - 1 Flammability - 1 Instability - 0**
MSDS Prepared By	Engineering and Risk Management Department
Phone No.	1 (416) 281 - 8181
Date of Preparation	August 22, 2014

.. .TERIAL SAFETY DATA SHEET

LIMESTONE

SECTION I: MATERIAL IDENTIFICATION AND USE

Material Name/Identifier: Limestone
Chemical Name: Limestone
Chemical Family: Carbonate Rock
Chemical Formula: Complex mixture (naturally variable)
Trade Name and synonyms: Aglime, manufactured sand, aggregate, dolomite, crushed stone
Molecular Weight: Not available
Material Use: Construction, ready mix concrete, concrete products, asphalt, agriculture.

SECTION II: HAZARDOUS INGREDIENTS OF MATERIAL

Limestone: A complex mixture (naturally variable composition of primarily Calcium and Magnesium Carbonates).
C.A.S.,N.A. or U.N. Number: 1317-65-3
LD_{50}: Not available
LC_{50}: Not available
*Limestone may contain varying concentrations of Quartz (Crystalline Silica).
C.A.S., NA., or U.N. Number: 14808-60-7
Note: This MSDS is applicable to limestone only when the Quartz concentration is greater than 0.1 (%) percent.

SECTION III: PHYSICAL DATA FOR MATERIAL

Physical State: Solid
Odour and Appearance: No odour; angular grey/brown/white particles of varying sizes.
Odour Threshold (P .P .M.): Not Applicable
Specific Gravity: 2.6-2.8
Vapour Pressure (MM): Not Applicable
Vapour Density (Air=1): Not Applicable
Evaporation Rate: 0
Solubility in Water (20°C): Negligible
Boiling Point PC): Not Applicable
Freezing Point (OC): Not Applicable
pH: Not Applicable
Percentage Volatile (By Volume): 0
Coefficient of Water/Oil Distribution: Not Applicable

SECTION IV: FIRE AND EXPLOSION HAZARD OF MATERIAL

Section Not Applicable

SECTION V: REACTIVITY DATA

Chemical Stability: Yes
Incompatibility to other Substances: No
Reactivity and Under What Conditions: Neutralizing agent for strong acids
Hazardous Decomposition Products: CO2 may be released on contact with strong acids.

SECTION VI: TOXICOLOGICAL PROPERTIES OF MATERIAL

Route of Entry: Inhalation
Effects of Acute Exposure to Material: Exposure to dust may irritate respiratory system.
Effects of Chronic Exposure to Material:
1. Chronic exposure to respirable limestone dust at levels exceeding exposure limits has caused pneumoconiosis.
2. Chronic exposure to respirable limestone/dolomite dust containing quartz at levels exceeding exposure limits has caused silicosis, a serious and progressive pneumoconiosis which can be disabling, and lead to death. Symptoms may appear at any time; even years after exposure has ceased. Symptoms of silicosis may include shortness of breath, difficulty in breathing, coughing, diminished work capacity, diminished chest expansion, reduction of lung volume and right heart enlargement and/or failure. The only reliable method of detecting silicosis is through a chest X-ray. Silicosis may aggravate other chronic pulmonary conditions and may increase the risk of pulmonary tuberculosis infection. Smoking aggravates the effects of silica exposure.

LD_{50} of Material (Specify Species and Route): Not Available
LC_{50} of Material (Specify Species and Route): Not Available
Exposure Limits (Ontario):

1. Limestone (Total Dust) 10 mg/metre^3 (TWAEV)
2. Respirable Silica Dust 0.2 mg/metre^3 (TWAEV)

TWAEV-Time Weighted Average Exposure Values
For additional information on the above exposure limits, consult Ontario Regulations 654/86 and 769/83, amended 23/87.
Irritancy of Material: Respiratory system, eyes, skin.
Sensitization of Material: Not Available
Synergistic Material: None known
Carcinogenicity, Reproductive Effects, Teratogenicity, Mutagenicity:
As of date of preparation of this MSDS:
1. Limestone is not included on the ACGIH, NTP or OSHA lists of potential carcinogens.
2. Silica, in the form of crystalline Quartz, and as a component of this material, is listed as a potential carcinogen by IARC. IARC (International Agency for Research on Cancer) has determined that there is limited evidence of the carcinogenicity to humans. Limited evidence of carcinogenicity indicates that casual interpretation is credible, but alternate explanations such as chance, bias or confounding factors could not adequately be excluded. There is no evidence that limestone is a teratogen, a mutagen or has a reproductive effect.

SECTION VII: PREVENATIVE MEASURES

Personal Protective Equipment: Respiratory protection should be used whenever dust is generated. Refer to the Ontario Regulation 769/83 as amended for respiratory equipment specified for various respirable silica dust levels.
Engineering Controls (Ventilation, Enclosed Process): Where feasible, dust levels should be reduced through wet suppression, dust collection, ventilation, process enclosure and enclosed pressurized employee workstations.
Leak and Spill Procedure: Spilled materials, where dust can be generated, may expose clean up personnel to respirable dust. Wetting of spilled materials and/or use of protective respiratory equipment may be necessary.
Waste Disposal: Re-use clean materials; dispose of waste materials only in accordance with applicable federal, provincial and local laws and regulations.
Handling Procedures and Equipments: Respirable dust may be generated during processing, handling and storage-avoid inhalation. Refer to "Personal Protective Equipment-Respiratory'.
Storage Requirements: Not Applicable
Special Shipping Information: Not Applicable

SECTION VII: FIRST AID MEASURES

Dust In Eyes: Flush out eyes with running water for 15 minutes. Contact a physician if irritation persists.
Dust on Skin: Wash with Soap and water. Contact a physician if irritation is aggravated.
Dust Inhalation: Remove to fresh air. Dust in throat and nasal passages should clear spontaneously. Contact a physician if irritation persists.

SECTION IX: PREPARATION DATE OF MSDS

Prepared by: *Al Buchanan*

Manufacturer's Name: *Halton Crushed Stone Ltd.*

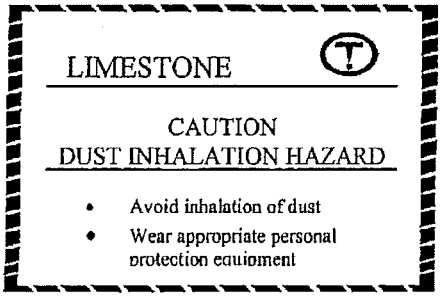
Address: P.O. Box 272, Agincourt, Ontario, M1S 3B6

Telephone: 416-291-1986 **Fax:** *416-291-3252*

Date: February 1, *2014*

SECTION X: LABEL INFORMATION

Labelling of bulk products is not required, however label information is as follows:



Additional Notes or References: Physical irritation may result from handling limestone. Work gloves and work clothing are recommended.

The Company believes that the information contained herein is factual. The data and information presented are without warranty, guarantee or liability on our part, and are presented to the customer for his own consideration, investigation and verification.