

APPENDIX A – SAFETY DATA SHEETS



Section 1: IDENTIFICATION

Product Name:	Recycled Asphalt Pavement
Synonyms:	Reclaimed Asphalt Pavement (RAP); Crusted Asphalt Base Course; Reclaimed Paving Material; Reclaimed Blacktop; Reclaimed Asphalt Concrete; Recycled Asphalt Pavement and Millings.
Product Use:	Product is generated through municipal road maintenance processes of mechanically milling existing asphalt roadways. The product can be reintroduced into new asphalt mixes in specified ratios/percentages and reapplied to roadways. See the City of Calgary product specification and use sheet for recommended ratios/percentages.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	City of Calgary P.O. Box 2100, Stn M Calgary AB, T2P 2M5
Phone Number:	1-403-268-2899
Emergency Phone:	1-403-268-4066 (24 hours)
Date of Preparation of SDS:	December 15, 2016
Date of Revision 1.0	April 30, 2021

Section 2: HAZARD(S) IDENTIFICATION**GHS INFORMATION**

Classification: Carcinogenicity, Category 1A
Specific Target Organ Toxicity (Repeated Exposure), Category 1

LABEL ELEMENTS**Hazard****Pictogram(s):****Signal Word:****Hazard****Statements:**

Danger
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements**Prevention:**

Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust or fumes.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Wear protective gloves, protective clothing, eye protection, face protection and respiratory protection depending on working conditions and task.

SAFETY DATA SHEET

Reviewed: November 10, 2023 (Rev. 02)

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- Response:** IF exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
- Storage:** Store locked up. Stockpiles of recycled asphalt should be kept covered or enclosed as much as possible.
- Disposal:** Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.
- Hazards Not Otherwise Classified:** Not applicable.
- Ingredients with Unknown Toxicity:** 100% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200). This material is considered hazardous by the Hazardous Products Regulations.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Aggregate (crushed stone, sand, gavel, slag)	Not available.	(various)	60 - 100
Asphalt	Not available.	8052-42-4	5 - 10
Quartz (SiO ₂)	Not available.	14808-60-7	1 - 5
Chrysotile asbestos	Not available.	12001-29-5	1 - 5
Limestone	Not available.	1317-65-3	1 - 5

Asphalt pavement is a mixture of gravel or rock, sand, filler (e.g., limestone or hydrated lime) and asphalt cement. It may also contain fly ash, slag, fibres (synthetic or organic), color pigment and other recycled material (e.g., ceramics, plastic, glass, etc.). Properties and composition of this material can vary depending on the original properties and composition of the recovered asphalt pavement.

Section 4: FIRST-AID MEASURES

- Inhalation:** If inhaled: Call a poison center or doctor if you feel unwell.
Acute and delayed symptoms and effects: Dust and/or fumes may cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO₂) dust has occurred. Coughing and irritation of throat are early symptoms.
- Eye Contact:** If hot product comes into contact with the eyes: Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor. If dust or fumes contact the eyes: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Acute and delayed symptoms and effects: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hot liquid product may cause serious thermal burns on direct contact.
- Skin Contact:** If hot product comes into contact with skin (or hair): Rinse skin with water or shower. Get immediate medical advice/attention. Remove non-adhering

contaminated clothing. Cool adherent materials and burned areas with ice and/or cold water. Do not remove adherent material or clothing. Do not use solvents to remove asphalt from the skin. If dust contacts the skin:
Wash skin with soap and water.

Acute and delayed symptoms and effects: May cause skin irritation.

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.

Ingestion:

If swallowed: Rinse mouth. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: Hot product may cause thermal burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen. If swallowed in large quantities, Asphalt can obstruct the intestine.

General Advice:

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

Note to Physicians:

Symptoms may not appear immediately.

Section 5: FIRE FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Not flammable or combustible by OSHA/WHMIS criteria.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is not sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO2, water spray or regular foam.
Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Do not spray water onto burning product as this may cause spattering and spreading of the flame.

Products of Combustion: Oxides of carbon. Oxides of sulphur. Oxides of calcium.
Hydrogen sulphide.

Protection of Firefighters: Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution.
Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures:	Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Contact environmental consultant, and if required, conduct air occupational air sampling during spill clean up.
Personal Precautions:	Do not touch or walk through spilled material. Use personal protection recommended in Section 8.
Environmental Precautions:	Keep out of drains, sewers, ditches, and waterways.
Methods for Containment:	Do not flush to sewer or allow to enter waterways. For hot material: Contain hot liquid by dyking and allow to cool and solidify.
Methods for Clean-Up:	Sweep up and shovel into suitable containers for disposal.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:

Do not swallow. Do not breathe dust or fumes. When conducting asphalt removal, cutting, milling, grinding or grooving: (1) Removal methods that may create airborne dust should be avoided. (2) Water should be applied during these activities to control dust. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. See Section 8 for information on Personal Protective Equipment.

Storage:

Stockpiles of recycled asphalt should be kept covered or enclosed as much as possible. Store locked up. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children. Asphalt may contain trace amounts of Hydrogen sulfide which can accumulate in vapour space of tanks and containers.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component

Aggregate (crushed stone, sand, gavel, slag) [CAS No. (various)]

ACGIH: 10 mg/m³ (TWA) (Inhalable.); 3 mg/m³ (TWA) (Respirable.); For Particles (Insoluble or Poorly Soluble) Not Otherwise Specified

OSHA: 15 mg/m³ (Total dust) (TWA), 5 mg/m³ (Respirable fraction) (TWA); For Particulates Not Otherwise Regulated (PNOR).

Asphalt [CAS No. 8052-42-4]

ACGIH: 0.5 mg/m³ (TWA); A4; BEI; Inhalable fraction; For Asphalt (Bitumen) fume, as benzene-soluble aerosol

OSHA: No PEL established.

Quartz [CAS No. 14808-60-7]

ACGIH: 0.025 mg/m³ (TWA); A2; Respirable fraction (2009)

SAFETY DATA SHEET

Reviewed: November 10, 2023 (Rev. 02)

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OSHA: 30 / (%SiO₂ + 2) mg/m³ Quartz (Total dust) (TWA), 10 / (%SiO₂ + 2) mg/m³ Quartz (Respirable) & 250 / (%SiO₂ + 5) mppcf Quartz (Respirable) (TWA); See Table Z3.

0.1 mg/m³ (As respirable quartz) (TWA) [Vacated];

Chrysotile asbestos [CAS No. 12001-29-5]

ACGIH: 0.1 f/cc (TWA); A1; Respirable fibers: length > 5µm; aspect ratio ≥ 3:1, as determined by the membrane filter method at 400-450X magnification (4-mm objective), using phase-contrast illumination (1994); For Asbestos, All forms

OSHA: 0.1 f/cc (TWA); 1.0 f/cc (30-min EL)

Limestone [CAS No. 1317-65-3]

ACGIH: 10 mg/m³ (TWA) (Inhalable.); 3 mg/m³ (TWA) (Respirable.); For Particles (Insoluble or Poorly Soluble) Not Otherwise Specified

OSHA: 15 mg/m³ (Total dust) (TWA), 5 mg/m³ (Respirable fraction) (TWA)

PEL: Permissible Exposure Limit

TWA: Time-Weighted Average

EL: Excursion Limit

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits. When conducting asphalt removal, cutting, milling, grinding or grooving: (1) Removal methods that may create airborne dust should be avoided. (2) Water should be applied during these activities to control dust.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection: Wear chemical safety goggles. If product is hot, wear full face-shield. Indirect vented, dust-tight goggles are required if dust is generated when handling this product. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Wear protective gloves. If product is hot, thermally protective gloves are recommended. Consult manufacturer specifications for further information.

Skin and Body Protection: Wear protective clothing. Clothing with full length sleeves and pants should be worn.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with minimal P100 particulate filter, or self-contained breathing apparatus must be used.

Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Consult a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Dark brown, grey or black solid.
Colour:	Dark brown, grey or black.
Odour:	Petroleum-like.
Odour Threshold:	Not available.
Physical State:	Solid.
pH:	Not available.
Melting Point / Freezing Point:	Typically > 200 °C (392 °F) as Asphalt.
Initial Boiling Point:	Typically > 400 °C (752 °F) as Asphalt.
Boiling Range:	Not available.
Flash Point:	Not available.
Evaporation Rate:	Not available.
Flammability (solid, gas):	See Section 5.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapor Pressure:	Not available.
Vapor Density:	> 1 (Air = 1)
Relative Density:	> 1 (Water = 1)
Solubilities:	Not available.
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	> 485 °C (905 °F) as Asphalt.
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.

SAFETY DATA SHEET

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Coefficient of Water/Oil Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity: Contact with incompatible materials. Sources of ignition.

Chemical Stability: Stable under normal storage conditions.

Possibility of Hazardous Reactions: Contact between heated Asphalt and water can cause a violent eruption.

Conditions to Avoid: Contact with incompatible materials. Sources of ignition.

Incompatible Materials: Acids. Bases. Oxidizers.

Hazardous Decomposition Products: Heat may liberate Hydrogen sulphide, Carbon monoxide, Carbon dioxide, Amines, Ammonia, Nitrogen dioxide, Sulphur oxides, Ozone and various hydrocarbons.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: Not available.

Dermal: Not available.

Inhalation: Not available.

Component Toxicity

Component	CAS No.	LD ₅₀ oral	LD ₅₀ dermal	LC ₅₀
Aggregate (crushed stone, sand, gavel, slag)	(various)	Not available.	Not available.	Not available.
Asphalt	8052-42-4	Not available.	Not available.	Not available.
Quartz	14808-60-7	Not available.	Not available.	0.3 mg/m ³ (human); 10Y
Chrysotile asbestos	12001-29-5	Not available.	Not available.	Not available.
Limestone	1317-65-3	Not available.	Not available.	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs.

Symptoms (including delayed and immediate effects)

Inhalation: Dust and/or fumes may cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO₂) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye: May cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision. Hot liquid product may cause serious thermal burns on direct contact.

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Skin: May cause skin irritation. 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.

Ingestion: Hot product may cause thermal burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen. If swallowed in large quantities, Asphalt can obstruct the intestine.

Skin Sensitization: Not available.

Respiratory Sensitization: Not available.

Medical Conditions Not available.

Aggravated By Exposure:

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Liver. Kidneys.

Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. Repeated exposure to Silica (Quartz, SiO₂) can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death. Long-term exposure to Chrysotile asbestos has been shown to cause asbestosis. Asbestosis is pulmonary fibrosis caused by the accumulation of asbestos fibers in the lungs. Symptoms include shortness of breath, coughing, fatigue, and vague feelings of sickness. When the fibrosis worsens, shortness of breath occurs even at rest. The diagnosis of asbestosis is based on a history of exposure to Asbestos, the presence of characteristic radiologic changes, end-inspiratory crackles (rales), and other clinical features of fibrosing lung disease. Pleural plaques and thickening are observed on X-rays taken during the early stages of the disease. Asbestosis is often a progressive disease even in the absence of continued exposure, although this appears to be a highly individualized characteristic. In severe cases, death may be caused by respiratory or cardiac failure.

Carcinogenicity: May cause cancer. Long-term or repeated exposures to Asphalt fumes are possibly carcinogenic to humans. Respirable Silica (Quartz, SiO₂) dust is classified as a human carcinogen. Exposure to Asbestos has been shown to cause lung cancer, mesothelioma, and cancer of the stomach and colon. Mesothelioma is a rare cancer of the thin membrane lining of the chest and abdomen. Symptoms of mesothelioma include shortness of breath, pain in the walls of the chest, and/or abdominal pain.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Asphalt	A4	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Quartz	A2	Group 1	List 1	OSHA Carcinogen.	Listed.
Chrysotile asbestos	A1	Group 1	List 1	OSHA Carcinogen.	Listed.

Mutagenicity: Not available.

Reproductive Effects: Not available.

SAFETY DATA SHEET

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Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Not available.

Toxicologically Synergistic Materials: Not available.

SAFETY DATA SHEET

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Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.
Persistence / Degradability: Not available.
Bioaccumulation / Accumulation: Not available.
Mobility in Environment: Not available.
Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: Not regulated.
Class: Not applicable.
UN Number: Not applicable.
Packing Group: Not applicable.
Label Code: Not applicable.

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: Not regulated.
Class: Not applicable.
UN Number: Not applicable.
Packing Group: Not applicable.
Label Code: Not applicable.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)

The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)

The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section	Section	CERCLA	Section	RCRA	CAA
	302 (EHS)	304 EHS	RQ (lbs.)	313	CODE	112 (r) TQ
	TPQ (lbs.)	RQ (lbs.)				(lbs.)

SAFETY DATA SHEET

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Chrysotile asbestos	Not listed.	Not listed.	1	313	Not listed. Not listed.
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SAFETY DATA SHEET

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State Regulations**Massachusetts**

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Quartz	14808-60-7	E
Chrysotile asbestos	12001-29-5	E
Limestone	1317-65-3	Listed.

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Asphalt	8052-42-4	Listed.
Quartz	14808-60-7	SHHS
Chrysotile asbestos	12001-29-5	SHHS
Limestone	1317-65-3	Listed.

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Asphalt	8052-42-4	Listed.
Quartz	14808-60-7	Listed.
Chrysotile asbestos	12001-29-5	S
Limestone	1317-65-3	Listed.

Note: S = Special Hazardous Substance

California

California Prop 65: WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Component	Type of Toxicity
Asphalt	cancer
Quartz	cancer
Chrysotile asbestos	cancer

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 their own particular use.

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GHS SDS Prepared by: Deerfoot Consulting Inc. on behalf of Western Health & Safety
Phone: (403) 720-3700
Date of Revision: April 30, 2021
Version: 2.0
Prepared by: Associated Engineering
Phone: (403) 262-4500
Date of Review: November. 10, 2023
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Prepared by: Associated Engineering