

BEST SAND, SILICA SAND

WASHED AND DRIED



Typical Analysis – Percent Retained on Each Mesh

| Mesh | 412 | 430 | 612 | 620 | 1020 | 1220 | 1635 | 2040 | 530 | 540 | 545 | 550 | 565 | 555 Blend | 560 Blend | 565 Blend | 575 Blend | 110 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|-----------|-----------|-----------|-------|
| 1/4" | 1 | | | | | | | | | | | | | | | | | |
| 4 | 24 | T | T | | | | | | | | | | | | | | | |
| 6 | 66 | 35 | 2 | T | | | | | T | | | | | | | | | |
| 8 | 8 | 58 | 43 | 9 | T | | T | | 1 | | | | | | | | | |
| 10 | 0 | 6 | 42 | 12 | 4 | T | 1 | | 1 | | | | | | | | | |
| 12 | 0 | 1 | 12 | 14 | 12 | 4 | 3 | | 1 | | | | | | | | | |
| 16 | T | T | 1 | 35 | 45 | 44 | 14 | T | 3 | T | T | | | | | | | |
| 20 | | | T | 22 | 29 | 39 | 18 | 10 | 3 | 2 | 1 | | | | | | | |
| 30 | | | | 6 | 7 | 10 | 37 | 53 | 6 | 9 | 7 | T | | 0 | 0 | 0 | 0 | |
| 40 | | | | 1 | 1 | 2 | 24 | 35 | 14 | 20 | 16 | 15 | 0 | 4 | 3 | 3 | 2 | 0 |
| 50 | | | | 1 | 1 | 1 | 2 | 3 | 33 | 43 | 36 | 41 | 7 | 19 | 17 | 14 | 13 | 0 |
| 70 | | | | 0 | 0 | 0 | 0 | T | 26 | 22 | 28 | 31 | 51 | 44 | 48 | 41 | 41 | 5 |
| 100 | | | | T | T | T | T | | 10 | 4 | 10 | 11 | 33 | 25 | 25 | 27 | 22 | 18 |
| 140 | | | | | | | | | 3 | 1 | 2 | 2 | 8 | 7 | 7 | 10 | 12 | 35 |
| 200 | | | | | | | | | T | T | T | T | 1 | 1 | 1 | 4 | 7 | 25 |
| 270 | | | | | | | | | | | T | T | 0 | T | T | 1 | 3 | 10 |
| Pan | | | | | | | | | | | | | 0 | T | T | T | 1 | 6 |
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| AFS | N/A | N/A | N/A | 9.5 | 10.5 | 11.8 | 19.4 | 23.0 | 42.0 | 39.5 | 44.0 | 46.4 | 61.3 | 56.4 | 56.8 | 64.7 | 72.2 | 125.2 |
| E.S. | 3.34 | 2.43 | 2.00 | 0.90 | 0.87 | 0.81 | 0.50 | 0.49 | 0.20 | 0.23 | 0.20 | 0.20 | 0.16 | N/A | N/A | N/A | N/A | N/A |
| U.C. | 1.24 | 1.35 | 1.26 | 1.75 | 1.59 | 1.56 | 1.55 | 1.43 | 1.77 | 1.56 | 1.72 | 1.67 | 1.52 | N/A | N/A | N/A | N/A | N/A |

WARNING: Contains Free Silica. Do Not Breathe Dust. Prolonged exposure to dust may cause delayed lung injury (silicosis). Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans (vol 68, 1997) concludes that there is sufficient evidence in humans for the carcinogenicity of inhaled crystalline silica in the forms of quartz and cristobalite (Group I) in certain industrial circumstances, but that carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution activity or distribution of its polymorphs. See Material Safety Data Sheet for detailed information. CAS 14808-60-7 **FOR INDUSTRIAL USE ONLY.**

IMPORTANT: The technical data herein is believed to be accurate. It is offered for your consideration, investigation and verification. Buyer assumes all risk of use, storage and handling of the product.

Gravel

| Mesh | #8 | #67 |
|------|----|-----|
| 3/4" | | 0 |
| 1/2" | | 15 |
| 3/8" | T | 45 |
| 1/4" | 40 | 32 |
| 4 | 37 | 5 |
| 6 | 20 | 2 |
| 8 | 2 | T |
| 16 | T | 0 |
| Pan | T | T |

T = Trace amounts

Typical Physical & Chemical Properties

| | |
|----------------------------------|-------------|
| % LOI | 0.12 |
| pH | 7.0 |
| Grain Shape | Sub-Rounded |
| % SiO ₂ | 99.5 |
| % Al ₂ O ₃ | 0.157 |
| % Fe ₂ O ₃ | 0.084 |
| % TiO ₂ | 0.031 |
| % CaO | 0.006 |

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**Product Identifier****Product Name:** Crystalline Silica in the form of Quartz – various grades**Synonyms:** Quartz, Crystalline Silica, Silicon Dioxide**Relevant Identified Uses of the Substance or Mixture and Uses Advised Against:****Product Use:** Various commercial and industrial uses**Manufacturer:****Covia (f/k/a Unimin)**

US: 3 Summit Park Drive, Suite 700

Independence, OH 44131

Phone: (203) 442-2500

Emergency Telephone Number: CHEMTREC

Within USA and Canada 1-800-424-9300

Outside USA and Canada +1-703-741-5970

For emergency calls only. Non-emergency calls cannot be serviced at these numbers.

CAN: 10 Four Seasons Place, Suite 600

Toronto, Ontario, M9B6H7

SDS Date of Preparation/Revision: May 2019**SECTION 2: HAZARDS IDENTIFICATION****GHS/ Hazcom 2012 Classification:**

| Physical: | Health: | Environmental |
|------------------|--|----------------------|
| Not Hazardous | Carcinogen Category 1A Specific Target Organ Toxicity (Repeated Exposure) Category 1 | Not Hazardous |

GHS/Hazcom 2012 Label:

**DANGER****Statements of Hazard**

May cause cancer by inhalation.

Causes damage to lungs through prolonged or repeated exposure by inhalation

Response:

If exposed or concerned: Get medical advice.

Disposal:

Dispose of contents/containers in accordance with local regulation.

Prevention

Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust.

Do not eat, drink or smoke when using this product.

Wear protective gloves and safety glasses or goggles.

In case of inadequate ventilation wear respiratory protection.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

| CAS# | Component | Percentage |
|------------|--|------------|
| 14808-60-7 | Crystalline Silica in the form of Quartz | 87 - 99.9% |

SECTION 4: FIRST AID MEASURES**Gross Inhalation:** Remove victim to fresh air. If breathing has stopped, perform artificial respiration. If breathing is difficult have qualified personnel administer oxygen. Get prompt medical attention.

Skin Contact: No first aid should be needed since dermal contact with this product does not affect the skin. Wash exposed skin with soap and water before breaks and at the end of the shift.

Eye Contact: Flush the eyes immediately with large amounts of running water, lifting the upper and lower lids occasionally. If irritation persists or for imbedded foreign body, get immediate medical attention.

Ingestion: If large amounts are swallowed, get immediate medical attention.

Most Important Symptoms and Effects, Both Acute and Delayed: May cause eye irritation with redness and tearing. Exposure to dust may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath. However, there may be no immediate signs or symptoms of exposure to hazardous concentrations of respirable crystalline silica (quartz).

Indication of immediate medical attention and Special Treatment Needed: None required.

SECTION 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media: This product will not burn but is compatible with all extinguishing media. Use any media that is appropriate for the surrounding fire.

Specific Hazards Arising from the Chemical:

Unusual Fire and Explosion Hazards: Not flammable or combustible. Dry powders may accumulate static charge in handling which can be a source of ignition for flammable atmospheres.

Hazardous Combustion Products: None.

Special Protective Equipment and Precautions for Fire-Fighters: None required with respect to this product. Firefighters should always wear self-contained breathing apparatus for fires indoors or in confined areas.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Wear appropriate protective equipment.

Environmental Precautions: Report spills and releases as required to appropriate authorities.

Methods and Material for Containment/Cleanup: If uncontaminated, collect using dustless method (HEPA vacuum or wet method) and place in appropriate container for use. If contaminated: a) use appropriate method for the nature of contamination, and b) consider possible toxic or fire hazards associated with the contaminating substances. Collect for appropriate disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for Safe Handling: Do not breathe dust. Do not rely on your sight to determine if dust is in the air. Silica may be in the air without a visible dust cloud. Use normal precautions against bag breakage or spills of bulk material. Avoid creation of respirable dust. Use good housekeeping in storage and use areas to prevent accumulation of dust in work area.

To reduce the risk of developing silicosis, lung cancer and other adverse health effects, the ACGIH recommends that the industrial hygienist use every means available to keep exposures below the recommended TLV. NIOSH recommends reducing airborne exposure levels as low as possible below NIOSH's recommended exposure limit, substituting less hazardous materials when feasible, using appropriate respiratory protection when source controls cannot keep exposures below the recommended limit and making medical examinations available to exposed workers.

Use adequate ventilation and dust collection. To minimize exposure, wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. Refer to the most recent government and local regulations when selecting a respirator. Maintain, clean and fit test respirators in accordance with the most recent government and local

regulations. Maintain and test ventilation and dust collection equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain silica residue and must be handled in accordance with the provisions of this Material Safety Data Sheet. **WARN and TRAIN** employees in accordance with state and federal regulations.

Refer to the OSHA Respirable Crystalline Silica standards; 29CFR1910.1053, 1915.1053 and 1926.1053 for specific requirements for use and handling.

WARN YOUR EMPLOYEES (AND YOUR CUSTOMERS AND USERS IN CASE OF RESALE) BY POSTING, AND OTHER MEANS, OF THE HAZARDS AND OSHA AND ANY OTHER APPLICABLE REGULATORY PRECAUTIONS TO BE USED. PROVIDE TRAINING FOR YOUR EMPLOYEES ABOUT OSHA PRECAUTIONS.

Dust can accumulate electrostatic charges due to friction from transfer and mixing operations and cause an electrical spark (ignition source) which can ignite flammable liquids and atmospheres. Provide adequate precautions when adding this product to flammable and combustible mixtures like paints and coating, such as electrical grounding and bonding, inert atmosphere or non-sparking tools. However, bonding and grounds may not eliminate the hazard for static accumulation.

See also American Society for Testing and Materials (ASTM) Standard Practice E1132-99a, "Standard Practice for Health Requirements Relating to Occupational Exposure to Respirable Crystalline Silica".

Additional information on silica hazards and precautionary measures can be found at the following websites:
 NIOSH Joint Campaign on Silicosis Prevention <http://www.cdc.gov/niosh/topics/silica/default.html>
 OSHA Crystalline Silica Website <http://www.osha.gov/dsg/topics/silicacrystalline/index.html>
 MSHA Silicosis Prevention Website <https://arlweb.msha.gov/S&HINFO/SILICO/SILICAX.pdf>
 NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica Website <http://www.cdc.gov/niosh/docs/2002-129/>

Conditions for Safe Storage, Including any Incompatibilities: Store in a dry location.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:

Definitions:

NIOSH means National Institute for Occupational Safety and Health.
 REL means the NIOSH Recommended Exposure Limit.
 TLV means American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value.
 TWA means time-weighted average.

| Component | OSHA PEL | ACGIH TLV | NIOSH REL | MSHA |
|-----------------------------|--|---|--|--|
| Crystalline Silica, quartz* | 0.05 mg/m ³ TWA (respirable dust) * | 0.025 mg/m ³ TWA (respirable dust) | 0.05 mg/m ³ TWA (respirable dust) | 10 mg/m ³ % Silica + 2 (Respirable measured as an 8-hour TWA) |

The OSHA PEL for Quartz until the effective dates for new PEL above:
 $\frac{10 \text{ mg/m}^3}{\% \text{SiO}_2 + 2}$ TWA (respirable dust) $\frac{30 \text{ mg/m}^3}{\% \text{SiO}_2 + 2}$ TWA (total dust)

In 2006 the ACGIH lowered the TLV for Silica, Crystalline: α -Quartz and Cristobalite to 0.025 mg/m³ stating in the *Documentation of the TLV* "Because the time between exposure and signs of fibrosis is characteristically very long, as much as 30 to 40 years, the margin of safety for exposure to crystalline silica at the proposed TLV-TWA is not known precisely. Given the observed association between silicosis and lung cancer, it is recommended that air concentrations be maintained as

far below the proposed TLV as prudent practices permit. The recommended TLV-TWA of 0.025 mg/m³, respirable particulate mass, is intended to prevent pulmonary fibrosis that may be a risk factor for lung cancer. An A2, Suspected Human Carcinogen, notation is based on the demonstrated association between lung cancer and the presence of silicosis." The documentation further states "A lack of toxicological and industrial hygiene data does not permit the recommendation of a TLV-STEL. However, it should be noted that high exposures of short duration to freshly fragmented crystalline particles do produce an acute and rapidly progressive form of silicosis. The reader is encouraged to review the section on *Excursion Limits* in the "Introduction to the Chemical Substances" of the current TLVs[®] and BEIs[®] book for guidance and control of excursions above the TLV-TWA, even when the 8-hour TWA is within the recommended limits"

NIOSH has issued its REL of 50 micrograms respirable free silica per cubic meter of air (0.05 mg/m³) as determined by a full shift sample up to 10-hour working day, 40 hours per week. NIOSH has recommended that OSHA and MSHA adopt the NIOSH REL as the OSHA PEL and the MSHA Exposure Limit. The 1974 NIOSH Criteria for a Recommended Standard for Occupational Exposure to Crystalline Silica should be consulted for more detailed information. Additionally, NIOSH, in a publication entitled NIOSH Hazard Review Health Effects of Occupational Exposure to Respirable Silica (April 2002), NIOSH stated "...that workers have a significant risk of developing chronic silicosis when they are exposed to respirable crystalline silica over a working lifetime at the current Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL), the Mine Safety and Health Administration (MSHA) PEL, or the National Institute for Occupational Safety and Health (NIOSH) recommended exposure limit (REL). ...Current sampling and analytical methods used to evaluate occupational exposure to respirable crystalline silica do not meet the accuracy criterion needed to quantify exposures at concentrations below the NIOSH REL of 0.05 mg/m³ as a time-weighted average (TWA) for up to a 10-hr workday during a 40-hr workweek. Until improved sampling and analytical methods are developed for respirable crystalline silica, NIOSH will continue to recommend an exposure limit of 0.05 mg/m³ to reduce the risk of developing silicosis, lung cancer, and other adverse health effects. NIOSH also recommends minimizing the risk of illness that remains for workers exposed at the REL by substituting less hazardous materials for crystalline silica when feasible, by using appropriate respiratory protection when source controls cannot keep exposures below the NIOSH REL, and by making medical examinations available to exposed workers."

Crystalline silica exists in several forms, the most common of which are quartz (i.e. this product), trydimite and cristobalite, with quartz being the most common form found in nature. If quartz is heated to more than 870°C, it can change form to trydimite and if quartz is heated to more than 1450°C, it can change form to cristobalite.

Appropriate Engineering Controls: Use local exhaust as required to maintain exposures as far as possible below applicable occupational exposure limits. See also ACGIH "Industrial Ventilation - A Manual for Recommended Practice" (current edition). Control of exposure to dust must be accomplished as far as feasible by accepted engineering control measures (for example, enclosure or confinement of the operation, general or local exhaust ventilation and substitution of less toxic materials). Refer to the OSHA Respirable Crystalline Silica standards; 29CFR1910.1053, 1915.1053 and 1926.1053 for specific requirements for engineering controls.

Personal Protective Equipment:

Respiratory Protection: When effective engineering controls are not feasible, or while they are being implemented, appropriate respiratory protection must be used. Use appropriate respiratory protection for respirable particulates based on consideration of airborne workplace concentrations and duration of exposure arising from intended end use. Refer to the most recent government and local standards. Refer to the OSHA Respirable Crystalline Silica standards; 29CFR1910.1053, 1915.1053 and 1926.1053 for specific requirements for respiratory protection. Always refer to the most recent government and local standards.

Gloves: Protective gloves recommended.

Eye Protection: Safety glasses or goggles recommended.

Other Protective Equipment/Clothing: As appropriate for the work environment. Dusty clothing should be laundered before reuse.

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| SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES |
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| | | | |
|--------------------------------------|-------------------------------|---|--------------------|
| Form: | Solid | Appearance: | White powder |
| Viscosity: | Not applicable | Odor: | None |
| pH: | Not applicable | Odor Threshold: | Not applicable |
| Boiling Point/Range: | 4046°F / 2230°C | Vapor Density: | Not applicable |
| Melting point/freezing point: | 2930°F / 1610°C | Evaporation Rate: | Not applicable |
| Flammability (solid, gas): | Fully oxidized, will not burn | Partition coefficient (n-octanol/water): | Not applicable |
| Decomposition Temperature: | Not applicable | Vapor Pressure: | Not applicable |
| Flash Point: | Not applicable | Relative Density: | 2.65 |
| Lower Explosion Limit: | Not applicable | Solubilities: | Insoluble in water |
| Upper Explosion Limit: | Not applicable | Autoignition Temperature: | Will not burn |

SECTION 10: STABILITY AND REACTIVITY

Reactivity: This product is not reactive under normal conditions of storage and use.

Chemical Stability: This product is stable at normal temperatures.

Possibility of Hazardous Reactions: None known

Conditions to Avoid: None known.

Incompatible Materials: Powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, etc.

Hazardous Decomposition Products: Silica will dissolve in hydrofluoric acid producing a corrosive gas, silicon tetrafluoride.

SECTION 11: TOXICOLOGICAL INFORMATION

Information on Toxicological Effects

Potential Health Effects:

Inhalation: Breathing silica dust may not cause noticeable injury or illness even though permanent lung damage may be occurring. Inhalation of dust may have serious chronic health effects (see below Repeat Dose Toxicity.)

Skin Contact: No adverse effects expected.

Eye Contact: Contact may cause mechanical irritation and possible injury.

Ingestion: No adverse effects expected for normal, incidental ingestion.

Chronic Health Effects: See Repeat Dose Toxicity below with respect to silicosis, cancer status and other data with possible relevance to human health.

Signs and Symptoms of Exposure: Exposure to dust may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath. However, there may be no immediate signs or symptoms of exposure to hazardous concentrations of respirable crystalline silica (quartz). See Repeat Dose Toxicity below for symptoms of silicosis. The absence of symptoms is not necessarily indicative of safe conditions.

Acute Toxicity Values: Silica: LD50 oral rat >22,500 mg/kg.

Skin Sensitization: Not a skin sensitizer in animals or humans.

Repeated Dose Toxicity:

Silicosis: Excessive inhalation of respirable crystalline silica dust may cause a progressive, disabling and sometimes fatal lung disease called silicosis. Symptoms include cough, shortness of breath, wheezing, non-specific chest illness and reduced pulmonary function. This disease is exacerbated by smoking. Individuals with silicosis are predisposed to develop mycobacterial infections (tuberculous and non-tuberculous) and fungal infections. Inhalation of air with a very high concentration of respirable silica dust can cause the most serious forms of silicosis in a matter of months or a few years. Some epidemiologic studies have concluded that there is significant risk of developing silicosis even at airborne exposure levels that are equal to the recommended NIOSH REL, and ACGIH TLV.

Other Data with Possible Relevance to Human Health:

There is some evidence that breathing respirable crystalline silica or the disease silicosis is associated with an increased incidence of significant disease endpoints such as scleroderma (an immune system disorder manifested by fibrosis of the lungs, skin and other internal organs) rheumatoid arthritis, systemic lupus, erythematosus, sarcoidosis, chronic bronchitis, chronic obstructive pulmonary disease (COPD), emphysema, chronic kidney disease and end-stage renal disease.

For further information consult "Adverse Effects of Crystalline Silica Exposure" published by the American Thoracic Society Medical Section of the American Lung Association, American Journal of Respiratory and Critical Care Medicine, Volume 155, pages 761-768, 1997, and see also NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002 (see Section 7 for NIOSH Hazard Review Website).

Carcinogenicity: The International Agency for Research on Cancer has determined that crystalline silica is carcinogenic to humans (Group 1 - carcinogenic to humans). Refer to IARC Monograph 100C, A Review of Human Carcinogens: Arsenic, Fibres, and Dusts (published in 2011) in conjunction with the use of these materials. The National Toxicology Program classifies respirable crystalline silica as "known to be a human carcinogen". Refer to the Twelfth Report on Carcinogens (2011). The American Conference of Governmental Industrial Hygienists (ACGIH) classifies crystalline silica, quartz, as a suspected human carcinogen (A2).

Developmental / Reproductive Toxicity: No specific data is available, however, there is no evidence that silica exposure has any effect on reproduction.

Genetic Toxicity: No specific data is available, however, there is no evidence that silica is a germ cell mutagen.

SECTION 12: ECOLOGICAL INFORMATION

Toxicity: Practically non-toxic to aquatic organisms. Silica: LC50 carp >10,000 mg/L/72 hr.

Persistence and Degradability: Silica is not degradable.

Bioaccumulative Potential: Not expected to bioaccumulate.

Mobility in Soil: Not applicable.

Results of PBT and vPvB Assessment: None required.

Other Adverse Effects: None known

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Treatment Methods:

If uncontaminated, dispose as an inert, non-metallic mineral. If contaminated, dispose in accordance with all applicable local, state/provincial and national/ federal regulations in light of the contamination present. Local regulations may be more stringent than regional and national requirements. It is the responsibility of the waste generator to determine the toxicity and physical characteristics of the material to determine the proper waste identification and disposal in compliance with applicable regulations.

SECTION 14: TRANSPORT INFORMATION

Not regulated for transportation under IATA/ICAO, IMDG, US DOT, EU ADR, or Canadian TDG Regulations.
Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code: None

SECTION 15: REGULATORY INFORMATION

SARA 311/312: Refer to Section 2 for the OSHA Hazard Classification

SARA 313 This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements Under the SARA Section 313 (40 CFR 372): None

CERCLA Section 103 Reportable Quantity: None

California Proposition 65: This product contains crystalline silica (respirable) which is known to the State of California to cause cancer.

Toxic Substances Control Act: All of the components of this product are listed on the EPA TSCA Inventory or exempt from premanufacture notification requirements.

EU Inventory: All of the components of this product are listed on the EINECS inventory or exempt from notification requirements.

EU REACH Status: This substance is exempt from REACH registration.

Canadian Environmental Protection Act: All the components of this product are listed on the Canadian Domestic Substances List or exempt from notification requirements.

Japan METI: All of the components of this product are existing chemical substances as defined in the Chemical Substance Control Law.

Australian Inventory of Chemical Substances: All of the components of this product are listed on the AICS inventory or exempt from notification requirements.

Korea: All of the components of this product are listed on the KECL inventory or exempt from notification requirements.

Philippines: All of the components of this product are listed on the PICCS inventory or exempt from notification requirements.

New Zealand: All of the components of this product are listed on the HSNO inventory or exempt from notification requirements.

China: All of the components of this product are listed on the IECSC inventory or exempt from notification requirements.

Taiwan: All of the components of this product are listed on the CSNN inventory or exempt from notification requirements.

16: OTHER INFORMATION

NFPA Hazard Rating: Health: 1 Fire: 0 Reactivity: 0

HMIS Hazard Rating: Health: * Fire: 0 Reactivity: 0

* Warning - Chronic health effect possible - inhalation of silica dust may cause lung injury/disease (silicosis). Take appropriate measures to avoid breathing dust. See Section 3.

References:

Registry for Toxic Effects of Chemical Substances (RTECS), 2018
NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica, April 2002
NTP Report on Carcinogens
IARC Monograph Volume 100C, A Review of Human Carcinogens: Arsenic, Fibres, and Dusts (2011)
Hazardous Substances Data Bank (HSDB), 2016
Documentation of the TLV – Silica, Crystalline: α -Quartz and Cristobalite, American Conference of Governmental Industrial Hygienists, 2006
OSHA Respirable Crystalline Silica standards; 29CFR1910.1053, 1915.1053 and 1926.1053

SDS Date of Preparation/Revision: May 2019

Revision Summary: Update Emergency Phone Number

The data in this Safety Data Sheet relates only to the specific material designated herein and does not relate to use in combination with any other material or in any process. The information set forth herein is based on technical data Covia believes reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside the control of Covia, no warranties, expressed or implied, are made and no liability is assumed in connection with any use of this information. Any use of these data and information must be determined by the user to be in accordance with federal, state and local laws and regulations.

UNIT WEIGHT ASTM-C29 CEDARVILLE E-1 *Grey*

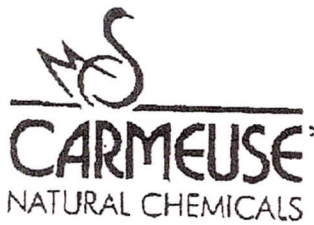
#57 Michigan

*QMD
8/30/12*

*57
618
4070*

*#8
62*

| SIZE | METHOD | OVEN DRY | % MOIST. | #YD3 | FT ³ /TON * | METHOD | OVEN DRY | #YD3 * | FT ³ /TON * |
|---------|--------|----------|----------|------|------------------------|--------|----------|--------|------------------------|
| D | J | 105.3 | 0.8 | 2865 | 19 | S | 91.9 | 2502 | 22 |
| E | J | 103.5 | 1.1 | 2824 | 18 | S | 91.6 | 2488 | 22 |
| F | R | 99.2 | 1.9 | 2728 | 20 | S | 91.7 | 2521 | 21 |
| G-1 60% | R | 89.0 | 1.9 | 2723 | 20 | S | 91.0 | 2502 | 22 |
| G-2 40% | R | 101.8 | 3.1 | 2834 | 19 | S | 92.6 | 2577 | 21 |
| HL-3 | R | 103.6 | 5.8 | 2859 | 18 | S | 96.0 | 2742 | 20 |
| H-1 | R | 101.8 | 8.8 | 2888 | 18 | S | 92.4 | 2713 | 20 |
| H-2 | R | 115.2 | 15.1 | 3579 | 15 | S | 105.0 | 3262 | 17 |



Carmeuse Lime & Stone
 Cedarville Quarry
 5093 M-134 East Highway
 Cedarville, MI 49719

Crushed Limestone
 Michigan DOT Pit # 49-65
 Penn DOT Supplier Code: CALMIA14
 Ohio DOT Producer : 05115-01

2012
PRODUCT TYPICAL ANALYSIS

Product Description: AASHTO/ASTM 8

Carmeuse Product Code: 11695

| Typical Properties | | | |
|--|-----------------------|--------|---|
| Specific Gravity | Oven Dry | 2.780 | ASTM C127 – Carmeuse Technology Center |
| | Saturated Surface Dry | 2.796 | |
| Abrasion Resistance (Los Angeles) | | 26.2% | ASTM C131 – MDOT |
| Freeze Thaw Durability | | 0.001% | 100 Cycles – MDOT |
| Sodium Sulfate Soundness | | 2.3% | ASTM C88 – Carmeuse Technology Center |
| Clay Lumps and Friable Particles | | 0.0 | ASTM C142 – MDOT |
| Chert | | 0.0 | ASTM 123 – MDOT |
| Sum of Clay Lumps, Friable Particles and Chert | | 0.0 | ASTM C142, ASTM C123 – MDOT |
| Coal and Lignite | | 0.0 | ASTM C123 – Carmeuse Technology Center |
| Flat/Elongated Particle | | 5.8% | ASTM D4791 – Carmeuse Technology Center |
| Chloride Content | Acid Soluble | 0.142% | ASTM C1152 – CTL Group |
| | Water Soluble | 0.050% | ASTM C1218 – CTL Group |
| Water Absorption | | 0.59% | ASTM C127 – Advanced Asphalt Technologies |
| Asphalt Absorption | | 0.54% | AASHTO T312 – Advanced Asphalt Technologies |
| Crushed Pieces/Particles | | 100% | ASTM D5821 – Carmeuse Technology Center |

Limestone - Cedarville - Pwcnond
 from Ontario Stone - Cleveland, OH

| O-N MINERALS CEDARVILLE OPERATION | |
|--|-----------------------|
| PHYSICAL PROPERTIES | VALUES |
| <i>Gray</i> BULK SPECIFIC GRAVITY E-1 STONE (ST. MARYS LEASIDE LAB - 02/2006) E-2 STONE (ST. MARYS LEASIDE LAB - 02/2006) | 2.80 2.75 |
| BULK SPECIFIC GRAVITY SSD E-1 STONE (ST. MARYS LEASIDE LAB - 02/2006) E-2 STONE (ST. MARYS LEASIDE LAB - 02/2006) | 2.81 2.77 |
| WATER ABSORPTION E-1 STONE (ST. MARYS LEASIDE LAB - 02/2006) E-2 STONE (ST. MARYS LEASIDE LAB - 02/2006) | 0.41 0.59 |
| COMPRESSION STRENGTH (DBT MINERAL PROCESSING - 2001) E-1 STONE E-2 STONE | 39498 PSI 8847 PSI |
| E-1 STONE MAGNESIUM SULFATE SOUNDNESS (ST. MARYS LEASIDE LAB - 02/2006) E-2 STONE MAGNESIUM SULFATE SOUNDNESS (ST. MARYS LEASIDE LAB - 02/2006) | 0.5 0.5 |
| FREEZE THAW DILATION (MDOT 2002) FREEZE THAW FACTOR (MDOT 2002) | 0.003 93 |
| AGGREGATE WEAR INDEX E-1 STONE (MDOT 2005) E-2 STONE (MDOT 2005) | 196.2 219.1 |

| LOS ANGELES ABRASION (ASTM C-131) CALCITE LAB | | | | | |
|---|--------------------------|------------------------|-----------------------|----------------------|--------|
| | GRADE A (1 1/2 x 3/8) | GRADE B (3/4 x 3/8) | GRADE C (3/8 x #4) | GRADE D (#4 x #8) | TESTED |
| <i>E-1</i> | 27.8% | 23.9% | 27.1% | 27.4% | 2003 |
| E-2 | 34.4% | 31.6% | 31.7% | 32.9% | 1999 |

*Bill Tord 8/23/15
 Ontario Stone*



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MATERIAL ANALYSIS

| | |
|--|---|
| PROJECT: ONTARIO STONE CORPORATION VARIOUS PROJECTS AND TESTING | FILE NO.: S019113 |
| CLIENT: ONTARIO STONE CORPORATION 1246 RIVER ROAD CLEVELAND, OH 44113 | REPORT NO.: 045 DATE: 6/26/19 PAGE NO.: 1 OF 1 |

On June 20, 2019, a sample of #8 Carmeuse limestone (Cedarville, Michigan) was delivered to this laboratory for a sieve analysis. Following are the test results:

| Sieve Size | % Passing | Passing Specifications (ODOT 703-1) |
|------------|-----------|-------------------------------------|
| 1/2" | 100 | 100 |
| 3/8" | 91 | 85 – 100 |
| #4 | 28 | 10 – 30 |
| #8 | 6 | 0 – 10 |
| #16 | 4 | 0 – 5 |

This sample meets Ohio Department of Transportation gradation specification Item 703-1 for a #8 aggregate.

TECHNICIAN: DONALD HOLLENBAUGH

SOLAR TESTING LABORATORIES, INC.

Dennis L. Sanderson
Vice President/General Manager

emm 6/27/19