

**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/  
UNDERTAKING****UNIMIN CORPORATION**

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PRODUCT NAME: Olivine for Abrasive Blasting

SYNONYMS: Magnesium Iron Silicate

Date Prepared: May 2006

**SECTION 2: COMPOSITION/INFORMATION ON INGREDIENTS**

CAS# / EINECS #	Component	Percentage	EU Classification (67/548/EEC)
1317-71-1/ 215-281-7	Olivine	>99.3%	Not Applicable
7440-02-0 / 231-111-4	Nickel Compounds	0.1-0.4%	Xn R40, R43
7440-47-3 / 231-157-5	Chromium Compounds	0.1-0.5%	Not Applicable

Refer to section 16 for further information on EU Classification.

See Section 8 for occupational exposure limit information

**SECTION 3: HAZARDS IDENTIFICATION**

This product is a chemically inert, non-combustible mineral.

**EMERGENCY OVERVIEW****WARNING!**

Excessive inhalation of dust may cause mucous membrane and respiratory irritation and lung injury with symptoms of shortness of breath and reduced pulmonary function. Cancer Hazard. Contains nickel compounds, which can cause cancer. Risk of injury is dependent on the duration and level of exposure. A single exposure will not result in serious adverse effects. See "Health Hazards" in Section 11 for detailed information.

**A greater hazard, in most cases, is the exposure to the dust from the substrate material or paint/coatings being blasted. During this operation exposure to toxic materials such as lead, cadmium, chromium, nickel, crystalline silica, etc. found in the substrate or coatings can occur. The potential hazard from this exposure must be evaluated and appropriate protective measures taken.**

Use with adequate engineering controls and protective equipment to keep exposure to all potential contaminants below recommended exposure limits.

EU Classification of Substance/Preparation: Not classified as a dangerous preparation.

**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.

#### SECTION 5: FIREFIGHTING MEASURES

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

Special Fire Fighting Procedures: None required with respect to this product. Firefighters should always wear self-contained breathing apparatus for fires indoors or in confined areas.

Unusual Fire and Explosion Hazards: None.

Hazardous Combustion Products: None.

#### SECTION 6: ACCIDENTAL RELEASE MEASURES

Wear appropriate protective equipment. 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

Avoid breathing dust. Respiratory protection is mandatory for abrasive blasting. **A greater hazard, in most cases, is the exposure to the dust from the substrate material or paint/coatings being blasted. During this operation exposure to toxic materials such as lead, cadmium, chromium, nickel, crystalline silica, etc. found in the substrate or coatings can occur. The potential hazard from this exposure must be evaluated and appropriate protective measures taken..**

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.

Use adequate ventilation and dust collection. To minimize exposure, wear a respirator approved for dust when handling, storing or disposing of this product or bag. When abrasive blasting, use respiratory protection adequate for the hazard. Refer to the most recent standards of ANSI (Z88.2), OSHA (29 CFR 1910.134, 1926.103, 1910.94 and 1926.57), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic. Maintain, clean and fit test respirators in accordance with OSHA regulations. Maintain and test ventilation and dust collection equipment. Launder clothing that has become dusty. Empty containers (bags, bulk containers, storage tanks, etc.) retain product 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.

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

While olivine contains no crystalline silica, additional information on abrasive blasting hazards and precautionary measures can be found at the following websites:

NIOSH Joint Campaign on Silicosis Prevention <http://www.cdc.gov/niosh/sicampn.html>

OSHA Crystalline Silica Website <http://www.osha-slc.gov/SLTC/silicacrystalline/index.html>

MSHA Silicosis Prevention Website <http://www.msha.gov/S&HINFO/SILICO/SILICO.HTM>

NIOSH Hazard Review – Health Effects of Occupational Exposure to Respirable Crystalline Silica Website  
<http://www.cdc.gov/niosh/02-129pd.html>

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Limits

#### Definitions:

MSHA means Mine Safety and Health Administration.

NIOSH means National Institute for Occupational Safety and Health.

OSHA means Occupational Safety and Health Administration.

PEL means OSHA Permissible Exposure Limit.

REL means the NIOSH Recommended Exposure Limit.

TLV means American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Value.

TWA means time-weighted average.

Olivine: PEL - 5mg/m<sup>3</sup> TWA (respirable fraction), 15 mg/ m<sup>3</sup> TWA (total dust) as Particulates not Otherwise Classified  
 TLV- None established (refer to ACGIH guidance for Particulates (insoluble or poorly soluble) Not  
 Otherwise Specified)

MSHA - 5mg/m<sup>3</sup> TWA (respirable fraction), 15 mg/ m<sup>3</sup> TWA (total dust) as Particulates not Otherwise  
 Classified

Nickel Compounds: PEL - 1mg/ m<sup>3</sup> TWA  
 (as Nickel) TLV - 0.2mg/m<sup>3</sup> TWA (inhalable fraction)  
 MSHA - 1 mg/m<sup>3</sup> TWA

Chromium Compounds: PEL - 0.5mg/ m<sup>3</sup> TWA  
 (as Chromium) TLV - 0.5mg/m<sup>3</sup> TWA  
 MSHA - 0.5mg/m<sup>3</sup> TWA

Ventilation: Use local exhaust as required to maintain exposures below applicable occupational exposure limits. Refer to OSHA 29 CFR 1910.94 and 1926.57 for requirements for abrasive blasting. 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).

Respiratory Protection: Respiratory protection is mandatory. NIOSH states that positive pressure Type CE supplied air abrasive-blast respirators (SARs) are the only respirators suitable for use in abrasive blasting operations, and a pressure demand respirator containing a tight fitting face-piece with a protection factor of 2000 is required. NIOSH recommends that continuous flow Type CE abrasive blast SARs be operated near the upper limit of the NIOSH approved operating pressure range to ensure maximum protection to the user. Use appropriate respiratory protection for respirable particulates based on consideration of hazardous materials present, airborne workplace concentrations and duration of exposure arising from intended end use. Refer to the most recent standards of ANSI (Z88.2), OSHA (29 CFR 1910.134, 1926.103, 1910.94 and 1926.57), MSHA (30 CFR Parts 56 and 57) and NIOSH Respirator Decision Logic.

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.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Light green to gray-green sand-size granules, odorless.

pH: Not applicable  
Boiling Point: Not applicable  
Melting Point: Melting Point: 2800 - 3200°F  
Solubility in Water: Insoluble  
Percent Volatile: 0%  
Autoignition Temp: Will not burn

Specific Gravity (water=1): 2.3-3.6  
Vapor Pressure: Not applicable  
Vapor Density: Not applicable  
Evaporation Rate: Not applicable  
Flash Point (Method Used): Fully oxidized, will not burn  
Flammable Limits: LEL: Not applicable  
UEL: Not applicable

## SECTION 10: STABILITY AND REACTIVITY

Stability: Stable  
Conditions to Avoid: None.

Incompatibility: None known

Hazardous Decomposition Products: None known.

Hazardous Polymerization: Will not occur.  
Conditions to Avoid: None

## SECTION 11: TOXICOLOGICAL INFORMATION

### HEALTH HAZARDS:

Inhalation: Inhalation of dust may cause irritation of the nose, throat and respiratory passages.

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: Prolonged overexposure to any nuisance dust may cause lung injury. Symptoms include cough, shortness of breath, and reduced pulmonary function. This product contains small amounts of nickel and chromium compounds. Hexavalent chromium has not been detected in this product (detection limit 0.1%). Overexposure to nickel and chromium compounds may cause respiratory and skin sensitization.

Cancer Status: Nickel compounds are classified by IARC as "carcinogenic to humans" (Group 1) and by NTP as "known to be human carcinogens". None of the other components are listed as carcinogens or suspected carcinogens by IARC, NTP or OSHA.

Medical Conditions Aggravated by Exposure: Individuals with respiratory disease, including but not limited to, asthma and bronchitis, or subject to eye irritation should be excluded from exposure.

Signs and Symptoms of Exposure: Overexposure to nuisance dusts may cause mucous membrane and respiratory irritation, cough, sore throat, nasal congestion, sneezing and shortness of breath.

Acute Toxicity Values: No acute toxicity data is available for product or components.

## SECTION 12: ECOLOGICAL INFORMATION

No ecotoxicity data is available. This product is not expected to present an environmental hazard.

**SECTION 13: DISPOSAL CONSIDERATIONS**

Waste Disposal Method: Olivine is not classified as a hazardous waste under US EPA RCRA regulations. If uncontaminated, dispose as an inert, non-metallic mineral. If contaminated, dispose in accordance with all applicable local, state/provincial and 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**U.S. DOT HAZARD CLASSIFICATION

Proper Shipping Name: Not Regulated

Technical Name: N/A

UN Number: N/A

Hazard Class/Packing Group: N/A

Labels Required: None

DOT Packaging Requirements: N/A

Exceptions: N/A

**SECTION 15: REGULATORY INFORMATION**

SARA 311/312: Hazard Categories for SARA Section 311/312 Reporting: Chronic Health

SARA 313 This Product Contains the Following Chemicals Subject to Annual Release Reporting Requirements Under the SARA Section 313 (40 CFR 372): Nickel Compounds 0.1- 0.4% Chromium Compounds 0.1 - 0.5%.

CERCLA Section 103 Reportable Quantity: None

California Proposition 65: This product contains nickel compounds which are 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.

European Inventory of Commercial Chemical Substances: All of the components of this product are listed on the EINECS Inventory or exempt from notification requirements.

European Community Labeling: No labeling required.

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

Canadian WHMIS Classification: Class D, Division 2, Subdivision A (Very Toxic Material causing other Toxic Effects)

This MSDS has been prepared according to the criteria of the Controlled Products Regulation (CPR) and the MSDS contains all of the information required by the CPR.

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 ECL 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.

## 16: OTHER INFORMATION

### EU Classes and Risk Phrases for Reference (See Sections 2 and 3)

Xn Harmful

R40 Limited evidence of a carcinogenic effect.

R43 May cause sensitization by skin contact.

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

HMIS Hazard Rating:      Health: 1\*              Fire: 0              Reactivity: 0

\*Warning - Chronic health effect possible

### References:

Registry for Toxic Effects of Chemical Substances (RTECS), 2006

Patty's Industrial Hygiene and Toxicology

NTP Eleventh Report on Carcinogens, 2005

IARC Monograph Volume 49, Nickel and Nickel Compounds, 1990

Hazardous Substances Data Bank (HSDB), 2006

Toxline, 2006

Revision Summary: Section 2 and 15 – changes percent range for nickel and chromium. Section 5 – moved flash point and explosive limits fields to Section 9. Section 15 – Added Australian Hazard Classification.

The data in this Material 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 the Unimin Corporation 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 Unimin Corporation, 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.