

HARSCO MINERALS MATERIAL SAFETY DATA SHEET

I. GENERAL INFORMATION

<i>Chemical Name & Synonyms: Harsco Minerals Final Aggregate</i>	<i>Trade Name & Synonyms: AgrowSil</i>
<i>Chemical Family: N/A</i>	<i>Formula: Processed Slag to Remove Metallics</i>
<i>Proper DOT Shipping Name: Unassigned</i>	<i>DOT Hazard Classification: N/A</i>
<i>Manufacturer: Harsco Minerals</i>	<i>Manufacturer's Phone Number: 724-353-0055 Emergency Phone Number: 724-353-0055</i>
<i>Manufacturer's Address: 359 N. Pike Road Sarver, PA 16055</i>	<i>MSDS Preparation Date: 2/6/09</i>

II. INGREDIENTS

<i>Principal-Hazardous Components</i>	<i>CAS#</i>	<i>Percent</i>	<i>ACGIH Threshold Limit Value (units)</i>	<i>OSHA PEL</i>
<i>AgrowSil (1), Non-Hazardous</i>			<i>N/A</i>	
<i>- Calcium</i>	<i>7440-70-2</i>	<i>30% (typical)</i>	<i>10 mg/m³ (CaCO₃) total, 5 mg/m³(resp)</i>	<i>15 mg/m³ (CaCO₃) total, 5 mg/m³ (resp)</i>
<i>- Magnesium</i>	<i>7439-95-4</i>	<i>7% (typical)</i>	<i>10 mg/m³ total particulate, 5 mg/m³(resp)</i>	<i>15 mg/m³ (total) 5 mg/m³(resp)</i>
<i>- Silicon</i>	<i>7440-21-3</i>	<i>12% (typical)</i>	<i>10 mg/m³ total particulate, 5 mg/m³(resp)</i>	<i>15 mg/m³ (total) 5 mg/m³(resp)</i>
<i>- Manganese</i>	<i>7439-96-5</i>	<i>1% (typical)</i>	<i>0.2 mg/m³ dust</i>	<i>5 mg/m³</i>
<i>- Aluminum</i>	<i>7429-90-5</i>	<i>3% (typical)</i>	<i>10 mg/m³ dust, 5 mg/m³(resp)</i>	<i>15 mg/m³ (total) 5 mg/m³(resp)</i>
<i>- Iron</i>	<i>7439-89-6</i>	<i>4% (typical)</i>	<i>5 mg/m³ dust</i>	<i>10 mg/m³</i>
<i>- Chromium</i>	<i>7440-47-3</i>	<i>0.2% (typical)</i>	<i>0.5 mg/m³ metal</i>	<i>1 mg/m³</i>
<i>- Sulfur</i>	<i>7704-34-9</i>	<i>0.2% (typical)</i>	<i>5.2 mg/m³ (SO₂)</i>	<i>13 mg/m³</i>
<i>- Titanium</i>	<i>7440-32-6</i>	<i>0.5% (typical)</i>	<i>10 mg/m³ (TO₂)</i>	<i>15 mg/m³</i>
<i>- Nickel</i>	<i>7440-02-0</i>	<i>0.04% (typical)</i>	<i>0.05 mg/m³ metal</i>	<i>1 mg/m³</i>

(1) Stainless steel removed through gravimetric and magnetic processes.

III. PHYSICAL DATA

<i>Boiling Point (?F): Very High</i>	<i>Specific Gravity (H₂O = 1): 2.80</i>
<i>Vapor Pressure (mm Hg): N/A</i>	<i>Percent Volatile by Volume (%): Negligible</i>
<i>Vapor Density (Air = 1): Negligible</i>	<i>Evaporation Rate (Butyl Acetate = 1): N/A</i>
<i>Solubility in Water: High solubility in water; can raise pH in water to values of 11 to 12 due to alkaline nature of AgrowSil; solubility of metals is negligible.</i>	<i>pH: N/A (Solid), Mixed with 7.0 pH water = 12.0 pH (maximum) solution.</i>
<i>Appearance & Odor: Gray powder; no significant odor.</i>	

IV. FIRE AND EXPLOSION HAZARD DATA

<i>Flash Point/Test Method: Non-Flammable</i>	<i>Auto Ignition Temperature: Non-Flammable</i>
<i>Flammable Limits: N/A</i>	<i>LEL: N/A UEL: N/A</i>
<i>Extinguishing Media: Non-Flammable</i>	
<i>Special Fire Fighting Procedures: Wear SCBA</i>	
<i>Unusual Fire & Explosion Hazards: N/A</i>	

V. HEALTH HAZARD DATA

<i>OSHA Permissible Exposure Limit: Not Established for AgrowSil (See Section II).</i>	<i>ACGIH Threshold Limit Value: Not Established for AgrowSil (See Section II).</i>
<i>Carcinogen - NTP Program: Not Established</i>	<i>Carcinogen - IARC Program: Quartz</i>
<p><i>Symptoms of Exposure: Calcium oxide and calcium hydroxide, which are major constituents of slag dust, are caustic substances. Slag dust may, upon short-term intensive exposure, result in significant irritation to the eyes and respiratory tract. May cause skin irritation if moisture is present.</i></p> <p><i>The health effects from overexposure to silica are dependent upon the specific structure of the silicon dioxide compound present. Free crystalline silica compounds are the most hazardous. Chronic exposure can result in silicosis. It is generally accepted that exposure to silicon dioxide compounds containing <1% free crystalline silica does not result in the development of silicosis, but rather produces the same effects as other nuisance particulates. Slags produced by the steel-making industry typically contain less than 1% free crystalline silica.</i></p> <p><i>Chronic overexposure to iron oxide may result in development of benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis.</i></p> <p><i>Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms, including sleepiness, weakness, emotional disturbances, mask-like facial expression, and paralysis.</i></p> <p><i>The health hazards associated with exposure to chromium are dependent on its oxidation state. The trivalent form (chromium as it exists in this product) is of low toxicity. International Agency for Research on Cancer (IARC) has trivalent chromium listed as not classifiable as to human carcinogenic potential.</i></p> <p><i>Nickel fumes are respiratory irritants and may cause pneumonitis. Skin contact may cause an allergic rash. Airborne nickel dusts are regarded as carcinogens via inhalation.</i></p> <p><i>Aluminum oxide, magnesium oxide and titanium oxide dusts are generally considered nuisance dusts. Prolonged exposure may irritate the respiratory tract.</i></p>	
<i>Medical Conditions Aggravated by Exposure: Not Established</i>	
<i>Primary Route(s) of Entry: Inhalation, Ingestion</i>	
<p><i>Emergency First Aid: Dust: Remove affected person to fresh air. If affected person has stopped breathing, call for medical attention and administer CPR. Eye and Skin Contact: Wash skin surfaces that have been in contact with AgrowSil, apply a skin lotion especially if redness persists. If contact with eyes occurs, flush with water for at least 15 minutes, occasionally lifting upper and lower lids; consult physician. Ingestion: Give large quantities of water and consult physician. Do not induce vomiting.</i></p>	
<i>HMIS Codes: Health -1, Flam-0, React-0</i>	

VI. REACTIVITY DATA

<i>Stability</i>		<i>Unstable</i>	<i>Conditions to Avoid: N/A</i>
	<i>XX</i>	<i>Stable</i>	
<i>Incompatibility</i>		<i>N/A</i>	<i>Materials to Avoid: Strong acids</i>
<i>Hazardous Polymerization</i>		<i>May Occur</i>	<i>Conditions to Avoid: N/A</i>
	<i>XX</i>	<i>Will Not Occur</i>	

VII. ENVIRONMENTAL PROTECTION PROCEDURES

Spill Response: Use normal cleanup procedures: hose down, sweep, shovel, or vacuum.

Waste Disposal Method: If material cannot be used as co-product in accordance with regulatory approvals, dispose at approved solid waste disposal site in accordance with local, state, and federal regulations.

VIII. SPECIAL PROTECTION INFORMATION

<i>Eye Protection: Safety Glass</i>	<i>Skin Protection: Gloves (as necessary)</i>
<i>Respiratory Protection (Specific Type): None, if adequate ventilation is provided to maintain air quality below applicable OSHA and ACGIH standards. If adequate ventilation is not provided, use a half-face or full-face respirator with high efficiency particulate air (HEPA) cartridge filters to prevent inhalation of dust. Not applicable if AgrowSil is wet.</i>	<i>Ventilation: Mechanically ventilate enclosed storage bins and work areas.</i>
<i>Other Protection: Wear long sleeve shirt and pants. Launder dirty clothes regularly.</i>	

IX. SPECIAL PRECAUTIONS

<i>Hygienic Practices in Handling & Storage: Keep material moist or covered to control dusting.</i>
<i>Precautions to be Taken in Handling and Storage: Do not contaminate food stuffs. Do not mix with any other chemicals except under direct supervision of a chemist, or technically trained supervisor. During storage and transport of the product do not exceed container integrity. If sensitivity or aggravation of allergy, or unanticipated personal health problems become evident, stop use and see your supervisor.</i>
<i>Precautions for Repair and Maintenance of Contaminated Equipment: Non-slip safety shoes are recommended.</i>
<i>Other Precautions: Wash or shower daily to maintain good cleanliness after exposure to AgrowSil. Work with material in a manner that will not create excessive dust.</i>

X. DISCLAIMER

While the information and recommendations set forth in this MSDS are believed to be accurate as of the date of MSDS preparation, Harsco Minerals makes no warranty regarding its accuracy. Recipients are advised to confirm that the information is current and applicable to meet their requirements. Since the conditions and methods of use of this product are beyond our control, we disclaim any and all liability arising out of the use of this product or the information provided herewith.