



REVISED

MATERIAL SAFETY DATA SHEET

SECTION 1 - IDENTIFICATION

MICROSTAR®

Product Name(s): HS Investment™, HS-PC™, HS™ Partial Plus.

Product Use: Universal investment for casting and pressing

Manufacturer/Supplier: Jensen Industries Inc.
50 Stillman Road
North Haven, CT 06473
USA

Emergency Telephone: 1-800-243-2000

Revised: October 3rd, 2012

SECTION 2 – COMPOSITION / INFORMATION ON HAZARDOUS INGREDIENTS

COMPONENT	%RANGE	CAS#	*PEL/OSHA (mg/m ³)	**TLV/ACGIH (mg/m ³)
SiO ₂ (Quartz)	50-100%	14808-60-7	^a Mineral Dusts	0.025R
SiO ₂ (Cristobalite)	10-25%	14464-46-1	^a Mineral Dusts	0.025R
(NH ₄) ₃ PO ₄ (Ammonium Phosphate)	0-40%	7722-76-1	N/A	N/A
MgO (Magnesium Oxide)	0-40%	1309-48-4	15	10

*Taken from the Permissible Exposure Limits for Air Contaminants established by OSHA CFR 29 1910.1000 Subpart Z – Toxic and Hazardous Substances

**Taken from the ACGIH Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices

R = *Respirable Particulate Mass* TLVs® (RPM-TLVs) for those materials that are hazardous when deposited in the gas-exchange region.

^aMineral Dusts: The OSHA PELs for "mineral dusts" listed below are from Table Z-3 of 29 CFR 1910.1000. The OSHA PEL (8-hour TWA) for crystalline silica (as respirable quartz) is either 250 mppcf divided by the value "%SiO₂ + 5" or 10 mg/m³ divided by the value "%SiO₂ + 2." The OSHA PEL (8-hour TWA) for crystalline silica (as total quartz) is 30 mg/m³ divided by the value "%SiO₂ + 2." The OSHA PELs (8-hour TWAs) for cristobalite and tridymite are ½ the values calculated above using the count or mass formula for quartz.

SECTION 3 - HAZARD IDENTIFICATION

Silica, Crystalline: (quartz/cristobalite): Repeated inhalation of silica crystalline dust/particulates can cause serious chronic lung damage, known as *silicosis*. Silicosis involves inflammation and scarring of the lung tissue; pulmonary fibrosis. Lung cancer is contributed to chronic exposure to silica (crystalline) dust/fumes.

Silicon: Inhalation of silicon dust/fumes may cause irritation to the upper respiratory system; symptoms include: cough/irritation. Contact with skin and/or eyes may cause dermatitis/irritation.

Magnesium Oxide: Inhalation of magnesium oxide dust/fumes can cause irritation to the eyes, nasal passage, and respiratory system. A condition known as *metal fume fever* may result from acute exposure. Symptoms include: cough, chest pain, flu-like fever; as listed by NIOSH. This is a self limiting condition which will resolve within 24 to 48 hours.

Hazardous Decomposition: This material, when mixed and heated in a furnace, in normal use, will emit ammonia gas. Proper ventilation of furnace is required

SECTION 4 - FIRST AID MEASURES

Inhalation: Breathing difficulty caused by inhalation of dust or fume requires immediate removal to fresh air. There are no known cases in which a person stopped breathing as a result of exposure. If breathing has stopped, perform artificial respiration and obtain medical assistance.

Ingestion: Swallowing this material can be treated by having the affected person drink large quantities of water. If this method proves ineffective, immediately obtain medical assistance.

Skin: Skin cuts and abrasions should be treated by standard first aid. Skin contamination with dust or powder can be removed by washing with soap and water. Obtain medical help if irritation develops and persists.

Eyes: Dust or powder should be flushed from the eyes with a lot of clean water. Obtain medical help if irritation persists

SECTION 5 - FIRE FIGHTING MEASURES

Flash Point: N/A

Explosive Limits: N/A

Extinguishing Media: Use fire fighting measures that suit the environment: Foam, CO₂, extinguishing powder, or water jet.

Fire & Explosion Hazards: Fire can cause release of nitrogen oxides (NO_x) and ammonia (NH₃). Metal oxide fumes may result from intense heating

Special Fire Fighting Procedures: this material becomes airborne as a respirable particulate during a fire situation, pressure-demand self-contained breathing apparatus must be worn by firefighters or any other persons potentially exposed to the airborne dust.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Steps To Be Taken If Material Is Released Or Spilled: Establish a restricted entry zone based on the severity of the spill. Persons entering the restricted zone must wear adequate respiratory protection and protective clothing appropriate for the severity of the spill. Cleanup should be conducted with a vacuum system utilizing a high efficiency particulate air (HEPA) filtration system followed by wet cleaning methods. Special precautions must be taken when changing filters on HEPA vacuum cleaners used to clean up potentially toxic materials. Caution should be taken to minimize airborne generation of powder or dust and avoid contamination of air and water. Depending upon the quantity of material released, fine powder or dust spills to the environment may require reporting to the National Response Center at (800) 424-8802 as well as the State Emergency Response Commission and Local Emergency Planning Committee.

SECTION 7 - HANDLING AND STORAGE

Handling: Wear an approved respirator when handling this product (see section 8).

Storage: Store material in a sealed container, in a cool dry area.

SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

Ventilation and Engineering Controls: Whenever possible, the use of local exhaust ventilation or other engineering controls is the preferred method of controlling exposure to airborne dust. Where utilized, pickups on flexible ventilation lines should be positioned as close to the source of airborne contamination as possible. Disruption of the airflow in the area of a local exhaust inlet, such as by a cooling fan, should be avoided. Ventilation equipment should be checked regularly to ensure it is functioning properly. Ventilation training is recommended for all users. Ventilation systems should be designed and installed by qualified professionals.

Respiratory Protection: When potential exposures are above the occupational limits shown in Section 2, approved respirators must be used as specified by an Industrial Hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of any style respirator must be clean- on those areas of the face where the respirator seal contacts the face. Exposure to unknown concentrations of dust requires the wearing of a pressure-demand airline respirator or pressure-demand self-contained breathing apparatus. Pressure-demand airline respirators are recommended when performing jobs with high potential exposures such as changing filters in a bag house air cleaning device.

Housekeeping: Vacuum and wet cleaning methods are recommended for dust removal. Be certain to de-energize electrical systems, as necessary, before beginning wet cleaning. Vacuum cleaners with high efficiency particulate air (HEPA) filters are the recommended type. The use of compressed air or brooms to remove dusts must be avoided as such an activity can result in unnecessary short-term elevated exposures to airborne dusts.

Maintenance: During repair or maintenance activities the potential exists for exposures to constituents in excess of the occupational standards. Under these circumstances, protecting workers can require the use of specific work practices or procedures involving the combined use of ventilation, wet and vacuum cleaning methods, respiratory protection, decontamination, special protective clothing i.e. lab coats, and when necessary, restricted work zones.

Other Protective Equipment: No other special protective equipment or clothing is required when handling this material

Protective Gloves: Not required

Eye Protection: Wear safety glasses (goggles)

Recommended Monitoring Procedures:

Environmental Surveillance: Exposure to airborne materials should be determined by having air samples taken in the employee breathing zone, work area, and department. The frequency and type of air sampling should be as specified by an Industrial Hygienist or other qualified professional. Air sample results should be made available to employees.

Medical Surveillance: Persons exposed to airborne concentrations of this material should be included in a periodic medical surveillance program. The program should include examination of the skin and respiratory system. Non-specific findings of skin rash, skin granulomata, or respiratory signs or symptoms may indicate a reaction to this material.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Color: Colorless	Melting Range (°C): >1400	Density (Kg/m³): 1100-1200	Boiling Point: N/A
Evaporation Rate: N/A	Freezing Point: N/A	Odor: none	pH-value (10 g/l) at 20°: ca. 6 suspension
Physical State: solid	Radioactivity: N/A	Solubility: insoluble	Sublimes At: N/A
Vapor Density (Air = 1): N/A	Vapor Pressure (mmHg): N/A	% Volatiles by Volume: none	

SECTION 10 - STABILITY AND REACTIVITY

General Reactivity: This material is stable. **Noncompatibility With Other Substances:** Strong acids and oxidizing agents

Hazardous Combustion Products: None under normal conditions of use.

Hazardous Polymerization: Will not occur.

SECTION 11- TOXICOLOGICAL INFORMATION

PRIMARY ROUTES OF EXPOSURE:

Inhalation: Airborne exposure in excess of the constituent's listed values can occur upon opening of the package, mixing stone, and/or any activities that cause the material to become airborne i.e. abrasive cutting, grinding, crushing, or otherwise abrading the surface of this material in its' solid form, which generates finely divided particles. The potential for exposures may also occur during repair or maintenance activities on contaminated equipment such as: furnace rebuilding, maintenance or repair of air cleaning equipment, structural renovation, etc.

Ingestion: There are no known cases of illness resulting from ingestion of this material. Ingestion can occur from hand, clothing, food, and drink contact with investment dust, fume or powder during hand to mouth activities such as eating, drinking, smoking, nail biting, etc. These products are not intended for internal consumption. As a standard hygiene practice, hands should be washed before eating or smoking.

Skin: Skin contact with this material may cause, in some sensitive individuals, dermatitis/irritation, due to the response from silica. Skin abrasion may cause irritation. See Section 4 for additional information.

Eyes: Injury can result from particulate irritation or mechanical injury to the eyes by dust or particulate. Exposure may result from direct contact with airborne particulate (dust or powder) or contact to the eye of contaminated hands or clothing.

EFFECTS OF OVEREXPOSURE: The potential health effects listed below are confined to constituents which are in sufficient concentrations within the product to be significant.

Acute (immediate or near-term health effects): In general, the airborne dust/fumes of silica listed in Section 3 can cause irritation to the skin, eyes, nose, throat, lungs, and mucous membranes.

Chronic (long-term health effects): In general, the airborne dust/fumes of silica crystalline listed in Section 3 can cause respiratory disease with symptoms which include cough, chest pain, shortness of breath, weight loss, weakness, and fatigue. Exposure to airborne dust and fumes containing silica may cause long-term health effects including loss of lung function, fibrosis Cough,

dyspnea (breathing difficulty), wheezing; decreased pulmonary function, progressive respiratory symptoms (silicosis); irritation eyes; [potential occupational carcinogen].

Carcinogenic References:

NTP: *Silica, crystalline* is listed as a known to be human carcinogen.

IARC: *Silica, crystalline* is listed as a Group 1 carcinogen: Carcinogenic to humans

NIOSH: *Silica, crystalline* is listed as a potential carcinogen.

ACGIH: *Silica, crystalline* is listed as an A2, suspected human carcinogen
Magnesium Oxide is listed as an A4, not classifiable as a human carcinogen.

Medical Conditions Aggravated By Exposure: Persons with impaired pulmonary function, airway diseases, or conditions such as asthma, emphysema, chronic bronchitis, etc. may incur further impairment if dust or fume is inhaled.

SECTION 12- ECOLOGICAL INFORMATION

This material is insoluble in water. Inorganic salts are not biodegradable. There is no information available on the ecological effects of this material.

Water hazard class according to EC guidelines: Water hazard class 1(Self-assessment): generally not hazardous for water

SECTION 13- DISPOSAL CONSIDERATIONS

Waste Management: Material and/or /packaging, containing powder, should be sealed inside a plastic bag when disposed of. Avoid washing down drains as material can plug drain. Comply with Federal, State, and local regulations.

SECTION 14 - TRANSPORT INFORMATION

There are no U.S. Department of Transportation hazardous material regulations that apply to the packaging and labeling of this product as shipped.

SECTION 15- REGULATORY INFORMATION

OSHA Hazard Communication Standard, 29 CFR 1910.1200: Components of these products are considered hazardous ingredients.

Wastewater: Wastewater regulations can vary considerably. Contact your local and state governments to determine their requirements.

Other Regulations, Limitations and Prohibitive Regulations:

German UVV: Protection against mineral dust which is harmful to health.

California Proposition 65: *Crystalline, silica* is known to the state of California to cause cancer.

SECTION 16 - OTHER INFORMATION

Disclaimer:

The information herein is supplied in the belief it is from accurate and reliable sources. The information is supplied to assist the dental professional and no warranty is made with respect to the accuracy of information on the suitability of recommendation. This MSDS has been revised following the guidelines outlined in CFR 1910.1200 "Material Safety Data Sheets."

IMPORTANT: If you have any questions or require additional information regarding the materials described in this Material Safety Data Sheet please contact Jensen Industries at 1-800-243-2000.