MATERIAL SAFETY DATA SHEET

SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION

Product Name: Magnesium Powder
Synonyms: Magnesium Dust, Magnesium Fines
Appearance: Silver Gray Metallic Powder
Odor: None

Manufacturer:
Hart Metals Inc.
dba Magnesium Elektron Powders PA
HART METALS INC.,
1415 East Broad St.
Tamaqua, PA 18252-9674
Tel: (570) 668-0001
Fax: (570) 668-6526
www.magnesium-elektron.com

24 HR. Emergency Telephone: CHEMTREC 1-800-424-9300

SECTION 2 – COMPOSITION / INGREDIENTS

Chemical Name	CAS #	Approx. Wt.%	OSHA PEL	ACGIH TLV
Magnesium (Free Metallic)	7439-95-4	99.8% min.	15 mg/m^3	N/A

SECTION 3 – HAZARDS IDENTIFICATION

Low toxicity and not considered to be hazardous to health.

Magnesium powder is highly flammable, igniting readily. It is difficult to extinguish once ignited.

Magnesium powder reacts with water to create hydrogen gas and heat. Magnesium powder must be kept dry.

Magnesium powder can be explosive if suspended in air and ignited.

SECTION 4 –FIRST AID MEASURES

Inhalation: Remove to fresh air if inhalation occurs.
Eye Contact: Flush eyes with water thoroughly. Consult a physician.
Skin Contact: Wash with soap and water thoroughly to remove particles.
Ingestion: If swallowed, INDUCE VOMITTING. Give large amounts of water. Seek medical attention.
Note To Physician: No specific treatment or antidote. Supportive care recommended. Treatment should be based on reactions of the patient.

SECTION 5 – FIRE AND EXPLOSION HAZARD INFORMATION

Flash Point: Not Applicable
Autoignition Temperature: Magnesium powder in air will sometimes autoignite at temperatures significantly less than its melting point of 1202^{0}F. The finer the powder, the more readily it will ignite. The presence of moisture will greatly increase the risk of autoignition.
Flammability Limits in Air: Not Applicable
Flammability Characteristics: Magnesium powder will readily ignite in the presence of any spark or flame. Magnesium powder will also autoignite when heated in air even though kept below the melting point. Once ignited, magnesium powder burns vigorously with an intense white flame. Burning magnesium powder can only be extinguished by smothering and allowing it to cool. Water should **NOT** be used on a magnesium powder fire. Water acts as an accelerant, resulting in intense flare ups, "popping" (endangering personnel) and spreading the fire. Water and magnesium powder will produce hydrogen gas, which may also result in an explosion. Since magnesium powder is extremely light (weight), it can easily be suspended in air and care must be exercised to avoid spreading burning magnesium powder.

Extinguishing Media: Smother burning magnesium powder by gently covering with **DRY** agents only such as melting flux, dry sand, dry talc, MET-L-X powder, Purple-K powder, G1, or other suitable extinguishing agents. **DO NOT USE WATER!** DO not use foam, halogenated extinguishers or carbon dioxide.

NOTE: The use of wet extinguishing agents will accelerate the magnesium powder fire, release hydrogen and may cause an explosion.

Special Fire Fighting Procedures: Wear Fire Fighting Glasses when fighting fires – Burning magnesium produces a very bright white flame! Apply extinguishing agents carefully to avoid disturbing or spreading the burning magnesium powder. Monitor carefully for flare-ups and smother these as necessary. Use self contained breathing apparatus (SCBA) or approach fire from upwind due to dense white smoke (magnesium oxide) produced.

NOTE: If small amounts of magnesium powder are burning, these may best be handled by allowing them to burn themselves out, rather than by fighting the fire.

Unusual Fire and Explosion Hazard: Magnesium powder burns vigorously once it is ignited. Magnesium powder can explode if suspended in air. Water will act as an accelerant when added to burning magnesium powder. The addition of water will intensify the fire, possibly causing "popping" or a flare-up – spreading the fire and endangering personnel. Hydrogen gas will be produced with the application of water, possibly causing an explosion.

Fire Prevention: Keep magnesium away from open flames, sparks, and sources of heat. **NO SMOKING** in areas where magnesium is stored or used. Keep magnesium powder dry! Clean buildings, rooms and areas where magnesium powder is used or handled on a regular basis. Prevent accumulations of magnesium dust from gathering on ledges, rafters, walls, or floors. Avoid suspension of magnesium powder or dust in the air during use or cleanup. Such suspensions may create an explosive concentration of magnesium.

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Magnesium powder which is spilled should be promptly swept up using natural fiber brushes or brooms and a non-sparking dust pan. The powder sweepings must be kept separate from other trash and refuse. If the powder is dry, place it in a covered steel drum. If possible, reuse the powder. Powder should be placed in a vented steel container and stored in a safe, secure outside area. Wet magnesium powder will oxidize, generating heat and hydrogen gas. Such wet powder may autoignite. Use extreme care.

SECTION 7 – SPECIAL HANDLING & STORAGE PRECAUTIONS

Melting: Melting of magnesium powder is extremely hazardous and should not be attempted.
Other Operations: Operations which may result in the suspension of magnesium dust or powder should be avoided. Refer to NFPA 484 standard for more information.
Storage: Storage of magnesium powder should be in a dry place, separated from other combustible materials. The powder must be kept dry and away from sources of heat or ignition. Magnesium powder must be stored in tightly sealed steel drums. Exposure to air and humidity should be avoided. In dedicated areas where significant quantities of magnesium powder are stored, there should be no automatic sprinklers. Refer to NFPA 484 standard. NO SMOKING in areas where magnesium is present.

Note: Automatic sprinklers are not recommended in areas where magnesium powder is handled or used.

SECTION 8 – EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Guideline: No exposure guidelines established for magnesium metal. Treat magnesium powder or fines as a nuisance dust with a low health hazard.
Ventilation: Extreme care in handling or a ventilation system (explosion proof) is necessary to prevent airborne dust concentrations. Suspensions of magnesium powder or dust must be avoided! Refer to NFPA (National Fire Prevention Association) 484 standard if handling significant quantities of magnesium powder.
Respiratory Protection: Use an approved dust mask or respirator.

Skin Protection: Flame resistant clothing without cuffs or pockets is recommended. The use of gloves is also recommended. Avoid wearing fabrics which cause static sparks (ie; wool, some synthetics). See NFPA 484 standard for additional recommendations based on use.
Eye Protection: Safety glasses or goggles are recommended.
Housekeeping: Accumulations of magnesium powder or dust must be prevented. Thorough cleanup, including rafters and ledges must be done frequently if dust is present. Magnesium powder spills should be swept up promptly. Work areas must be kept clean at all times!

Note: No Smoking, Open Flames, Sparks or other sources of ignition in areas of magnesium powder handling or use. The use of non-sparking tools and equipment is recommended. Refer to NFPA 484 standard.

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Silver Grey Solid Metallic Powder
Odor: None
PH: Not Applicable
Melting Point: 1202 (^{0}F)
Boiling Point: 2025 (^{0}F)
Flash Point: Not Applicable
Flammability: Flammable Metal
Auto Flammability: Magnesium powder or dust may autoignite if damp or wet.
Explosive Properties: Magnesium powder or dust may explode if suspended in air.
Vapor Pressure: Not Applicable
Specific Gravity: 1.74
Solubility in Water: None
Partition Coefficient: Not Applicable
Viscosity: Not Applicable

SECTION 10 – STABILITY AND REACTIVITY

Stability: Stable under normal conditions unless exposed to moisture. Keep away from open flame, sparks, moderate heat and sources of ignition.
Conditions and Materials to Avoid:

- **Acid:** Magnesium reacts with acid to form hydrogen gas and heat. Hydrogen gas is highly flammable and explosive.
- **Water:** Magnesium powder or dust will react with water to produce hydrogen gas and heat. The application of water to molten or burning magnesium will act as an accelerant, generate hydrogen gas and may cause an explosion.

Hazardous Decomposition Products: None under normal use and storage. Reacts with acid or water to produce hydrogen gas, which is flammable and explosive.
Hazardous Polymerization: Will not occur.

SECTION 11 – HEALTH HAZARD / TOXICITY INFORMATION

Inhalation: Magnesium powder should be treated as a nuisance dust. Magnesium dust may irritate mucous membranes or upper respiratory tract.
Eyes: Mechanical injury or particle may embed in eye. Viewing of burning magnesium powder without fire glasses may result in "welder's flash", due to intense white flame.
Skin Contact: Embedding of particle in skin.
Skin Absorption: Unlikely due to physical form and properties.
Ingestion: Ingestion is unlikely; however, ingestion of large amounts of magnesium powder could cause injury.
Exposure Guidelines: No exposure guidelines for magnesium metal have been established. Magnesium has not been tested, but is not suspected of being carcinogenic, mutagenic, or teratogenic.
Magnesium oxide fume has the following established:

ACGIH TLV = 10 mgs/m^3
OSHA PEL = 15 mgs/m^3

Exposure to magnesium oxide fume subsequent to burning, welding or molten metal work can result in metal fume fever. Metal fume fever's temporary symptoms include fever, chills, nausea, vomiting and muscle pain.

These symptoms usually occur 4-12 hours after exposure and last up to 48 hours. Magnesium oxide fume is a by-product of burning magnesium.

SECTION 12 – ECOLOGICAL INFORMATION

Magnesium powder is not suspected of being highly harmful to the environment.

As magnesium oxide (MGO) an aquatic toxicity rating of TLM^{96} 1000ppm has been established. "Water Quality Characteristics of Hazardous Materials", Hann & Jensen, Enviro. End. Div., Texas A&M, Vol. 3 (1974).

SECTION 13 – DISPOSAL CONSIDERATIONS

Waste magnesium should be disposed of under relevant federal, state, and local regulations.

The main considerations in the disposal of magnesium powder are contact with water or moisture, which will release hydrogen gas. Hydrogen gas is both highly flammable and explosive. Wet magnesium powder may autoignite due to heat generation as well.

Magnesium is a recyclable material and reuse or recycling are preferable to other methods of disposal. Keeping the magnesium powder dry and free of other contaminants (chemicals) is critical to its recyclability.

SECTION 14 – TRANSPORTATION INFORMATION

Proper Shipping Name: Magnesium Powder
Hazard Class: 4.3 (4.2) Dangerous When Wet, Spontaneously Combustible
UN Number: UN1418
Packing Group: II

SECTION 15 – REGULATORY INFORMATION

No ingredient of this product is subject to the reporting requirements of Section 313 of Title 3 of the Superfund Amendment and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

SECTION 16 – OTHER INFORMATION

None

NOTE

Although the information in this MSDS was obtained from sources which we believe to be reliable, it cannot be guaranteed. In addition, this information may be used in a manner beyond our knowledge or control. The information is, therefore, provided without representation or warranty express or implied.

The information included in the Safety Data Sheet was written based on the best updated knowhow and experience.