Magnesium Alloys

Safety Data Sheet

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SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture

Product Name: Magnesium Alloys

Synonyms: Mg

1.2. Intended Use of the Product

Use of the Substance/Mixture: No use is specified.

1.3. Name, Address, and Telephone of the Responsible Party

Distributor

ThyssenKrupp Materials NA, Inc.

22355 W. Eleven Mile Road

Southfield, Michigan 48034

TEL: 248-233-5681

1.4. Emergency Telephone Number

Emergency Number : 248-233-5681

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US Classification

Classification as delivered:

Not classified

Classification Intended Use (Physical alteration resulting in dust, fines, and chips):

Flammable solids Category 1	H228
Self-heating substances and mixtures Category 1	H251
Substances and mixtures which in contact with water emit flammable gases Category 2	H261
Specific target organ toxicity (repeated exposure) Category 1	H372
Hazardous to the aquatic environment – Acute Hazard Category 2	H401
Hazardous to the aquatic environment – Chronic Hazard Category 2	H411

Combustible Dust

Full text of hazard classes and H-statements: see section 16

Classification Intended Use (Extreme heat resulting in fumes):

Specific target organ toxicity (repeated exposure) Category 1	H372

Full text of hazard classes and H-statements: see section 16

2.2. Label Elements

GHS-US Labeling

Classification as delivered:

Not classified

Classification Intended Use (Physical alteration resulting in dust, fines, and chips):

Hazard Pictograms (GHS-US) :

GHS02 GHS08 GHS09

Signal Word (GHS-US) : Danger

Hazard Statements (GHS-US) : May form combustible dust concentrations in air.
H228 - Flammable solid.
H251 - Self-heating; may catch fire.
H261 - In contact with water releases flammable gas.
H372 - Causes damage to organs (lung/respiratory system, central nervous system) through prolonged or repeated exposure.
H401 - Toxic to aquatic life.
H411 - Toxic to aquatic life with long lasting effects.

Precautionary Statements (GHS-US)	:	P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P223 - Do not allow contact with water. P231+P232 - Handle under inert gas. Protect from moisture. P235+P410 - Keep cool. Protect from sunlight. P240 - Ground/Bond container and receiving equipment. P241 - Use explosion-proof electrical, ventilating, and lighting equipment. P260 - Do not breathe dust. P264 - Wash hands, forearms, and other exposed areas thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P273 - Avoid release to the environment. P280 - Wear protective gloves, protective clothing, and eye protection. P314 - Get medical advice/attention if you feel unwell. P335+P334 - Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages. P370+P378 - In case of fire: Use appropriate media (see section 5) to extinguish. P391 - Collect spillage. P402+P404 - Store in a dry place. Store in a closed container. P407 - Maintain air gap between stacks/pallets. P413 - Store bulk masses greater than …kg/…lbs at temperatures not exceeding …°C/…°F. P420 - Store away from other materials. P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.
Supplemental Information	:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Proper grounding procedures to avoid static electricity should be followed. Prevent dust accumulation (to minimize explosion hazard). Avoid generating dust.

Classification Intended Use (Extreme heat resulting in fumes):

Hazard Pictograms (GHS-US)	:	 GHS08
Signal Word (GHS-US)	:	Danger
Hazard Statements (GHS-US)	:	H372 - Causes damage to organs (lung/respiratory system, central nervous system) through prolonged or repeated exposure.
Precautionary Statements (GHS-US)	:	P260 - Do not breathe fumes. P264 - Wash hands, forearms, and other exposed areas thoroughly after handling. P270 - Do not eat, drink or smoke when using this product. P314 - Get medical advice/attention if you feel unwell. P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

This product is physiologically inert in its massive form. However, user-generated dust and/or fumes may pose a physiological hazard if inhaled or ingested. Avoid inhalation of metal dusts and fumes. May cause an influenza-like illness. Avoid skin and eye contact with dusts to prevent mechanical irritation. User-generated dust is easily ignited and difficult to extinguish.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Synonyms	Product Identifier	%	GHS US classification
Magnesium	Magnesium powder / Magnesium powder (pyrophoric) / MAGNESIUM POWDER	(CAS-No.) 7439-95-4	80 – 99.7	Flam. Sol. 1, H228 Self-heat. 1, H251 Water-react. 2, H261 Combustible Dust
Aluminum	Aluminium / Aluminium metal / Aluminium, metal / Aluminum metal / Aluminum, elemental / Aluminum, metal / C.I. 77000 / CI 77000 / Aluminium powder (stabilised) / Aluminium powder (stabilized) / Aluminium powder / Pigment Metal 1 / Aluminum powder / Aluminium metal, powder / aluminum	(CAS-No.) 7429-90-5	0.01 – 9	Flam. Sol. 1, H228 Water-react. 2, H261 Combustible Dust
Zinc oxide (ZnO)	Zinc oxide / C.I. 77947 / C.I. Pigment White 4 / Zinc White / CI 77947 / Pigment White 4	(CAS-No.) 1314-13-2	1 – 3	Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Manganese	Manganese, elemental / Manganese metal / manganese	(CAS-No.) 7439-96-5	0.01 – 1	Flam. Sol. 2, H228 STOT RE 1, H372 Aquatic Acute 2, H401 Aquatic Chronic 2, H411 Combustible Dust

Full text of H-phrases: see section 16

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible). Removal of solidified material from skin, eyes, or mouth requires medical assistance. The health effects listed below are not likely to occur unless dust or fumes are generated by processing.

First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: *Normal handling:* Remove contaminated clothing. Drench affected area with water for at least 5 minutes. Obtain medical attention if irritation develops or persists. *In molten form:* Cool skin rapidly with cold water after contact with molten product. Removal of solidified molten material from skin requires medical assistance.

First-aid Measures After Eye Contact: *Contact with solid product or product dusts:* Immediately rinse with water for a prolonged period (at least 15 minutes) while holding the eyelids wide open. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists. *Contact with molten material:* Removal of solidified molten material from the eyes requires medical assistance.

First-aid Measures After Ingestion: Rinse mouth. Immediately call a POISON CENTER or doctor/physician. Do NOT induce vomiting.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

Symptoms/Injuries: Causes damage to organs (lung/respiratory system, central nervous system) through prolonged or repeated exposure. Welding, cutting, or processing this material may release dust or fumes that are hazardous. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Inhalation: During processing, the most significant route of exposure is by the inhalation (breathing) of dust or fumes. If fumes or dust are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza. Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: Direct contact may cause irritation by mechanical abrasion. Contact with hot, molten metal will cause thermal burns.

Symptoms/Injuries After Eye Contact: During metal processing, dusts caused from milling and physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes. Mechanical damage via flying particles and chipped slag is possible. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects. Ingestion of the molten product may cause severe thermal burns.

Chronic Symptoms None expected when handled in massive form. *If physically altered to present slivers, ribbons, dusts or fumes from molten material:* Causes damage to organs (lung/respiratory system, central nervous system) through prolonged or repeated exposure. Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. Overexposure to metal fumes may result metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude), disturbances in smell and/or taste, and possible discloration of skin, hair and mucous membranes; discoloration may become permanent.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Use Class D extinguishing agents on dusts, fines or molten metal. Use coarse water spray on chips and turnings. *As shipped:* Use extinguishing media appropriate for surrounding fire.

Unsuitable Extinguishing Media: Do not use water when molten material is involved, contact of hot product with water will result in a violent expansion as the water turns to steam causing explosion with massive force. Do not use halogenated extinguishing agents on small chips or fines.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: In massive form: Not flammable. Dust generated from processing may present a dust explosion hazard. Chips, fines, and dust can react with water forming explosive/flammable hydrogen gas. Molten material may react violently with water forming explosive or flammable reactions. Small chips, turnings, dust and fines from processing may be readily ignitable.

Explosion Hazard: Dust generated from processing may present a dust explosion hazard. Chips, fines, and dust can react with water forming explosive/flammable hydrogen gas. Molten material may react violently with water forming explosive or flammable reactions.

Reactivity: Dust and other forms of product formed from processing might react with water producing a flammable/explosive environment, especially in confined spaces. Molten material will react violently with water.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. Under fire conditions, hazardous fumes will be present.

Firefighting Instructions: Do not breathe fumes from fires or vapors from decomposition.

Protection During Firefighting: Firefighters must use full bunker gear including NIOSH-approved positive-pressure self-contained breathing apparatus to protect against potential hazardous combustion and decomposition products.

Hazardous Combustion Products: Metallic oxides.

Other Information: Do not allow run-off from fire fighting to enter drains or water courses. Risk of dust explosion.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Do not handle until all safety precautions have been read and understood. Remove ignition sources. Use only non-sparking tools. Keep away from heat, hot surfaces, sparks, open flames, and other ignition sources. No smoking. Where possible allow molten material to solidify naturally. Do not breathe fumes from molten product. Do not breathe dust. Do not get in eyes, on skin, or on clothing.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Use appropriate personal protective equipment (PPE).

Emergency Procedures: Evacuate unnecessary personnel. Stop leak if safe to do so.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Eliminate ignition sources first, then ventilate the area. Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain and collect as any solid. Avoid generation of dust during clean-up of spills. If metal is in molten form allow to cool and collect as a solid. Contain spills with appropriate barriers and prevent migration and entry into sewers or streams.

Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. *For dust spills:* Use only non-sparking tools. Use explosion proof vacuum during cleanup, with appropriate filter. Do not mix with other materials. *In molten form:* Allow product to completely solidify, then scrape product from hard surface (avoid generating dust). Place solidified product in appropriate waste container. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for Exposure Controls and Personal Protection and Section 13 for Disposal Considerations. See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Product dust is combustible. Use care during processing to minimize generation of dust. When immersed in furnace, splashing of molten metal can occur. Molten metal and water can be an explosive combination. The risk is greatest when there is sufficient molten metal to entrap or seal off the water. Water and other forms of contamination on or contained in scrap or remelt ingot are known to have caused explosions in melting operations. While the products may have minimal surface roughness and internal voids, there remains the possibility of moisture contamination or entrapment. If confined, even a few drops of water can lead to violent explosions. All tooling and containers which come in contact with molten metal must be preheated or specially coated and rust free. Molds and ladles must be preheated or oiled prior to casting. Any surfaces that may contact molten metal (e.g, concrete) should be specially coated. Drops of molten metal in water (e.g. from plasma arc cutting), while not normally an explosion hazard, can generate enough flammable hydrogen gas to present an explosion hazard. Vigorous circulation of the water and removal of the particles minimize the hazards.

During melting operations, the following minimum guidelines should be observed:

-Inspect all materials prior to furnace charging and completely remove surface contamination such as water, ice, snow, deposits of grease and oil or other surface contamination resulting from weather exposure, shipment, or storage.

-Store materials in dry, heated areas with any cracks or cavities pointed downwards.

-Preheat and dry large or heavy items such as ingot adequately before charging into a furnace containing molten metal. This is typically done by use of a drying oven or homogenizing furnace. The drying cycle should bring the internal metal temperature of the coldest item of the batch to 400 °F (204 °C) and then hold at that temperature for 6 hours.

Precautions for Safe Handling: Avoid creating or spreading dust. Do not breathe dust. Do not breathe fumes from molten product. Do not get in eyes, on skin, or on clothing. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

Hygiene Measures: Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Avoid creating or spreading dust. Use explosion-proof electrical, ventilating, lighting equipment. Proper grounding procedures to avoid static electricity should be followed. Take action to prevent static discharges. Use explosion-proof electrical, ventilating, and lighting equipment. Comply with applicable regulations.

Storage Conditions: Store in original container. Store in dry protected location to prevent any moisture contact. Keep away from heat and flame. Keep container closed when not in use. Keep/Store away from Incompatible materials.

Incompatible Materials: Corrosive substances in contact with metals may produce flammable hydrogen gas. Strong acids, strong bases, strong oxidizers. *When molten:* water. *Dust, fines, and chips:* water

7.3. Specific End Use(s)

No use is specified.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

Aluminum (7429-90-5)		
USA ACGIH	ACGIH OEL TWA	1 mg/m³ (respirable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA)	10 mg/m³ (total dust) 5 mg/m³ (respirable dust)
USA OSHA	OSHA PEL (TWA) [1]	15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Zinc oxide (ZnO) (1314-13-2)		
USA ACGIH	ACGIH OEL TWA	2 mg/m³ (respirable particulate matter)
USA ACGIH	ACGIH OEL STEL	10 mg/m³ (respirable particulate matter)
USA NIOSH	NIOSH REL (TWA)	5 mg/m³ (dust and fume)
USA NIOSH	NIOSH REL (STEL)	10 mg/m³ (fume)
USA NIOSH	NIOSH REL (Ceiling)	15 mg/m³ (dust)
USA IDLH	IDLH	500 mg/m³
USA OSHA	OSHA PEL (TWA) [1]	5 mg/m³ (fume) 15 mg/m³ (total dust) 5 mg/m³ (respirable fraction)

Manganese (7439-96-5)		
USA ACGIH	ACGIH OEL TWA	0.02 mg/m³ (respirable particulate matter) 0.1 mg/m³ (inhalable particulate matter)
USA ACGIH	ACGIH chemical category	Not Classifiable as a Human Carcinogen
USA NIOSH	NIOSH REL (TWA)	1 mg/m³ (fume)
USA NIOSH	NIOSH REL (STEL)	3 mg/m³
USA IDLH	IDLH	500 mg/m³
USA OSHA	OSHA PEL (Ceiling)	5 mg/m³ (fume)

8.2. Exposure Controls

Appropriate Engineering Controls : Ensure adequate ventilation, especially in confined areas. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use explosion-proof equipment. Use local exhaust or general dilution ventilation or other suppression methods to maintain dust levels below exposure limits. Power equipment should be equipped with proper dust collection devices. It is recommended that all dust control equipment such as local exhaust ventilation and material transport systems involved in handling of this product contain explosion relief vents or an explosion suppression system or an oxygen-deficient environment. Proper grounding procedures to avoid static electricity should be followed. Ensure all national/local regulations are observed.

Personal Protective Equipment : Gloves. Protective clothing. Protective goggles. Insufficient ventilation: wear respiratory protection.

Materials for Protective Clothing : Chemically resistant materials and fabrics. Thermal protection required when working with hot material.

Hand Protection : Wear protective gloves. When needed, wear protective gloves to protect against thermal and/or mechanical hazards. . If material is hot, wear thermally resistant protective gloves.

Eye and Face Protection : Chemical safety goggles.

Skin and Body Protection : Wear suitable protective clothing.

Respiratory Protection : If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Thermal Hazard Protection : When working with hot material, use suitable thermally protective clothing.

Other Information : When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State : Solid

Appearance : Metallic.

Odor : Odorless.

Odor Threshold : No data available

pH : No data available

Evaporation Rate : No data available

Melting Point	:	626.67 °C (1160.01 °F)
Freezing Point	:	No data available
Boiling Point	:	No data available
Flash Point	:	Not applicable
Auto-ignition Temperature	:	No data available
Decomposition Temperature	:	No data available
Flammability (solid, gas)	:	Flammable solid
Vapor Pressure	:	No data available
Relative Vapor Density at 20°C	:	No data available
Relative Density	:	No data available
Specific Gravity	:	1.77
Solubility	:	Insoluble in water.
Partition Coefficient: N-Octanol/Water	:	No data available
Viscosity	:	No data available

9.2. Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reacts readily with water liberating highly flammable gases. Reacts violently with strong oxidizers. Increased risk of fire or explosion. In molten form may react violently with water.

10.2. Chemical Stability

Self-heating: may catch fire. Flammable solid. Metallic dusts may ignite or explode.

10.3. Possibility of Hazardous Reactions

In contact with water releases flammable gas.

10.4. Conditions to Avoid

Dust accumulation (to minimize explosion hazard). Protect from moisture. Dust, chips, or ribbons can be ignited more easily, by an ignition source, by improper machining, or by spontaneous combustion if finely divided and damp.

10.5. Incompatible Materials

Corrosive substances in contact with metals may produce flammable hydrogen gas. Strong acids, strong bases, strong oxidizers. *When molten:* water. *Dust, fines, and chips:* water.

10.6. Hazardous Decomposition Products

Thermal decomposition may produce: Metal oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

Acute Toxicity (Oral): Not classified
Acute Toxicity (Dermal): Not classified
Acute Toxicity (Inhalation): Not classified

Aluminum (7429-90-5)	
LD50 Oral Rat	> 15900 mg/kg

Zinc oxide (ZnO) (1314-13-2)	
LD50 Oral Rat	> 5000 mg/kg
LD50 Dermal Rat	> 2000 mg/kg (no deaths)
LC50 Inhalation Rat	> 5700 mg/m³ (Exposure time: 4 h)

Manganese (7439-96-5)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.14 mg/l/4h

Skin Corrosion/Irritation: Not classified
Serious Eye Damage/Irritation: Not classified
Respiratory or Skin Sensitization: Not classified
Germ Cell Mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive Toxicity: Not classified
Specific Target Organ Toxicity (Single Exposure): Not classified

Specific Target Organ Toxicity (Repeated Exposure): Causes damage to organs (lung/respiratory system, central nervous system, kidneys) through prolonged or repeated exposure.

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: During processing, the most significant route of exposure is by the inhalation (breathing) of dust or fumes. If fumes are inhaled, they can cause a condition commonly known as metal fume fever with symptoms which resemble influenza; Symptoms may be delayed 4-12 hours and begin with a sudden onset of thirst, and a sweet, metallic or foul taste in the mouth. Other symptoms may include upper respiratory tract irritation accompanied by coughing and a dryness of the mucous membranes, lassitude and a generalized feeling of malaise. Fever, chills, muscular pain, mild to severe headache, nausea, occasional vomiting, exaggerated mental activity, profuse sweating, excessive urination, diarrhea and prostration may also occur.

Symptoms/Injuries After Skin Contact: Contact with fumes or metal powder will irritate skin. Contact with hot, molten metal will cause thermal burns.

Symptoms/Injuries After Eye Contact: During metal processing, dusts caused from physical alteration will likely cause eye irritation. Fumes from thermal decomposition or molten material will likely be irritating to the eyes. Risk of thermal burns on contact with molten product.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects. Ingestion of the molten product may cause severe thermal burns.

Chronic Symptoms: In massive form, no chronic hazard exists. If physically altered to present slivers, ribbons, dusts or fumes from molten material: Causes damage to organs (lung/respiratory system, central nervous system) through prolonged or repeated exposure. Aluminum: Inhalation of finely divided aluminum powder may cause pulmonary fibrosis. Manganese: Chronic exposure can cause inflammation of the lung tissue, scarring the lungs (pulmonary fibrosis). Zinc: Prolonged exposure to high concentrations of zinc fumes may cause "zinc shakes", an involuntary twitching of the muscles. Otherwise, zinc is non-toxic. Overexposure to metal fumes may result metal fume fever (chills, muscle aches, nausea, fever, dry throat, cough, weakness, lassitude), disturbances in smell and/or taste, and possible discloration of skin, hair and mucous membranes; discoloration may become permanent.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General : *Massive form:* Not hazardous. *Dust, fines, and chips:* Toxic to aquatic life with long lasting effects.

Zinc oxide (ZnO) (1314-13-2)	
LC50 Fish 1	1.793 mg/l (Exposure time: 96 h - Species: Zebrafish)
EC50 - Crustacea [1]	0.154 mg/l (Desmodesmus subspicatus 48 h)
ErC50 (Algae)	3.35 mg/l (Desmodesmus subspicatus 72 h)
NOEC Chronic Fish	0.026 mg/l (Jordanella floridae)
NOEC Chronic Crustacea	0.04 mg/l (Daphnia magna 21 d semi-static reproduction)

Manganese (7439-96-5)	
LC50 Fish 1	> 3.6 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [semi-static])
NOEC Chronic Fish	3.6 mg/l (Exposure time: 96h; Species: Oncorhynchus mykiss)

12.2. Persistence and Degradability

Magnesium Alloys	
Persistence and Degradability	May cause long-term adverse effects in the environment. Inorganic product which cannot be eliminated from water by biological purification processes.

12.3. Bioaccumulative Potential

Magnesium Alloys	
Bioaccumulative Potential	Not established.

12.4. Mobility in Soil

No additional information available

12.5. Other Adverse Effects

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Waste Treatment Methods: Material should be recycled if possible.

Waste Disposal Recommendations: Dispose of contents/container in accordance with local, regional, national, and international regulations.

Additional Information: Recover or recycle if possible.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT

Not regulated for transport

14.2. In Accordance with IMDG

Not regulated for transport

14.3. In Accordance with IATA

Not regulated for transport

*The shipping descriptions above do not apply to forms of this product that may result from further processing (such as dust, fines, and chips). Shipping classifications must be reassessed if the form of the product is altered.

SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

Magnesium Alloys	
SARA Section 311/312 Hazard Classes	Physical hazard - Self-heating Health hazard - Specific target organ toxicity (single or repeated exposure) Physical hazard - In contact with water emits flammable gas Physical hazard - Flammable (gases, aerosols, liquids, or solids) Physical hazard - Combustible dust

Magnesium (7439-95-4)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	

Aluminum (7429-90-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 % (dust or fume only)

Zinc oxide (ZnO) (1314-13-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active	

Manganese (7439-96-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active Subject to reporting requirements of United States SARA Section 313	
SARA Section 313 - Emission Reporting	1 %

15.2. US State Regulations

Magnesium (7439-95-4)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List

Aluminum (7429-90-5)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Zinc oxide (ZnO) (1314-13-2)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List
U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Manganese (7439-96-5)
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List
U.S. - Massachusetts - Right To Know List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 08/15/2023

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200.

GHS Full Text Phrases:

H228	Flammable solid
H251	Self-heating; may catch fire
H261	In contact with water releases flammable gas
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)