Magnesium Alloy containing Aluminium, Zinc and Manganese

Safety Data Sheet
Revision date: 26/05/15 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
Product form: Massive metal alloy
Part Number: ERAZ61A, ERAZ92A
SDS Number: 1901

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use of the substance/mixture: Industrial Fabrication, Casting, Welding

1.3. Details of the supplier of the safety data sheet
Manufacturer/Supplier of the Safety Data Sheet:
Welding Material Sales
1340 Reed Road
Geneva, IL 60134
Phone: 630-232-6421
Fax: 888-733-1512
E-mail: info@weldingmaterialsales.com

1.4. Emergency telephone number
Emergency number: 1-800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture
Classification in accordance with the Globally Harmonized Standard and regulations referenced above.
Not classified as hazardous as manufactured and shipped.

Classification in accordance with EU Directive 1999/45/EC
Not classified as hazardous as manufactured and shipped.

Classification in accordance with New Zealand HSNO Act
Not classified as hazardous as manufactured and shipped.

Classification in accordance with Canadian WHMIS
Not classified as hazardous as manufactured and shipped.

2.2. Label elements
Magnesium Alloy containing Zinc, Rare Earths and Zirconium
Safety Data Sheet
according to GHS

GHS labelling
No labelling applicable

Labelling according to EU Directive 1999/45/EC
No labelling applicable.

Labelling according to Canadian WHMIS
No labelling applicable.

2.3. Other hazards
PBT: not relevant – no registration required
vPvB: not relevant – no registration required

SECTION 3: Composition/information on ingredients

3.1. Substances
Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS Number</th>
<th>EINECS Number</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>CAS No. 7439-95-4</td>
<td>231-104-6</td>
<td>87 - 98.5</td>
</tr>
<tr>
<td>Aluminum</td>
<td>CAS No. 7429-90-5</td>
<td>231-072-3</td>
<td>1.5 - 11</td>
</tr>
<tr>
<td>Zinc</td>
<td>CAS No. 7440-66-6</td>
<td>231-175-3</td>
<td>0 – 1.0</td>
</tr>
<tr>
<td>Manganese</td>
<td>CAS No. 7439-96-5</td>
<td>231-105-1</td>
<td>0 – 1.0</td>
</tr>
</tbody>
</table>

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Machining may result in release of dust. If inhaled and if breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If dust are formed:

First-aid measures after skin contact: Machining may result in release of dust. Gently wash with plenty of soap and water.

First-aid measures after eye contact: Machining may result in release of dust. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if pain, blinking or redness persist.

First-aid measures after ingestion: Not expected to present a significant ingestion hazard under anticipated conditions of normal use.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries: No significant signs or symptoms indicative of any health hazard are expected to occur.

Symptoms/injuries after inhalation: Machining may result in release of dust. Inhalation may cause: irritation, coughing, shortness of breath.

Symptoms/injuries after skin contact: Mechanical injury only. Molten material may burn skin.

Symptoms/injuries after eye contact: Mechanical injury only. Metal dust or fume may be dangerous to eye and surrounding tissue.

Symptoms/injuries after ingestion: Ingestion is unlikely due to physical state. No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of ingestion.

4.3. Indication of any immediate medical attention and special treatment needed

All treatments should be based on observed signs and symptoms of distress in the patient.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media: Smother burning magnesium by covering with an extinguishing powder approved for use on magnesium fires, such as Class D fire extinguisher, G1, METL-X, dry sand or other media for metal fires. Consult National Fire Protection Association standards for other extinguishing media which may be applicable to certain operations such as foundries or heat-treat furnaces.

Unsuitable extinguishing media: Do not use water.

5.2. Special hazards arising from the substance or mixture

Fire hazard: When heated in air to a temperature near its melting point, magnesium alloys ignite and burn with a white flame. Finely divided magnesium will readily ignite in the presence of any spark or flame. It will also auto ignite when heated in air even below the melting point. The finer the particle size the more readily the powder will ignite and the more intense the fire will be. As a dust magnesium has an Explosive Concentration of 20 mg/litre.
Magnesium Alloy containing Zinc, Rare Earths and Zirconium
Safety Data Sheet
according to GHS

Explosion hazard: Use of water on molten or burning magnesium will produce hydrogen gas and may cause an explosion.

Reactivity: Water and acids may react with magnesium releasing hydrogen.

5.3. Advice for firefighters

Firefighting instructions: Avoid contact with water. Use dry extinguishing materials (e.g. dry sand, fluxes, iron chips, cement, class D fire extinguisher or dry sand).

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Wear fire/flame resistant/retardant clothing. Use self-contained breathing apparatus. Magnesium burns with a bright white flame, tinted goggles should be used.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Collect all waste in suitable and labelled containers and dispose according to local legislation. Collect contaminated fire fighting water separately. It must not enter the sewage system.

6.1.1. For non-emergency personnel

Protective equipment: Machining may result in release of dust. If dust is formed: Dust impervious gloves.

Emergency procedures: Machining may result in release of dust. If dust is formed: Avoid all unnecessary exposure.

6.1.2. For emergency responders

Protective equipment: Machining may result in release of dust. Where excessive dust may result, use approved respiratory protection equipment. Wear suitable protective clothing and eye/face protection. Dust impervious gloves.

Emergency procedures: 6.3. Methods and material for containment and cleaning up.

6.2. Environmental precautions

Machining may result in release of dust. Prevent dispersion. This product contains hazardous components for the aquatic environment. Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

For containment: Avoid generating dust. Contain and collect as any solid.

Methods for cleaning up: Collect spillage. Minimize generation of dust. Large spills: scoop solid spill into closing containers.

6.4. Reference to other sections

Section 7: safe handling. Section 8: personal protective equipment. Section 13: disposal information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Practice reasonable care in handling magnesium and magnesium alloy product forms to avoid product damage and/or personal injury. If operations involving this product, such as machining, produce fines, such as dust, powder, chips, or turnings, proper measures should be taken to prevent dust clouds around these operations. These fines should be collected frequently and should be stored and disposed of in accordance with National Fire Protection Agency guidelines. If these fines should become ignited, they can be extinguished using procedures described in this document.

Hygiene measures: Always wash your hands immediately after handling this product, and once again before leaving the workplace.

7.2. Conditions for safe storage, including any incompatibilities


Storage conditions: Store in dry protected location to prevent any moisture contact.

Prohibitions on mixed storage: Store away from combustibles.

7.3. Specific end use(s)

Not Relevant

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Magnesium</th>
<th>Target</th>
<th>Exposure Route</th>
<th>Exposure Duration</th>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>Workers</td>
<td>Inhalation</td>
<td>Long-term</td>
<td>Systematic</td>
<td>10 mg Mg/m3</td>
</tr>
<tr>
<td>DNEL</td>
<td>General Population</td>
<td>Inhalation</td>
<td>Long-term</td>
<td>Systematic</td>
<td>10 mg Mg/m3</td>
</tr>
<tr>
<td>OSHA PEL (TWA)</td>
<td>Workers</td>
<td>inhalation</td>
<td>Long-term</td>
<td>Systematic</td>
<td>15 mg Mg/m3</td>
</tr>
</tbody>
</table>
## Magnesium Alloy containing Zinc, Rare Earths and Zirconium
### Safety Data Sheet according to GHS

#### Aluminium

<table>
<thead>
<tr>
<th></th>
<th>USA OSHA</th>
<th>USA NIOSH</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA PEL (TWA)</td>
<td>NIOSH REL (ceiling)</td>
<td>WEL TWA (mg/m³)</td>
</tr>
<tr>
<td></td>
<td>(mg/m³)</td>
<td>(mg/m³)</td>
<td>(mg/m³)</td>
</tr>
<tr>
<td></td>
<td>15 mg/m³ (total dust)</td>
<td>5 mg/m³ (respirable dust)</td>
<td>10 mg/m³ (inhalable dust)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4 mg/m³ (respirable dust)</td>
</tr>
</tbody>
</table>

#### Zinc (as oxide)

<table>
<thead>
<tr>
<th></th>
<th>USA OSHA</th>
<th>USA NIOSH</th>
<th>United Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OSHA PEL (TWA)</td>
<td>NIOSH REL (ceiling)</td>
<td>WEL TWA (mg/m³)</td>
</tr>
<tr>
<td></td>
<td>(mg/m³)</td>
<td>(mg/m³)</td>
<td>(mg/m³)</td>
</tr>
<tr>
<td></td>
<td>15 mg/m³ (total dust)</td>
<td>5 mg/m³ (respirable dust)</td>
<td>15 mg/m³ (dust)</td>
</tr>
</tbody>
</table>

#### Manganese

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>DNEL</td>
<td>No hazard identified</td>
</tr>
<tr>
<td>PNEC</td>
<td>No hazard identified</td>
</tr>
</tbody>
</table>

### 8.2. Exposure controls

- **Appropriate engineering controls**: Provide local exhaust or general room ventilation to minimize exposure to dust. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
- **Materials for protective clothing**: Machining may result in release of dust. No special clothing/skin protection equipment is recommended under normal conditions of use.
- **Hand protection**: If dust is formed: Wear dust impervious gloves. EN374.
- **Eye protection**: Safety glasses. In case of dust production: protective goggles. EN166.
- **Respiratory protection**: Machining may result in release of dust. In case of inadequate ventilation wear respiratory protection. Use air-purifying respirator equipped with particulate filtering cartridges. EN 136/140.
- **Thermal hazard protection**: Flame retardant clothing should be used when handling in molten state.

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

- **Physical state**: Solid
- **Appearance**: Silver solid.
- **Color**: Silver.
- **Odor**: Odorless.
- **Odor threshold**: Not applicable
- **pH**: Not applicable
- **Relative evaporation rate**: Not applicable
- **Melting point**: 450 - 650 °C
- **Freezing point**: No data available
- **Boiling point**: 1095 °C
- **Flash point**: Not applicable
- **Self-ignition temperature**: Not applicable
- **Decomposition temperature**: Not applicable
- **Flammability (solid, gas)**: Highly flammable as powder
- **Vapor pressure**: Not applicable
- **Relative vapor density at 20 °C**: Not applicable
- **Relative density**: 1.76 - 1.81
- **Relative density of saturated gas/air mixture**: Not applicable
- **Solubility**: 6.7 mg/L (21°C, pH ca. 10.8)
- **Log Pow**: Not applicable
- **Log Kow**: Not applicable
- **Viscosity, kinematic**: Not applicable
- **Viscosity, dynamic**: Not applicable
- **Explosive properties**: Not applicable
- **Oxidising properties**: Not applicable
- **Explosive limits**: Not applicable
Magnesium Alloy containing Zinc, Rare Earths and Zirconium
Safety Data Sheet
according to GHS

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
Hazardous polymerization will not occur.

10.2. Chemical stability
The product is stable at normal handling and storage conditions.

10.3. Possibility of hazardous reactions
No additional information available.

10.4. Conditions to avoid
Exposure to extremely high temperatures. Build up of finely divided dust on surfaces.

10.5. Incompatible materials
Acid. Reacts with acid to form hydrogen gas. In finely divided form, will react with water or acids to release hydrogen.

10.6. Hazardous decomposition products
See incompatibility statement and fire and explosion hazard data for special situations.

SECTION 11: Toxicological information

11.1 Likely Routes of Exposure
Most likely routes of exposure: dermal.

11.2 Symptoms Related to Physical, Chemical and Toxicological Characteristics
Symptoms/injuries after inhalation : Machining may result in release of dust. Inhalation may cause: irritation, coughing, shortness of breath.
Symptoms/injuries after skin contact : Mechanical injury only. Molten material may burn skin.
Symptoms/injuries after eye contact : Mechanical injury only. Metal dust or fume may be dangerous to eye and surrounding tissue.

11.3 Effects from Exposure
No significant signs or symptoms indicative of any health hazard are expected to occur.

11.4. Information on toxicological effects
Acute toxicity : Not classified. Based on available data, the classification criteria are not met

<table>
<thead>
<tr>
<th>Substance</th>
<th>LD50 oral rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium (as Magnesium Oxide)</td>
<td>3990 mg/kg</td>
</tr>
<tr>
<td>Zinc (as Zinc Oxide)</td>
<td>&gt; 5000 mg/kg</td>
</tr>
<tr>
<td>Aluminium</td>
<td>&gt; 15900 mg/kg</td>
</tr>
<tr>
<td>Manganese</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

Skin corrosion/iritation: Not classified. Based on available data, the classification criteria are not met
Serious eye damage/iritation: Not classified. Based on available data, the classification criteria are not met
Respiratory or skin sensitisation: Not classified. Based on available data, the classification criteria are not met
Germ cell mutagenicity: Not classified. Based on available data, the classification criteria are not met
Carcinogenicity: Not classified. Based on available data, the classification criteria are not met
Reproductive toxicity: Not classified. Based on available data, the classification criteria are not met
Specific target organ toxicity (single exposure): Not classified. Based on available data, the classification criteria are not met
Specific target organ toxicity (repeated exposure): Not classified. Based on available data, the classification criteria are not met
12. Carcinogenicity Lists
No components are found on OSHA, NTP or IARC lists.

SECTION 12: Ecological information

12.1. Toxicity

<table>
<thead>
<tr>
<th>Element</th>
<th>Toxicity Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>Magnesium is not hazardous to the aquatic environment as:</td>
</tr>
<tr>
<td></td>
<td>- The lowest acute reference values for fish, invertebrates and algae are &gt; 100 mg Mg/l.</td>
</tr>
<tr>
<td></td>
<td>- The lowest aquatic NOEC for these three trophic levels is &gt; 1 mg Mg/l (i.e., 41 mg Mg/l for Daphnia magna; no data are available for fish but based on the acute toxicity data, fish are less sensitive compared to aquatic invertebrates). - There is no evidence for bioaccumulation or biomagnification in the environment.</td>
</tr>
<tr>
<td>Zinc</td>
<td>Effects on fish: Danio rerio LL50 (96 hrs) 1.793 mg/L</td>
</tr>
<tr>
<td>Aluminium</td>
<td>&gt; 218.64 mg/l ASTM 2000; test material: aluminium chloride hexahydrate; Pimephales promelas</td>
</tr>
<tr>
<td>Manganese</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Element</th>
<th>Persistence and degradability Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>Magnesium is naturally occurring and ubiquitous in the environment. Upon contact with water, magnesium metal dissolves and behaves as magnesium naturally present in the environment. Biodegradation is not relevant for Mg metal, which is considered as not biodegradable.</td>
</tr>
<tr>
<td>Zinc</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Aluminium</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Manganese</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Element</th>
<th>Bioaccumulative Potential Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>Bioaccumulation of magnesium in aquatic/terrestrial organisms is considered to be of no concern since magnesium is an essential element for aquatic and terrestrial organisms. The uptake of essential elements is generally under strict homeostatic control. Under these conditions, the internal concentration of these elements is maintained over a wide concentration range in the environment and rises only dramatically under conditions that are toxic for aquatic and terrestrial organisms</td>
</tr>
<tr>
<td>Zinc</td>
<td>Not expected to bioaccumulate.</td>
</tr>
<tr>
<td>Aluminium</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Manganese</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

<table>
<thead>
<tr>
<th>Element</th>
<th>Mobility in Soil Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium</td>
<td>Magnesium metal is soluble in water. A log Kd value of 2.82 l/kg dw has been determined for freshwater sediment and no data are available for soil. Based on this relatively low Kd value, the Mg2+ ions can leach through normal soil and are relatively mobile in sediment. Results of PBT and vPvB assessment</td>
</tr>
<tr>
<td>Zinc</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Aluminium</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Manganese</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

12.5. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

<table>
<thead>
<tr>
<th>Waste treatment methods</th>
<th>Dispose in a safe manner in accordance with local/national regulations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste disposal recommendations</td>
<td>Depending on the local regulations it may be disposed of as solid waste or incinerated in a suitable installation.</td>
</tr>
<tr>
<td>EUR/LW code</td>
<td>For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.</td>
</tr>
</tbody>
</table>

SECTION 14: Transport information

In accordance with DOT / ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number
Not a dangerous good for transport regulations
Not applicable
14.2 Additional information

Overland transport
No additional information available

Transport by sea
No additional information available

Air transport
No additional information available

SECTION 15: Regulatory information

USA Regulations

SECTION 313 SUPPLIER NOTIFICATION
This product contains no chemicals in concentrations subject to the requirements of section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (Title III of SARA) and of 40 CFR 372

EU Classification

WARNING SYMBOL None
WARNING WORD None
RISK PHRASES None
SAFETY PHRASES None

SECTION 16: Other information

Indication of changes: Revised format. GHS classification information.

Data sources:
- New Zealand Government Information Sheet: Correlation between GHS and New Zealand HSNO Hazard Classes and Categories.

Abbreviations and acronyms:
- ACGIH (American Conference of Government Industrial Hygienists).
- ATE: Acute Toxicity Estimate.
- CAS (Chemical Abstracts Service) number.
- EC50: Environmental Concentration associated with a response by 50% of the test population.
- GHS: Globally Harmonized System (of Classification and Labeling of Chemicals).
- LD50: Lethal Dose for 50% of the test population.
- NOEC: No Observable Effect Concentration.
- OSHA: Occupational Safety & Health Administration.
- PBT: Persistent, Bioaccumulative, Toxic.
- STEL: Short Term Exposure Limits.
- TSCA: Toxic Substances Control Act.
- TWA: Time Weighted Average.

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.