



# SAFETY DATA SHEET

Issue Date 28-May-2015

Revision Date 04-Sep-2019

Version 2

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

### Product identifier

**Product Name** Zirconium Sponge (undistilled)

### Other means of identification

**Product Code** SAC035

**UN/ID No.** 3089

**Synonyms** Undistilled Zirconium Sponge, Kroll Process Zirconium Metal with magnesium (Product #356)

### Recommended use of the chemical and restrictions on use

**Recommended Use** Alloy product manufacture.

**Uses advised against**

### Details of the supplier of the safety data sheet

#### **Manufacturer Address**

ATI, 1000 Six PPG Place, Pittsburgh, PA  
15222 USA

#### **Emergency telephone number**

**Emergency Telephone** Chemtrec: 1-800-424-9300

## 2. HAZARDS IDENTIFICATION

### Classification

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable solids

Category 2

### Label elements

#### Emergency Overview

**Danger**

Flammable solid



**Appearance** Sponge

**Physical state** Solid

**Odor** Odorless

### **Precautionary Statements - Prevention**

Wear protective gloves/protective clothing/eye protection

Keep away from heat/sparks/open flames/hot surfaces. - No smoking

Ground/bond container and receiving equipment

If dust clouds can occur, use explosion-proof electrical/ ventilating/lighting/equipment

**Precautionary Statements - Response**

In case of fire: Use salt (NaCl) or class D dry powder for extinction

**Hazards not otherwise classified (HNOC)**

Not applicable

**Other Information**

When product is subjected to welding, burning, melting, sawing, brazing, grinding, buffing, polishing, or other similar heat-generating processes, the following potentially hazardous airborne particles and/or fumes may be generated: Zinc, copper, magnesium, or cadmium fumes may cause metal fume fever.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonyms** Undistilled Zirconium Sponge, Kroll Process Zirconium Metal with magnesium, (Product #356).

Chemical Name	CAS No.	Weight-%
Zirconium	7440-67-7	60- >99
Magnesium	7439-95-4	0-35
Magnesium Chloride	7786-30-3	0-5

### 4. FIRST AID MEASURES

**First aid measures**

**Eye contact** In the case of particles coming in contact with eyes during processing, treat as with any foreign object.

**Skin Contact** None under normal use conditions.

**Inhalation** If excessive amounts of smoke, fume, or particulate are inhaled during processing, remove to fresh air and consult a qualified health professional.

**Ingestion** IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

**Most important symptoms and effects, both acute and delayed**

**Symptoms** None anticipated.

**Indication of any immediate medical attention and special treatment needed**

**Note to physicians** Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Suitable extinguishing media**

Isolate large fires and allow to burn out. Smother small fires with salt (NaCl) or class D dry powder fire extinguisher.

**Unsuitable extinguishing media** Do not spray water on burning metal as an explosion may occur. This explosive characteristic is caused by the hydrogen and steam generated by the reaction of water with the burning material. If a fire occurs in the area, avoid water contact with the product to prevent evolution of hazardous gases.

**Specific hazards arising from the chemical**

Intense heat. Very fine, high surface area material resulting from processing this product may ignite spontaneously at room temperature. **WARNING:** Fine particles of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimize combustible dust hazard.

**Hazardous combustion products** Zinc, copper, magnesium, or cadmium fumes may cause metal fume fever.

**Explosion data****Sensitivity to Mechanical Impact** None.**Sensitivity to Static Discharge** May be ignited by heat, sparks or flames.**Protective equipment and precautions for firefighters**

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

**6. ACCIDENTAL RELEASE MEASURES****Personal precautions, protective equipment and emergency procedures****Personal precautions** Use personal protective equipment as required.**For emergency responders** Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 170.**Environmental precautions****Environmental precautions** Collect spillage to prevent release to the environment.**Methods and material for containment and cleaning up****Methods for containment** Prevent further leakage or spillage if safe to do so.**Methods for cleaning up** Sweep or shovel material into dry containers using non-sparking tools. Avoid creating uncontrolled dust. Wash the spill location thoroughly with water - remaining magnesium chloride residue would cause the floor to become slippery.**7. HANDLING AND STORAGE****Precautions for safe handling****Advice on safe handling** Very fine, high surface area material resulting from grinding, buffing, polishing, or similar processes of this product may ignite spontaneously at room temperature. WARNING: Fine particles of this product may form combustible dust-air mixtures. Keep particles away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimize combustible dust hazard.**Conditions for safe storage, including any incompatibilities****Storage Conditions** Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). For long-term storage, keep sealed in argon-filled steel drums.**Incompatible materials** Water. Dissolves in hydrofluoric acid. Ignites in the presence of fluorine. When heated above 200°C, reacts exothermically with the following: Chlorine, bromine, halocarbons, carbon tetrachloride, carbon tetrafluoride, and freon.**8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Control parameters****Exposure Guidelines**

Chemical Name	ACGIH TLV	OSHA PEL
Zirconium 7440-67-7	STEL: 10 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup> Zr TWA: 5 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup> Zr	TWA: 5 mg/m <sup>3</sup> Zr (vacated) STEL: 10 mg/m <sup>3</sup> (vacated) STEL: 10 mg/m <sup>3</sup> Zr
Magnesium 7439-95-4	-	-
Magnesium Chloride 7786-30-3	-	-

**Appropriate engineering controls**

**Engineering Controls** Avoid generation of uncontrolled particles.

**Individual protection measures, such as personal protective equipment**

<b>Eye/face protection</b>	When airborne particles may be present, appropriate eye protection is recommended. For example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shield the eyes from particles.
<b>Skin and body protection</b>	Fire/flame resistant/retardant clothing may be appropriate during hot work with the product. Wear protective gloves. Cut-resistant gloves and/or protective clothing may be appropriate when sharp surfaces are present.
<b>Respiratory protection</b>	When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Information on basic physical and chemical properties**

<b>Physical state</b>	Solid	<b>Odor</b>	Odorless
<b>Appearance</b>	Sponge	<b>Odor threshold</b>	Not applicable
<b>Color</b>	Metallic gray or silver		
<b>Property</b>	<b>Values</b>	<b>Remarks • Method</b>	
<b>pH</b>	-	Not applicable	
<b>Melting point / freezing point</b>	1850 °C / 3360 °F		
<b>Boiling point / boiling range</b>	-		
<b>Flash point</b>	-		
<b>Evaporation rate</b>	No information available	Not applicable	
<b>Flammability (solid, gas)</b>	No information available	Flammable	
<b>Flammability Limit in Air</b>			
<b>Upper flammability limit:</b>	-		
<b>Lower flammability limit:</b>	-		
<b>Vapor pressure</b>	-	Not applicable	
<b>Vapor density</b>	-	Not applicable	
<b>Specific Gravity</b>	6.49		
<b>Water solubility</b>	-		
<b>Solubility in other solvents</b>	-		
<b>Partition coefficient</b>	-	Not applicable	
<b>Autoignition temperature</b>	-	Not applicable	
<b>Decomposition temperature</b>	-	Not applicable	
<b>Kinematic viscosity</b>	-	Not applicable	
<b>Dynamic viscosity</b>	-	Not applicable	
<b>Explosive properties</b>	Not applicable		
<b>Oxidizing properties</b>	Not applicable		

**Other Information**

<b>Softening point</b>	-
<b>Molecular weight</b>	-
<b>VOC Content (%)</b>	Not applicable
<b>Density</b>	-
<b>Bulk density</b>	-

**10. STABILITY AND REACTIVITY**

**Reactivity**

Reacts with water

**Chemical stability**

Stable under normal conditions.

**Possibility of Hazardous Reactions**

Reacts with water.

**Hazardous polymerization**

Hazardous polymerization does not occur.

**Conditions to avoid**

Dust formation and dust accumulation. Unintentional contact with water. When mixed with water, heat, steam, and possibly hydrogen and hydrogen sulfide gas may be generated. Do not mix magnesium chloride with water except in a well-ventilated area, under conditions where heat and any gas that may evolve can easily dissipate.

**Incompatible materials**

Water. Dissolves in hydrofluoric acid. Ignites in the presence of fluorine. When heated above 200°C, reacts exothermically with the following: Chlorine, bromine, halocarbons, carbon tetrachloride, carbon tetrafluoride, and freon.

**Hazardous Decomposition Products**

None while dry and cool. Magnesium chloride heated above 110°C in the presence of moisture will evolve hydrogen chloride fumes.

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure****Product Information**

<b>Inhalation</b>	Product not classified.
<b>Eye contact</b>	Product not classified.
<b>Skin Contact</b>	Product not classified.
<b>Ingestion</b>	Product not classified.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Zirconium 7440-67-7	> 5000 mg/kg bw	-	>4.3 mg/L
Magnesium 7439-95-4	>2000 mg/kg bw	-	-
Magnesium Chloride 7786-30-3	5000 mg/kg bw	>2000 mg/kg bw	-

**Information on toxicological effects**

**Symptoms** None known.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Acute toxicity</b>	Product not classified.
<b>Skin corrosion/irritation</b>	Product not classified.
<b>Serious eye damage/eye irritation</b>	Product not classified.
<b>Sensitization</b>	Product not classified.
<b>Germ cell mutagenicity</b>	Product not classified.
<b>Carcinogenicity</b>	Product not classified.

**Reproductive toxicity** Product not classified.

STOT - single exposure                   Product not classified.  
 STOT - repeated exposure               Product not classified.  
 Aspiration hazard                         Product not classified.

## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

This product as shipped is not classified for aquatic toxicity.

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Zirconium 7440-67-7	The 14 d NOEC of zirconium dichloride oxide to <i>Chlorella vulgaris</i> was greater than 102.5 mg of Zr/L.	The 96 h LL50 of zirconium to <i>Danio rerio</i> was greater than 74.03 mg/L.	-	The 48 h EC50 of zirconium dioxide to <i>Daphnia magna</i> was greater than 74.03 mg of Zr/L.
Magnesium 7439-95-4	The 72 h EC50 of magnesium chloride hexahydrate to <i>Desmodesmus subspicatus</i> was greater than 12 mg of Mg/L.	The 96 h LC50 of magnesium chloride to <i>Pimephales promelas</i> was 541 mg of Mg/L.	The 3 h EC50 of magnesium chloride hexahydrate for activated sludge was greater than 108 mg of Mg/L.	The 48 h LC50 of magnesium chloride to <i>Ceriodaphnia dubia</i> was 225 mg of Mg/L. The 48 h LC50 of magnesium chloride hexahydrate to <i>Daphnia magna</i> was 322 mg of Mg/L.
Magnesium Chloride 7786-30-3	The 72 h EC50 of magnesium chloride to <i>Desmodesmus subspicatus</i> was greater than 100 mg of MgCl <sub>2</sub> /L.	The 96 h LC50 of magnesium chloride to <i>Pimephales promelas</i> was 2119.3 mg of MgCl <sub>2</sub> /L.	The 3 h EC50 of magnesium chloride for activated sludge was greater than 900 mg of MgCl <sub>2</sub> /L.	The 48 h LC50 of magnesium chloride hexahydrate to <i>Daphnia magna</i> was 548.4 mg of MgCl <sub>2</sub> /L.

### Persistence and degradability

.

### Bioaccumulation

.

### Mobility

.

### Other adverse effects

## 13. DISPOSAL CONSIDERATIONS

### Waste treatment methods

**Disposal of wastes**                         Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated packaging**                 Disposal should be in accordance with applicable regional, national and local laws and regulations.

This product contains one or more substances that are listed with the State of California as a hazardous waste.

## 14. TRANSPORT INFORMATION

**DOT**   Regulated  
**UN/ID No.**                                       3089  
**Proper shipping name**                       Metal powders, flammable, n.o.s. (Zirconium Magnesium)

<b>Hazard Class</b>	4.1
<b>Packing Group</b>	III
<b>Special Provisions</b>	IB6, T1, TP33
<b>Emergency Response Guide Number</b>	170

## 15. REGULATORY INFORMATION

### International Inventories

<b>TSCA</b>	Complies
<b>DSL/NDSL</b>	Complies
<b>EINECS/ELINCS</b>	Complies
<b>ENCS</b>	Complies
<b>IECSC</b>	Complies
<b>KECL</b>	Complies
<b>PICCS</b>	Complies
<b>AICS</b>	Complies

### Legend:

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory  
**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List  
**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
**ENCS** - Japan Existing and New Chemical Substances  
**IECSC** - China Inventory of Existing Chemical Substances  
**KECL** - Korean Existing and Evaluated Chemical Substances  
**PICCS** - Philippines Inventory of Chemicals and Chemical Substances  
**AICS** - Australian Inventory of Chemical Substances

### US Federal Regulations

#### **SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

#### **SARA 311/312 Hazard Categories**

<b>Acute health hazard</b>	No
<b>Chronic Health Hazard</b>	No
<b>Fire hazard</b>	Yes
<b>Sudden release of pressure hazard</b>	No
<b>Reactive Hazard</b>	No

#### **CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

#### **CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

### US State Regulations

#### **California Proposition 65**

This product does not contain any Proposition 65 chemicals

#### **U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
---------------	------------	---------------	--------------

Zirconium 7440-67-7	X	X	X
Magnesium 7439-95-4	X	X	X

**U.S. EPA Label Information**

EPA Pesticide Registration Number Not applicable

**16. OTHER INFORMATION**

<b>NFPA</b>	Health hazards 0	Flammability 1	Instability 1	Physical and Chemical Properties -
<b>HMIS</b>	Health hazards 1	Flammability 2	Physical hazards 1	Personal protection X
<i>Chronic Hazard Star Legend</i>	<i>* = Chronic Health Hazard</i>			

Issue Date 28-May-2015

Revision Date 04-Sep-2019

**Revision Note**

SDS sections updated 2, 3, 5, 6, 7, 8, 9, 10, 14, 16

**Note:**

The information provided in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**

Additional information available from: Safety data sheets and labels available at ATImetals.com