



SAFETY DATA SHEET

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Version 2

Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code SAC035
Product Name Zirconium Sponge (undistilled)

UN/ID no 3089
Synonyms Undistilled Zirconium Sponge, Kroll Process Zirconium Metal with magnesium (Product #356)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Alloy product manufacture

Uses advised against

1.3. Details of the supplier of the safety data sheet

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

1.4. Emergency telephone number

Emergency Telephone Chemtrec: +1-703-741-5970

Section 2: HAZARDS IDENTIFICATION

This material is classified per Regulation (EC) No 1272/2008.

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Flammable solids	Category 2
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2.2. Label elements

Emergency Overview

Danger

Flammable solid



Appearance Sponge

Physical state Solid

Odour Odourless

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

2.3 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.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

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

Chemical Name	EC No	CAS No	Weight-%
Zirconium	231-176-9	7440-67-7	60- >99
Magnesium	231-104-6	7439-95-4	0-35
Magnesium Chloride	232-094-6	7786-30-3	0-5

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

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

Skin Contact None under normal use conditions.

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

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

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

Symptoms None anticipated.

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

Note to doctors Treat symptomatically.

Section 5: FIREFIGHTING MEASURES

5.1. Extinguishing media**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

5.2. Special hazards arising from the substance or mixture

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 minimise combustible dust hazard.

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

5.3. Advice for firefighters

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

Section 6: ACCIDENTAL RELEASE MEASURES**6.1. 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.

6.2. Environmental precautions

Collect spillage to prevent release to the environment.

6.3. 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.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

Section 7: HANDLING AND STORAGE**7.1. 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 minimise combustible dust hazard.

General Hygiene Considerations

Handle in accordance with good industrial hygiene and safety practice.

7.2. 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.

7.3. Specific end use(s)**Risk Management Methods (RMM)**

The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**8.1. Control parameters**

Chemical Name	European Union	United Kingdom	France	Spain	Germany
Zirconium 7440-67-7	-	TWA: 5 mg/m ³	-	STEL: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 1 mg/m ³ Ceiling / Peak: 1 mg/m ³
Magnesium 7439-95-4	-	-	-	-	-
Magnesium Chloride 7786-30-3	-	-	-	-	-
Chemical Name	Italy	Portugal	Netherlands	Finland	Denmark
Zirconium 7440-67-7	-	STEL: 10 mg/m ³ TWA: 5 mg/m ³	-	TWA: 1 mg/m ³	TWA: 5 mg/m ³
Magnesium 7439-95-4	-	-	-	-	-
Magnesium Chloride 7786-30-3	-	-	-	-	-
Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Zirconium 7440-67-7	TWA: 5 mg/m ³	TWA: 5 mg/m ³	STEL: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³
Magnesium 7439-95-4	-	-	-	-	-
Magnesium Chloride 7786-30-3	-	-	-	-	-

Derived No Effect Level (DNEL) No DNELs are available for this product as a whole

Predicted No Effect Concentration (PNEC) No PNECs are available for this product as a whole.

8.2. Exposure controls**Engineering Controls**

Avoid generation of uncontrolled particles.

Personal protective equipment**Eye/face protection**

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.

Skin and body protection

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.

Respiratory protection

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 contaminate concentrations. Respiratory protection must be provided in accordance with current local regulations.

Environmental exposure controls Section 6: ACCIDENTAL RELEASE MEASURES.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES**9.1. Information on basic physical and chemical properties**

Physical state	Solid		
Appearance	Sponge	Odour	Odourless
Colour	metallic grey or Silver	Odour threshold	Not applicable
Property	Values	Remarks • Method	
pH	-	Not applicable	
Melting point / freezing point	1850 °C / 3360 °F		
Boiling point / boiling range	-		
Flash point	-		
Evaporation rate		Not applicable	
Flammability (solid, gas)		Flammable	
Flammability Limit in Air			
Upper flammability limit:		-	
Lower flammability limit		-	
Vapour pressure	-	Not applicable	
Vapour density	-	Not applicable	
Specific Gravity	6.49		
Water solubility	-		
Solubility(ies)			
Partition coefficient	-	Not applicable	
Autoignition temperature	-	Not applicable	
Decomposition temperature	-	Not applicable	
Kinematic viscosity	-	Not applicable	
Dynamic viscosity	-	Not applicable	
Explosive properties	Not applicable		
Oxidising properties	Not applicable		
9.2. Other information			
Softening point	-		
Molecular weight	-		
VOC Content (%)	Not applicable		
Density	-		
Bulk density	-		

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reacts with water .

10.2. Chemical stability

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge May be ignited by heat, sparks or flames.

10.3. Possibility of hazardous reactions

Hazardous polymerisation

Hazardous polymerisation does not occur.

Possibility of Hazardous Reactions

Reacts with water.

10.4. 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.

10.5. 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.

10.6. Hazardous decomposition products

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

Section 11: TOXICOLOGICAL INFORMATION**11.1. Information on toxicological effects****Product Information**

Inhalation	Product not classified.
Eye contact	Product not classified.
Skin Contact	Product not classified.
Ingestion	Product not classified.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Zirconium	> 5000 mg/kg bw	-	>4.3 mg/L
Magnesium	>2000 mg/kg bw	-	-
Magnesium Chloride	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

Acute toxicity	Product not classified.
Skin corrosion/irritation	Product not classified.
Serious eye damage/eye irritation	Product not classified.
Sensitisation	Product not classified.
Germ cell mutagenicity	Product not classified.
Carcinogenicity	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.

Section 12: ECOLOGICAL INFORMATION**12.1. Toxicity**

This product as shipped is not classified for aquatic toxicity

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Zirconium	The 14 d NOEC of	The 96 h LL50 of	-	The 48 h EC50 of

	zirconium dichloride oxide to <i>Chlorella vulgaris</i> was greater than 102.5 mg of Zr/L.	zirconium to <i>Danio rerio</i> was greater than 74.03 mg/L.		zirconium dioxide to <i>Daphnia magna</i> was greater than 74.03 mg of Zr/L.
Magnesium	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	The 72 h EC50 of magnesium chloride to <i>Desmodesmus subspicatus</i> was greater than 100 mg of MgCl ₂ /L.	The 96 h LC50 of magnesium chloride to <i>Pimephales promelas</i> was 2119.3 mg of MgCl ₂ /L.	The 3 h EC50 of magnesium chloride for activated sludge was greater than 900 mg of MgCl ₂ /L.	The 48 h LC50 of magnesium chloride hexahydrate to <i>Daphnia magna</i> was 548.4 mg of MgCl ₂ /L.

12.2. Persistence and degradability

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12.3. Bioaccumulative potential

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12.4. Mobility in soil**Mobility**

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12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria do not apply to inorganic substances.

12.6. Other adverse effects

Section 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods**Waste from residues/unused products**

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.

Section 14: TRANSPORT INFORMATION

IMDG

14.1 UN/ID no	3089
14.2 Proper shipping name	Metal powders, flammable, n.o.s. (Zirconium Magnesium)
14.3 Hazard Class	4.1
14.4 Packing Group	III
14.5 Marine pollutant	Not applicable
14.6 Special Provisions	IB6, T1, TP33
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code	Not applicable

RID

14.1 UN/ID no	3089
14.2 Proper shipping name	Metal powders, flammable, n.o.s. (Zirconium Magnesium)
14.3 Hazard Class	4.1
14.4 Packing Group	III
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB6, T1, TP33

ADR

14.1 UN/ID no	3089
14.2 Proper shipping name	Metal powders, flammable, n.o.s. (Zirconium Magnesium)
14.3 Hazard Class	4.1
14.4 Packing Group	III
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB6, T1, TP33

ICAO (air)

14.1 UN/ID no	3089
14.2 Proper shipping name	Metal powders, flammable, n.o.s. (Zirconium Magnesium)
14.3 Hazard Class	4.1
14.4 Packing Group	III
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB6, T1, TP33

IATA

14.1 UN/ID no	3089
14.2 Proper shipping name	Metal powders, flammable, n.o.s. (Zirconium Magnesium)
14.3 Hazard Class	4.1
14.4 Packing Group	III
Description	.
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	IB6, T1, TP33 ERG Code 170

Section 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Chemical Name	French RG number	Title
Zirconium 7440-67-7	-	-
Magnesium 7439-95-4	-	-
Magnesium Chloride 7786-30-3	-	-

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Authorisations and/or restrictions on use:

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

International Inventories

DSL/NDL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies

AICS 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

15.2. Chemical safety assessment

No chemical safety assessment has been performed for this product.

Section 16: OTHER INFORMATION

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.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Note:

The information provided in this Material 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