



SAFETY DATA SHEET

Issue Date 08-Jul-2015

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Version ' '

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

1.1. Product identifier

Product Code SAC022
Product Name Zirconium Tetrachloride

UN/ID no 2503
Synonyms Zirconium Tetrachloride; Zirconium Chloride (Product #305)

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

Recommended Use Zirconium Compounds

Uses advised against

1.3. Details of the supplier of the safety data sheet

Manufacturer Address
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

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

| | |
|---------------------------|-------------|
| Skin corrosion/irritation | Category 1B |
| Corrosive to metals | Category 1 |

2.2. Label elements

Emergency Overview

Danger

Hazard statements

May be corrosive to metals
Causes severe skin burns and eye damage



Appearance Powder

Physical state Powder

Odour Pungent, Slight chlorine.

Precautionary Statements - Prevention

Wear protective gloves/protective clothing/eye protection/face protection

Do not breathe dust/gas/mist

Precautionary Statements - Response

IF SWALLOWED:: Rinse mouth, Do NOT induce vomiting

IF ON SKIN (or hair), Brush off loose particles from skin, Remove/Take off immediately all contaminated clothing, Rinse skin with water/shower

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Immediately call a POISON CENTER or doctor/physician

Wash contaminated clothing before reuse

Absorb spillage to prevent material damage

Precautionary Statements - Storage

Store in a dry place

Store in corrosive resistant container

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

2.3 Hazards not otherwise classified (HNOC)

Not applicable

Other Information

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms

Zirconium Tetrachloride: Zirconium Chloride, (Product #305).

| Chemical Name | EC No | CAS No | Weight-% |
|-------------------------|-----------|------------|----------|
| Zirconium Tetrachloride | 233-058-2 | 10026-11-6 | >97 |

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation

If fumes from reactions are inhaled, move to fresh air immediately. Call a doctor or poison control centre immediately.

Skin Contact

Brush off loose particles from skin. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Eye contact

Flush with water for 15 minutes. See a physician.

Ingestion

Do NOT induce vomiting. Have patient drink large quantities of water if able. Call Physician immediately for further instructions.

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: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media

Non-combustible.

Unsuitable extinguishing media

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

Non-combustible

Hazardous combustion products Not applicable.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment as required.

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. 137.

6.2. Environmental precautions

Collect spillage.

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. Avoid creating uncontrolled dust. Wash the spill location thoroughly with water. Respiratory and skin protection may be needed during cleanup.

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

Handle in accordance with good industrial hygiene and safety practice. Protect from moisture, Reacts with water. Ensure adequate ventilation, especially in confined areas. Handle under inert gas such as nitrogen or argon to maintain the integrity of the product.

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 in properly labelled containers. Keep in a dry, cool and well-ventilated place. Protect from direct sunlight. Containers may become pressurized: Handle and open container with care.

Incompatible materials

Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics.

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 Tetrachloride 10026-11-6 | - | TWA: 5 mg/m ³ | - | STEL: 10 mg/m ³ TWA: 5 mg/m ³ | - |
| Chemical Name | Italy | Portugal | Netherlands | Finland | Denmark |
| Zirconium Tetrachloride 10026-11-6 | - | STEL: 10 mg/m ³ TWA: 5 mg/m ³ | - | TWA: 1 mg/m ³ | TWA: 5 mg/m ³ |
| Chemical Name | Austria | Switzerland | Poland | Norway | Ireland |
| Zirconium Tetrachloride 10026-11-6 | 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 |

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

Predicted No Effect Concentration (PNEC)

| | |
|-------------|------------|
| Fresh Water | 0.19mg/L |
| Sea Water | 0.019 mg/L |

8.2. Exposure controls

Engineering Controls Avoid generation of particulates.

Personal protective equipment

Eye/face protection

If a risk of eye injury or irritation is present, appropriate eye protection is recommended; for example, tight-fitting goggles, foam-lined safety glasses, or other protective equipment that shields the eyes.

Hand Protection

Ensure that the breakthrough time of the glove material is not exceeded. Refer to glove supplier for information on breakthrough time for specific gloves.

Skin and body protection

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

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 | Powder | Odour | Pungent, Slight chlorine. |
| Appearance | Powder | Odour threshold | |
| Colour | white, orange | | |
| Property | Values | Remarks • Method | |
| pH | <1 | | |
| Melting point/freezing point | 440 °C / 820 °F | | |
| Boiling point / boiling range | - | | |
| Flash point | - | Not applicable | |

| | | |
|---------------------------|-------------------|----------------|
| Evaporation rate | - | Not applicable |
| Flammability (solid, gas) | - | Not flammable |
| Flammability Limit in Air | | |
| Upper flammability limit: | - | |
| Lower flammability limit | - | |
| Vapour pressure | - | Not applicable |
| Vapour density | - | Not applicable |
| Specific Gravity | 2.8 | |
| Water solubility | Reacts with water | hydrolyzes |
| Solubility(ies) | | |
| Partition coefficient | - | |
| 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 | 45-80 lb/ft3 |

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 None.

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

Unintentional contact with water.

10.5. Incompatible materials

Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics.

10.6. Hazardous decomposition products

Reacts with water to produce hydrogen chloride gas or hydrochloric acid and heat.

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

Product Information

| | |
|---------------------|---------------------------|
| Inhalation | Product not classified. |
| Eye contact | Causes severe eye damage. |
| Skin Contact | Causes severe skin burns. |
| Ingestion | Product not classified. |

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|-------------------------|-----------|-------------|-----------------|
| Zirconium Tetrachloride | - | - | - |

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 | May cause severe skin burns. |
| Serious eye damage/eye irritation | May cause serious eye damage. |
| 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 Micro-organisms | Crustacea |
|-------------------------|--|---|-----------------------------|---|
| Zirconium Tetrachloride | The 14 d NOEC of zirconium tetrachloride to <i>Chlorella vulgaris</i> was greater than 262 mg of ZrCl ₄ /L. | The 96h LC50 value of zirconium tetrachloride to <i>Oncorhynchus mykiss</i> was greater than 51 mg ZrCl ₄ /L and the 96 h LL50 of zirconium tetrachloride to <i>Danio rerio</i> was greater than 190 mg of ZrCl ₄ /L. | - | The 48 h EC50 of zirconium tetrachloride to <i>Daphnia magna</i> was greater than 190 mg of ZrCl ₄ /L. |

12.2. Persistence and degradability**12.3. Bioaccumulative potential**

12.4. Mobility in soil12.5. Results of PBT and vPvB assessment12.6. 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 INFORMATIONIMDG

| | |
|--|-------------------------|
| 14.1 UN/ID no | 2503 |
| 14.2 Proper shipping name | Zirconium Tetrachloride |
| 14.3 Hazard Class | 8 |
| 14.4 Packing Group | III |
| 14.5 Marine pollutant | Not applicable |
| 14.6 Special Provisions | IB8, IP3, T1, TP33 |
| 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code | - |

RID

| | |
|----------------------------------|-------------------------|
| 14.1 UN/ID no | 2503 |
| 14.2 Proper shipping name | Zirconium Tetrachloride |
| 14.3 Hazard Class | 8 |
| 14.4 Packing Group | III |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | IB8, IP3, T1, TP33 |

ADR

| | |
|----------------------------------|-------------------------|
| 14.1 UN/ID no | 2503 |
| 14.2 Proper shipping name | Zirconium Tetrachloride |
| 14.3 Hazard Class | 8 |
| 14.4 Packing Group | III |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | IB8, IP3, T1, TP33 |

ICAO (air)

| | |
|----------------------------------|-------------------------|
| 14.1 UN/ID no | 2503 |
| 14.2 Proper shipping name | Zirconium Tetrachloride |
| 14.3 Hazard Class | 8 |
| 14.4 Packing Group | III |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | IB8, IP3, T1, TP33 |

IATA

| | |
|----------------------------------|-------------------------|
| 14.1 UN/ID no | 2503 |
| 14.2 Proper shipping name | Zirconium Tetrachloride |

| | |
|---------------------------|--|
| 14.3 Hazard Class | 8 |
| 14.4 Packing Group | III |
| Description | - |
| 14.5 Environmental hazard | Not applicable |
| 14.6 Special Provisions | IB8, IP3, T1, TP33 ERG 137 Code |

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 Tetrachloride 10026-11-6 | - | - |

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/NDSL | 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

A Chemical Safety Assessment has been carried out for this substance

Section 16: OTHER INFORMATION

| | |
|---------------|---------------------------|
| Issue Date | 08-Jul-2015 |
| Revision Date | 12-Oct-2016 |
| Revision Note | SDS sections updated, 14. |

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