



# SAFETY DATA SHEET

**MATERION**

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

### 1.1. Product identifier

**Name of the substance** Zirconium Iodide (ZrI4)  
**Identification number** 237-780-9 (EC number)  
**Registration number** -  
**Document number** 2LX  
**Synonyms** None.  
**Materion Code** 2LX  
**Issue date** 31-January-2020

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

#### Supplier

**Company name** Materion Advanced Chemicals Inc.  
**Address** 407 N. 13th Street  
1316 W. St. Paul Avenue  
Milwaukee, WI 53233  
United States  
**Division** Milwaukee  
**Telephone** 414.212.0257  
**e-mail** advancedmaterials@materion.com  
**Contact person** Laura Hamilton

### 1.4. Emergency telephone number

**Version number** 01

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

**Identified uses** Not available.  
**Uses advised against** None known.

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008 as amended

**Hazard summary** Causes severe skin burns and eye damage. May cause irritation to the respiratory system.

### 2.2. Label elements

#### Label according to Regulation (EC) No. 1272/2008 as amended

**Contains:** Zirconium Iodide (ZrI4)

#### Hazard pictograms



**Signal word** Danger

#### Hazard statements

H314 May cause respiratory irritation.  
H318 Causes severe skin burns and eye damage.  
H318 Causes serious eye damage.

#### Precautionary statements

##### Prevention

P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P271 Use only outdoors or in a well ventilated area.  
P264 Wash hands thoroughly after handling.

##### Response

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

P307 + P311 IF exposed: Call a POISON CENTRE or doctor/physician.  
P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.  
P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P363 Wash contaminated clothing before reuse.  
P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

#### Storage

P405 Store locked up.  
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

#### Disposal

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Supplemental label information

None.

#### 2.3. Other hazards

None known.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Zirconium Iodide (ZrI4)	100	13986-26-0 237-780-9	-	-	
<b>Classification:</b>	Skin Corr. 1B;H314, Eye Dam. 1;H318				

## SECTION 4: First aid measures

#### General information

Show this safety data sheet to the doctor in attendance.

#### 4.1. Description of first aid measures

##### Inhalation

Move into fresh air and keep at rest. If breathing has stopped, perform artificial respiration and obtain medical help. Do not use mouth-to-mouth method if victim inhaled the substance. Call a physician or poison control centre immediately.

##### Skin contact

Immediately remove contaminated clothing and shoes and wash skin with soap and plenty of water. Get medical attention immediately.

##### Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Hold eyelids apart. Get medical attention immediately.

##### Ingestion

Seek immediate medical attention. Do not induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person.

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

May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Burning pain and severe corrosive skin damage.

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

Treat symptomatically.

## SECTION 5: Firefighting measures

#### General fire hazards

Not available.

#### 5.1. Extinguishing media

##### Suitable extinguishing media

Use dry chemical, carbon dioxide (CO<sub>2</sub>), or a dry, non-combustible material such as dry sand or earth to extinguish flames. Alcohol resistant foam.

##### Unsuitable extinguishing media

Not available.

#### 5.2. Special hazards arising from the substance or mixture

Fire may produce irritating, corrosive and/or toxic gases.

#### 5.3. Advice for firefighters

##### Special protective equipment for firefighters

Wear self-contained breathing apparatus and protective clothing.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

<b>For non-emergency personnel</b>	Wear necessary protective equipment. Immediately evacuate personnel to safe areas. Avoid contact with skin and eyes.
<b>For emergency responders</b>	Not available.

**6.2. Environmental precautions** Avoid release to the environment. Do not contaminate water sources or sewer.

**6.3. Methods and material for containment and cleaning up** Vacuum or sweep up material and place in a disposal container. Avoid dust formation.

**6.4. Reference to other sections** Not available.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling** Wear protective gloves/protective clothing/eye protection/face protection. Avoid contact with eyes, skin, and clothing. Use only in an exhaust hood.

**7.2. Conditions for safe storage, including any incompatibilities** Corrosive storage. Store in tightly closed original container in a dry, cool and well-ventilated place. Avoid contact with moist air.

**7.3. Specific end use(s)** Not available.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

##### Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Material	Type	Value	Form
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	MAK	5 mg/m <sup>3</sup>	Inhalable fraction.

##### Belgium. Exposure Limit Values.

Material	Type	Value	Form
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m <sup>3</sup>	
	TWA	5 mg/m <sup>3</sup>	
		0,1 mg/m <sup>3</sup> 0,01 ppm	Vapour and aerosol. Vapour and aerosol.

##### Croatia. Dangerous Substance Exposure Limit Values in the Workplace (ELVs), Annexes 1 and 2, Narodne Novine, 13/09

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	MAC	5 mg/m <sup>3</sup>
	STEL	10 mg/m <sup>3</sup>

##### Cyprus. OELs. Control of factory atmosphere and dangerous substances in factories regulation, PI 311/73, as amended.

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TWA	5 mg/m <sup>3</sup>

##### Denmark. Exposure Limit Values

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TLV	5 mg/m <sup>3</sup>

##### Finland. Workplace Exposure Limits

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TWA	1 mg/m <sup>3</sup>

**Germany. TRGS 900, Limit Values in the Ambient Air at the Workplace**

Material	Type	Value	Form
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	AGW	1 mg/m3	Inhalable fraction.

**Greece. OELs (Decree No. 90/1999, as amended)**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3
	TWA	5 mg/m3

**Hungary. OELs. Joint Decree on Chemical Safety of Workplaces**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	20 mg/m3
	TWA	5 mg/m3

**Iceland. OELs. Regulation 154/1999 on occupational exposure limits**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TWA	5 mg/m3

**Ireland. Occupational Exposure Limits**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3
	TWA	5 mg/m3

**Italy. Occupational Exposure Limits**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3

**Norway. Administrative Norms for Contaminants in the Workplace**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TLV	5 mg/m3

**Ordinance of the Minister of Labour and Social Policy on 6 June 2014 on the maximum permissible concentrations and intensities of harmful health factors in the work environment, Journal of Laws 2014, item 817**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3
	TWA	5 mg/m3

**Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3

**Romania. OELs. Protection of workers from exposure to chemical agents at the workplace**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3
	TWA	5 mg/m3

**Slovakia. OELs. Regulation No. 300/2007 concerning protection of health in work with chemical agents**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TWA	1 mg/m3

**Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)**

Material	Type	Value	Form
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TWA	1 mg/m3	Inhalable dust.

**Spain. Occupational Exposure Limits**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3
	TWA	5 mg/m3

**Switzerland. SUVA Grenzwerte am Arbeitsplatz**

Material	Type	Value	Form
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	TWA	5 mg/m3	Inhalable fraction.

**UK. EH40 Workplace Exposure Limits (WELs)**

Material	Type	Value
Zirconium Iodide (ZrI4) (CAS 13986-26-0)	STEL	10 mg/m3
	TWA	5 mg/m3

**Biological limit values** No biological exposure limits noted for the ingredient(s).

**Recommended monitoring procedures** Not available.

**Derived no effect levels (DNELs)** Not available.

**Predicted no effect concentrations (PNECs)** Not available.

**8.2. Exposure controls**

**Appropriate engineering controls** Eye wash facilities and emergency shower must be available when handling this product. Ventilation should effectively remove and prevent buildup of any vapor/mist/fume/dust generated from the handling of this product.

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

**General information** Handle in accordance with good industrial hygiene and safety practices.

**Eye/face protection** Wear safety glasses with side shields (or goggles).

**Skin protection**

**- Hand protection** Wear protective gloves.

**- Other** Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment. Wear suitable protective clothing and gloves.

**Respiratory protection** When airborne exposures exceed or have the potential to exceed the occupational exposure limits, approved respirators must be used as specified by an Industrial Hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of tight fitting respirators must be clean shaven on those areas of the face where the respirator seal contacts the face. Use pressure-demand airline respirators when performing jobs with high potential exposures such as changing filters in a baghouse air cleaning device.

**Thermal hazards** Not available.

**Hygiene measures** Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**Environmental exposure controls** Not available.

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties****Appearance**

**Physical state** Solid.

**Form** Not available.

<b>Colour</b>	Not available.
<b>Odour</b>	Not available.
<b>Odour threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	Not available.
<b>Initial boiling point and boiling range</b>	Not available.
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Vapour pressure</b>	< 0,0000001 kPa (25 °C (77 °F))
<b>Vapour density</b>	Not available.
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Not available.
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	Not available.
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Explosive properties</b>	Not available.
<b>Oxidising properties</b>	Not available.

## 9.2. Other information

**Molecular formula** I4Zr

## SECTION 10: Stability and reactivity

<b>10.1. Reactivity</b>	Strong oxidising agents.
<b>10.2. Chemical stability</b>	Instability caused by excessive moisture.
<b>10.3. Possibility of hazardous reactions</b>	Hazardous polymerisation does not occur.
<b>10.4. Conditions to avoid</b>	Water, moisture.
<b>10.5. Incompatible materials</b>	Strong oxidising substances.
<b>10.6. Hazardous decomposition products</b>	No dangerous reaction known under conditions of normal use.

## SECTION 11: Toxicological information

<b>General information</b>	Not available.
<b>Information on likely routes of exposure</b>	
<b>Inhalation</b>	Irritating to respiratory system. Prolonged inhalation may be harmful.
<b>Skin contact</b>	Causes severe skin burns and eye damage.
<b>Eye contact</b>	Causes serious eye damage.
<b>Ingestion</b>	Causes digestive tract burns.
<b>Symptoms</b>	Not available.
<b>11.1. Information on toxicological effects</b>	
<b>Acute toxicity</b>	No data available.
<b>Skin corrosion/irritation</b>	Causes severe skin burns and eye damage.
<b>Serious eye damage/eye irritation</b>	Causes eye burns.
<b>Respiratory sensitisation</b>	Not available.
<b>Skin sensitisation</b>	Not available.
<b>Germ cell mutagenicity</b>	Not available.

## Carcinogenicity

Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)

Not listed.

<b>Reproductive toxicity</b>	Not available.
<b>Specific target organ toxicity - single exposure</b>	Respiratory tract irritation.
<b>Specific target organ toxicity - repeated exposure</b>	Not available.
<b>Aspiration hazard</b>	Not available.
<b>Mixture versus substance information</b>	Not available.
<b>Other information</b>	Not available.

## SECTION 12: Ecological information

<b>12.1. Toxicity</b>	No toxicity data noted for the ingredient(s).
<b>12.2. Persistence and degradability</b>	Not available.
<b>12.3. Bioaccumulative potential</b>	Not available.
<b>Partition coefficient n-octanol/water (log Kow)</b>	Not available.
<b>Bioconcentration factor (BCF)</b>	Not available.
<b>12.4. Mobility in soil</b>	Not available.
<b>12.5. Results of PBT and vPvB assessment</b>	Not a PBT or vPvB substance or mixture.
<b>12.6. Other adverse effects</b>	Not available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

<b>Residual waste</b>	Not available.
<b>Contaminated packaging</b>	Not available.
<b>EU waste code</b>	Not available.
<b>Disposal methods/information</b>	Dispose of contents/container in accordance with local/regional/national/international regulations.

## SECTION 14: Transport information

### ADR

14.1. - 14.6.: Not regulated as dangerous goods.

### RID

14.1. - 14.6.: Not regulated as dangerous goods.

### ADN

14.1. - 14.6.: Not regulated as dangerous goods.

### IATA

<b>14.1. UN number</b>	UN3260
<b>14.2. UN proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s.
<b>14.3. Transport hazard class(es)</b>	
<b>Class</b>	8
<b>Subsidiary risk</b>	-
<b>14.4. Packing group</b>	III
<b>14.5. Environmental hazards</b>	No.
<b>14.6. Special precautions for user</b>	Not available.

### IMDG

<b>14.1. UN number</b>	UN3260
<b>14.2. UN proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s.

### 14.3. Transport hazard class(es)

**Class** 8

**Subsidiary risk** -

**14.4. Packing group** III

### 14.5. Environmental hazards

**Marine pollutant** No.

**EmS** Not available.

**14.6. Special precautions for user** Not available.

**IATA; IMDG**



## SECTION 15: Regulatory information

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

#### EU regulations

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**

Not listed.

**Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

#### Authorisations

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

#### Restrictions on use

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Not listed.

**Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.**

Not listed.

#### Other EU regulations

**Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended**

Not listed.

**National regulations** Not available.

**15.2. Chemical safety assessment** Not available.



## SECTION 16: Other information

<b>List of abbreviations</b>	Not available.
<b>References</b>	Not available.
<b>Training information</b>	Not available.