



SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Trade name or designation of the mixture Pb(1.2)Zr(0.52)Ti(0.48)O(3.2)
Registration number -
Document number 1QC
Synonyms None.
Materion Code 1QC
Issue date 19-April-2016
Revision date 24-September-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

Supersedes date 20-March-2020
Version number 05

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

The mixture has been assessed and/or tested for its physical, health and environmental hazards and the following classification applies.

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

This mixture does not meet the criteria for classification according to Regulation (EC) 1272/2008 as amended.

Health hazards

Carcinogenicity	Category 2	H351 - Suspected of causing cancer.
Reproductive toxicity (fertility, the unborn child)	Category 1A	H360FD - May damage fertility. May damage the unborn child.
Reproductive toxicity	Effects on or via lactation	H362 - May cause harm to breast-fed children.

Hazard summary

DANGER

Causes fire through friction or through retained heat from manufacturing or processing. Harmful by inhalation and if swallowed. Harmful in contact with eyes. Risk of serious damage to eyes. Cancer hazard. Irritating to respiratory system and skin. Pregnant women or women of child-bearing age should not be exposed to this product. May cause reproductive effects. May cause harm to the unborn child. Possible risk of impaired fertility. Can cause adverse reproductive effects - such as birth defects, miscarriages, or infertility. Danger of cumulative effects. Prolonged exposure may cause chronic effects. Occupational exposure to the substance or mixture may cause adverse health effects. Not classified for health hazards. However, occupational exposure to the mixture or substance(s) may cause adverse health effects. The material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

2.2. Label elements

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

Contains: Lead, Oxygen, Titanium, Zirconium

Hazard pictograms



Signal word

Danger

Hazard statements

H351	The mixture does not meet the criteria for classification.
H360FD	Suspected of causing cancer.
H362	May damage fertility. May damage the unborn child.
	May cause harm to breast-fed children.

Precautionary statements

Prevention

P201	Observe good industrial hygiene practices.
P202	Obtain special instructions before use.
P263	Do not handle until all safety precautions have been read and understood.
P264	Avoid contact during pregnancy and while nursing.
P270	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P308 + P313	Wash hands after handling.
	IF exposed or concerned: Get medical advice/attention.

Storage

P405	Store away from incompatible materials.
	Store locked up.

Disposal

P501	Dispose of waste and residues in accordance with local authority requirements.
	Dispose of contents/container in accordance with local/regional/national/international regulations.

Supplemental label information

100 % of the mixture consists of component(s) of unknown acute oral toxicity. 100 % of the mixture consists of component(s) of unknown acute dermal toxicity. 100 % of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 100 % of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment. For further information, please contact the Product Stewardship Department at +1.800.862.4118.

2.3. Other hazards

Not a PBT or vPvB substance or mixture.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Lead		7439-92-1 231-100-4	-	082-014-00-7	#
Classification:	Acute Tox. 4;H302, Acute Tox. 4;H332, Carc. 2;H351, Repr. 1A;H360FD, STOT RE 2;H373				

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	Index No.	Notes
Oxygen		7782-44-7 231-956-9	-	008-001-00-8	
Classification:	Ox. Gas 1;H270				U
Titanium		7440-32-6 231-142-3	-	-	
Classification:	-				
Zirconium		7440-67-7 231-176-9	-	040-002-00-9	
Classification:	Flam. Sol. 2;H228, Pyr. Sol. 1;H250				T

List of abbreviations and symbols that may be used above

DSD: Directive 67/548/EEC.

CLP: Regulation No. 1272/2008.

#: This substance has been assigned Union workplace exposure limit(s).

M: M-factor

PBT: persistent, bioaccumulative and toxic substance.

vPvB: very persistent and very bioaccumulative substance.

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

Composition comments The full text for all H-statements is displayed in section 16.

SECTION 4: First aid measures

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

4.1. Description of first aid measures

Inhalation Move to fresh air. Call a physician if symptoms develop or persist.

Skin contact Wash off with soap and water. Get medical attention if irritation develops and persists.

Eye contact Rinse with water. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention if symptoms occur.

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

Abdominal pain.

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

Provide general supportive measures and treat symptomatically.

SECTION 5: Firefighting measures

General fire hazards No unusual fire or explosion hazards noted.

5.1. Extinguishing media

Suitable extinguishing media Dry powder. Dry sand.

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

5.2. Special hazards arising from the substance or mixture

During fire, gases hazardous to health may be formed.

5.3. Advice for firefighters

Special protective equipment for firefighters Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Special firefighting procedures Use water spray to cool unopened containers.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Keep unnecessary personnel away. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

For emergency responders

Keep unnecessary personnel away.

6.2. Environmental precautions

Avoid discharge into drains, water courses or onto the ground.

6.3. Methods and material for containment and cleaning up

Stop the flow of material, if this is without risk. Following product recovery, flush area with water. Put material in suitable, covered, labeled containers.

6.4. Reference to other sections

For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid prolonged exposure. Pregnant or breastfeeding women must not handle this product. Should be handled in closed systems, if possible. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

7.2. Conditions for safe storage, including any incompatibilities

Store locked up. Store in tightly closed container. Store away from incompatible materials (see Section 10 of the SDS).

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**

Components	Type	Value	Form
Lead (CAS 7439-92-1)	MAK	0,1 mg/m ³	Inhalable fraction.
	STEL	0,4 mg/m ³	Inhalable fraction.
Zirconium (CAS 7440-67-7)	MAK	5 mg/m ³	Inhalable fraction.

Belgium. Exposure Limit Values.

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	Dust and fume.
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³	
	TWA	5 mg/m ³	

Bulgaria. OELs. Regulation No 13 on protection of workers against risks of exposure to chemical agents at work

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,05 mg/m ³
Titanium (CAS 7440-32-6)	TWA	1 mg/m ³

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

Components	Type	Value
Lead (CAS 7439-92-1)	MAC	0,15 mg/m ³
Zirconium (CAS 7440-67-7)	MAC	5 mg/m ³
	STEL	10 mg/m ³

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

Components	Type	Value
Zirconium (CAS 7440-67-7)	TWA	5 mg/m ³

Czech Republic. OELs. Government Decree 361

Components	Type	Value
Lead (CAS 7439-92-1)	Ceiling	0,2 mg/m ³
	TWA	0,05 mg/m ³

Denmark. Exposure Limit Values

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TLV	0,05 mg/m ³	Dust and fume.

Estonia. OELs. Occupational Exposure Limits of Hazardous Substances. (Annex of Regulation No. 293 of 18 September 2001)

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,1 mg/m ³	Total dust.
		0,05 mg/m ³	Respirable dust.

Finland. Workplace Exposure Limits

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,1 mg/m ³
Zirconium (CAS 7440-67-7)	TWA	1 mg/m ³

France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Components	Type	Value
Lead (CAS 7439-92-1)	VME	0,1 mg/m ³

Regulatory status: Regulatory binding (VRC)

Germany. DFG MAK List (advisory OELs). Commission for the Investigation of Health Hazards of Chemical Compounds in the Work Area (DFG)

Components	Type	Value	Form
Zirconium (CAS 7440-67-7)	TWA	1 mg/m ³	Inhalable fraction.

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

Components	Type	Value	Form
Zirconium (CAS 7440-67-7)	AGW	1 mg/m ³	Inhalable fraction.

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

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	20 mg/m ³
	TWA	5 mg/m ³

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

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,05 mg/m ³	Dust and fume.
Zirconium (CAS 7440-67-7)	TWA	5 mg/m ³	

Ireland. Occupational Exposure Limits

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

Italy. Occupational Exposure Limits

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Latvia. OELs. Occupational exposure limit values of chemical substances in work environment

Components	Type	Value
Lead (CAS 7439-92-1)	STEL	0,01 mg/m ³
	TWA	0,005 mg/m ³
Titanium (CAS 7440-32-6)	TWA	10 mg/m ³

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	Inhalable fraction.

Lithuania. OELs. Limit Values for Chemical Substances, General Requirements

Components	Type	Value	Form
Zirconium (CAS 7440-67-7)	TWA	0,07 mg/m ³ 6 mg/m ³	Respirable fraction.

Luxembourg. Binding Occupational exposure limit values (Annex I), Memorial A

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

Malta. OELs. Occupational Exposure Limit Values (L.N. 227. of Occupational Health and Safety Authority Act (CAP. 424), Schedules I and V)

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

Netherlands. OELs (binding)

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

Norway. Administrative Norms for Contaminants in the Workplace

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TLV	0,05 mg/m ³	Dust and fume.

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

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,05 mg/m ³
Titanium (CAS 7440-32-6)	STEL	30 mg/m ³
	TWA	10 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Portugal. Decree-Law No. 24/2012, Binding Occupational Exposure Limit Values, Annex I (Diário da República - I.a série - No. 26)

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

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

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,05 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³
	TWA	5 mg/m ³

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

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³
Titanium (CAS 7440-32-6)	STEL	15 mg/m ³
	TWA	10 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³
	TWA	5 mg/m ³

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

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,5 mg/m ³	Inhalable fraction.
		0,15 mg/m ³	Respirable fraction.
Zirconium (CAS 7440-67-7)	TWA	1 mg/m ³	

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

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,1 mg/m ³	Inhalable fraction.
Zirconium (CAS 7440-67-7)	TWA	1 mg/m ³	Inhalable dust.

Spain. Occupational Exposure Limits Components

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³
Zirconium (CAS 7440-67-7)	STEL	10 mg/m ³
	TWA	5 mg/m ³

Sweden. OELs. Work Environment Authority (AV), Occupational Exposure Limit Values (AFS 2015:7) Components

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,1 mg/m ³	Inhalable dust.
		0,05 mg/m ³	Respirable dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz Components

Components	Type	Value	Form
Lead (CAS 7439-92-1)	STEL	0,8 mg/m ³	Inhalable fraction.
		0,1 mg/m ³	Inhalable fraction.
Zirconium (CAS 7440-67-7)	TWA	5 mg/m ³	Inhalable fraction.

UK. EH40 Workplace Exposure Limits (WELs) Components

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

EU. Directive 98/24/EC: on the protection of workers from the risks related to chemical agents at work, Annex I List of Binding Occupational Exposure Limit Values

Components	Type	Value
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³

Biological limit values**Croatia. BLV. Dangerous Substance Exposure Limit Values at Workplace, Annexes 4 (as amended) Components**

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	80 µg/g	Lead	Creatinine in urine	*
	1,5 mg/l	Protoporphyrin	Red blood cells (erythrocytes)	*
	0,7 mg/l	Lead	Blood	*
	15 u/l	Dehydratase δ-aminolevulinic acid	Blood	*
	2,67 umol/l	Protoporphyrin	Red blood cells (erythrocytes)	*
	43,68 umol/mol	Lead	Creatinine in urine	*

* - For sampling details, please see the source document.

Czech Republic. Limit Values for Indicators of Biological Exposure Tests in Urine and Blood, Annex 2, Tables 1 and 2, Government Decree 432/2003 Sb.

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	0,035 µmol/mmol	Coproporphyrin	Creatinine in urine	*
	0,2 mg/g	Coproporphyrin	Creatinine in urine	*
	0,4 mg/l	Lead	Blood	*

* - For sampling details, please see the source document.

Finland. HTP-arvot, App 2., Biological Limit Values, (BRA/BGV), Social Affairs and Ministry of Health Components

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	1,4 umol/l	Lead	Blood	*

* - For sampling details, please see the source document.

Germany. TRGS 903, BAT List (Biological Limit Values)

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	300 µg/l	Blei	Blood	*

* - For sampling details, please see the source document.

Hungary. Chemical Safety at Workplace Ordinance Joint Decree No. 25/2000 (Annex 2): Permissible limit values of biological exposure (effect) indices

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	300 µg/l	lead	Blood	*
	1,5 µmol/l	lead	Blood	*
	100 µmol/mol hb	zinc protoporphyrin (for pre-screening)	Hemoglobin in blood	

* - For sampling details, please see the source document.

Luxembourg. Biological limit values (Annex II), Memorial A, n. 96, p. 1948

Components	Value	Determinant	Specimen
Lead (CAS 7439-92-1)	70 ug/ml	Pb	Blood

Portugal. Decree-Law No. 24/2012, Binding Biological Limit Values, Annex II (Diário da República - I.a série - No. 26)

Components	Value	Determinant	Specimen
Lead (CAS 7439-92-1)	70 µg/100 ml	Chumbo	Blood

Slovakia. BLVs (Biological Limit Value). Regulation no. 355/2006 concerning protection of workers exposed to chemical agents, Annex 2

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	100 µg/l	Lead	Blood	*
	4,03 mg/g	δ-Aminolevulinic acid	Creatinine in urine	
	0,2 mg/g	Coproporphyrin	Creatinine in urine	*
	6 mg/l	δ-Aminolevulinic acid		
	0,3 mg/l	Coproporphyrin	Urine	*

* - For sampling details, please see the source document.

Spain. Biological Limit Values (VLBs), Occupational Exposure Limits for Chemical Agents, Table 4

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	70 µg/dl	Plomo	Blood	*

* - For sampling details, please see the source document.

Switzerland. BAT-Werte (Biological Limit Values in the Workplace as per SUVA)

Components	Value	Determinant	Specimen	Sampling Time
Lead (CAS 7439-92-1)	100 µg/l	Blei (Frauen < 45 Jahre)	Blood	*

* - For sampling details, please see the source document.

EU. Directive 98/24/EC: on the protection of workers from the risks related to chemical agents at work, Annex II Binding Biological Limit Values and Health Surveillance Measures

Components	Value	Determinant	Specimen
Lead (CAS 7439-92-1)	70 µg/100 ml	Lead	Blood

Recommended monitoring procedures Follow standard monitoring procedures.

Derived no effect levels (DNELs) Not available.

Predicted no effect concentrations (PNECs) Not available.

8.2. Exposure controls

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Individual protection measures, such as personal protective equipment

General information Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment.

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

Skin protection

- **Hand protection** Wear appropriate chemical resistant gloves.
- **Other** Wear suitable protective clothing. Use of an impervious apron is recommended.

Respiratory protection In case of insufficient ventilation, wear suitable respiratory equipment.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

Hygiene measures Observe any medical surveillance requirements. 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. 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 Environmental manager must be informed of all major releases.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance

Physical state Solid.

Form Solid.

Colour Not available.

Odour Not available.

Odour threshold Not available.

pH Not available.

Melting point/freezing point -218,4 °C (-361,12 °F) estimated

Initial boiling point and boiling range -182,96 °C (-297,33 °F) estimated

Flash point Not available.

Evaporation rate Not available.

Flammability (solid, gas) Not available.

Upper/lower flammability or explosive limits

Flammability limit - lower (%) Not available.

Flammability limit - upper (%) Not available.

Vapour pressure 11484738 hPa estimated

Vapour density Not available.

Relative density Not available.

Solubility(ies)

Solubility (water) Not available.

Partition coefficient (n-octanol/water) Not available.

Auto-ignition temperature 200 °C (392 °F) estimated

Decomposition temperature Not available.

Viscosity Not available.

Explosive properties Not explosive.

Oxidising properties Not oxidising.

9.2. Other information

Density	8,41 g/cm ³ estimated
Specific gravity	8,41 estimated

SECTION 10: Stability and reactivity

10.1. Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
10.2. Chemical stability	Material is stable under normal conditions.
10.3. Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
10.4. Conditions to avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Contact with incompatible materials.
10.5. Incompatible materials	Acids. Strong oxidising agents.
10.6. Hazardous decomposition products	No hazardous decomposition products are known.

SECTION 11: Toxicological information

General information Occupational exposure to the substance or mixture may cause adverse effects.

Information on likely routes of exposure

Inhalation	Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Direct contact with eyes may cause temporary irritation.
Ingestion	May cause discomfort if swallowed. However, ingestion is not likely to be a primary route of occupational exposure.

Symptoms Abdominal pain.

11.1. Information on toxicological effects

Acute toxicity	Not known.
Skin corrosion/irritation	Due to partial or complete lack of data the classification is not possible.
Serious eye damage/eye irritation	Due to partial or complete lack of data the classification is not possible.
Respiratory sensitisation	Due to partial or complete lack of data the classification is not possible.
Skin sensitisation	Due to partial or complete lack of data the classification is not possible.
Germ cell mutagenicity	Due to partial or complete lack of data the classification is not possible.
Carcinogenicity	Suspected of causing cancer.

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

Not listed.

IARC Monographs. Overall Evaluation of Carcinogenicity

Lead (CAS 7439-92-1) 2B Possibly carcinogenic to humans.

Reproductive toxicity May cause harm to breastfed babies. May damage fertility. May damage the unborn child.

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

Lead (CAS 7439-92-1) Toxic for reproduction - category 2.

Specific target organ toxicity - single exposure Due to partial or complete lack of data the classification is not possible.

Specific target organ toxicity - repeated exposure Due to partial or complete lack of data the classification is not possible.

Aspiration hazard Due to partial or complete lack of data the classification is not possible.

Mixture versus substance information No information available.

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity Based on available data, the classification criteria are not met for hazardous to the aquatic environment. The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Product	Species	Test Results
Pb(1.2)Zr(0.52)Ti(0.48)O(3.2)		
Aquatic		
Fish	LC50	Fish
		301,9445 mg/l, 96 hours estimated

* Estimates for product may be based on additional component data not shown.

12.2. Persistence and degradability	No data is available on the degradability of this product.
12.3. Bioaccumulative potential	No data available.
Partition coefficient n-octanol/water (log Kow)	Not available.
Bioconcentration factor (BCF)	Not available.
12.4. Mobility in soil	No data available.
12.5. Results of PBT and vPvB assessment	Not a PBT or vPvB substance or mixture.
12.6. Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

12.7. Additional information

Estonia Dangerous substances in groundwater Data

Lead (CAS 7439-92-1)	LEAD (PB) 10 ug/l
	LEAD (PB) 200 ug/l

Estonia Dangerous substances in soil Data

Lead (CAS 7439-92-1)	LEAD (PB) 300 mg/kg
	LEAD (PB) 50 mg/kg
	LEAD (PB) 600 mg/kg

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.
EU waste code	The Waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Disposal methods/information	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.
Special precautions	Dispose in accordance with all applicable regulations.

SECTION 14: Transport information

ADR

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally hazardous substances, solid, n.o.s.
14.3. Transport hazard class(es)	
Class	9
Subsidiary risk	-
Label(s)	9
Hazard No. (ADR)	Not available.
Tunnel restriction code	Not available.
14.4. Packing group	III
14.5. Environmental hazards	No.
14.6. Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

RID

14.1. UN number	UN3077
14.2. UN proper shipping name	Environmentally hazardous substances, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9
Subsidiary risk -
Label(s) 9

14.4. Packing group III

14.5. Environmental hazards No.

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

ADN

14.1. UN number UN3077

14.2. UN proper shipping name Environmentally hazardous substances, solid, n.o.s.

14.3. Transport hazard class(es)

Class 9
Subsidiary risk -
Label(s) 9

14.4. Packing group III

14.5. Environmental hazards No.

14.6. Special precautions for user Read safety instructions, SDS and emergency procedures before handling.

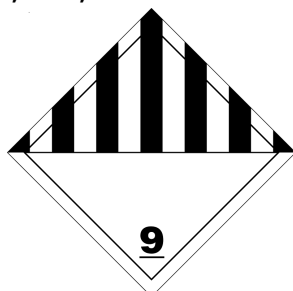
IATA

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

IMDG

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

ADN; ADR; RID



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

Lead (CAS 7439-92-1)

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

Lead (CAS 7439-92-1)

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

Lead (CAS 7439-92-1)

Zirconium (CAS 7440-67-7)

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

Oxygen (CAS 7782-44-7)

Zirconium (CAS 7440-67-7)

Other regulations

The product is classified and labelled in accordance with EC directives or respective national laws. Pregnant women should not work with the product, if there is the least risk of exposure. The product is classified and labelled in accordance with Regulation (EC) 1272/2008 (CLP Regulation) as amended. This Safety Data Sheet complies with the requirements of Regulation (EC) No 1907/2006, as amended.

National regulations

Follow national regulation for work with chemical agents. According to Directive 92/85/EEC as amended, pregnant women should not work with the product, if there is the least risk of exposure.

Young people under 18 years old are not allowed to work with this product according to EU Directive 94/33/EC on the protection of young people at work, as amended. Follow national regulation for work with chemical agents in accordance with Directive 98/24/EC, as amended.

15.2. Chemical safety assessment

No Chemical Safety Assessment has been carried out.

SECTION 16: Other information

List of abbreviations

Not available.

References

Not available.

Training information

Follow training instructions when handling this material.

Disclaimer

Materion Advanced Chemicals Inc. cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. This document has been prepared using data from sources considered to be technically reliable and the information is believed to be correct. Materion makes no warranties, expressed or implied, as to the accuracy of the information contained herein. Materion cannot anticipate all conditions under which this information and its products may be used and the actual conditions of use are beyond its control. The user is responsible to evaluate all available information when using this product for any particular use and to comply with all Federal, State, Provincial and Local laws, statutes and regulations.