



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 Kovar/A42 Clad
Synonyms None.
Document number W38
Issue date 05-May-2015
Version number 03
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Supersedes date 05-May-2015

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

Identified uses Not available.
Uses advised against None known.

1.3. Details of the supplier of the safety data sheet

Supplier

Company name Materion Advanced Materials Technologies and Services Inc.
Address 2978 Main Street
Buffalo, NY 14214
United States
Division Buffalo
Telephone 716-837-1000
e-mail Not available.
Contact person Not available.

1.4. Emergency telephone number 800-424-9300 Chemtrec

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC as amended

Classification Repr. Cat. 1;R61, Repr. Cat. 3;R62, T+;R26, Xn;R22, R33-42/43, N;R50/53

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

Health hazards

Acute toxicity, oral	Category 4	H302 - Harmful if swallowed.
Acute toxicity, inhalation	Category 4	H332 - Harmful if inhaled.
Respiratory sensitisation	Category 1	H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin sensitisation	Category 1	H317 - May cause an allergic skin reaction.
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.
Specific target organ toxicity - repeated exposure	Category 2	H373 - May cause damage to organs through prolonged or repeated exposure.

Environmental hazards

Hazardous to the aquatic environment, acute aquatic hazard	Category 1	H400 - Very toxic to aquatic life.
Hazardous to the aquatic environment, long-term aquatic hazard	Category 2	H411 - Toxic to aquatic life with long lasting effects.

Hazard summary

Physical hazards	Not classified for physical hazards.
Health hazards	May cause harm to the unborn child. Also harmful if swallowed. Also very toxic by inhalation. Danger of cumulative effects. May cause sensitisation by inhalation and skin contact. Possible risk of impaired fertility.
Environmental hazards	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Specific hazards	Not available.

2.2. Label elements

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

Contains:	Aluminium, Gold, Lead, Tin, TRADE SECRET, TRADE SECRET
Hazard pictograms	None.
Signal word	Danger
Hazard statements	
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H351	Suspected of causing cancer.
H360FD	May damage fertility. May damage the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

Prevention

P201	Obtain special instructions before use.
P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P261	Avoid breathing dust.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P284	Wear respiratory protection.

Response

P301 + P312	IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell.
P302 + P352	IF ON SKIN: Wash with plenty of water.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308 + P313	IF exposed or concerned: Get medical advice/attention.
P312	Call a POISON CENTER/doctor if you feel unwell.
P330	Rinse mouth.
P333 + P313	If skin irritation or rash occurs: Get medical advice/attention.
P342 + P311	If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
P362 + P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.

Storage

P405	Store locked up.
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Disposal

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

86,43 % of the mixture consists of component(s) of unknown acute oral toxicity. 73,7 % of the mixture consists of component(s) of unknown acute hazards to the aquatic environment. 73,7 % of the mixture consists of component(s) of unknown long-term hazards to the aquatic environment.

2.3. Other hazards

None known.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
TRADE SECRET	23 - < 30	Proprietary	-	-	M=10
Classification:	DSD: N;R50/53				
	CLP: Carc. 2;H351, Aquatic Acute 1;H400, Aquatic Chronic 3;H412				
TRADE SECRET	23 - < 30	Proprietary	-	-	
Classification:	DSD: R42/43				
	CLP: Skin Sens. 1;H317, Resp. Sens. 1;H334, STOT SE 3;H335, Carc. 2;H351				
Lead	10 - < 25	7439-92-1 231-100-4	-	082-001-00-6	#
Classification:	DSD: Repr. Cat. 1;R61, Repr. Cat. 3;R62, Xn;R20/22, R33				A,E,1
	CLP: Acute Tox. 4;H302, Acute Tox. 4;H332, Carc. 2;H351, Repr. 1A;H360FD, STOT RE 2;H373				1,A
Gold	2 - < 32	7440-57-5 231-165-9	-	-	
Classification:	DSD: -				
	CLP: -				
Aluminium	1 - < 15	7429-90-5 231-072-3	-	-	
Classification:	DSD: N;R50/53				
	CLP: Aquatic Acute 1;H400, Aquatic Chronic 1;H410				
Tin	1 - < 5	7440-31-5 231-141-8	-	-	#
Classification:	DSD: -				
	CLP: -				

SECTION 4: First aid measures

General information Not available.

4.1. Description of first aid measures

Inhalation Not available.

Skin contact Not available.

Eye contact Not available.

Ingestion Not available.

4.2. Most important symptoms and effects, both acute and delayed Not available.

4.3. Indication of any immediate medical attention and special treatment needed Not available.

SECTION 5: Firefighting measures

General fire hazards Not available.

5.1. Extinguishing media

Suitable extinguishing media Not available.

Unsuitable extinguishing media Not available.

5.2. Special hazards arising from the substance or mixture Not available.

5.3. Advice for firefighters
Special protective equipment for firefighters Not available.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel Not available.

For emergency responders Not available.

6.2. Environmental precautions Not available.

6.3. Methods and material for containment and cleaning up Not available.

6.4. Reference to other sections Not available.

SECTION 7: Handling and storage

7.1. Precautions for safe handling Not available.

7.2. Conditions for safe storage, including any incompatibilities Not available.

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
Aluminium (CAS 7429-90-5)	MAK	5 mg/m ³	Respirable fraction.
		10 mg/m ³	Inhalable fraction.
	STEL	20 mg/m ³	Inhalable fraction.
		10 mg/m ³	Respirable fraction.
Lead (CAS 7439-92-1)	MAK	0,1 mg/m ³	Inhalable fraction.
	STEL	0,4 mg/m ³	Inhalable fraction.
Tin (CAS 7440-31-5)	MAK	2 mg/m ³	Inhalable fraction.
	STEL	4 mg/m ³	Inhalable fraction.

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

Components	Type	Value	Form
TRADE SECRET	STEL	2 mg/m ³	Inhalable dust.
		0,4 mg/m ³	Inhalable fraction.
	TWA	0,5 mg/m ³	Inhalable dust.
		0,1 mg/m ³	Inhalable fraction.

Belgium. Exposure Limit Values.

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m ³	Respirable fraction.
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	Dust and fume.
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	
TRADE SECRET	TWA	1 mg/m ³	
		0,02 mg/m ³	Dust and fume.

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	2 mg/m ³	
		10 mg/m ³	Dust.
		1,5 mg/m ³	Respirable fraction.
Lead (CAS 7439-92-1)	TWA	0,05 mg/m ³	

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

Components	Type	Value	Form
Tin (CAS 7440-31-5)	TWA	0,1 mg/m ³	
TRADE SECRET	TWA	6 mg/m ³	Inhalable fraction.
		0,1 mg/m ³	
		0,05 mg/m ³	

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	MAC	4 mg/m ³	Respirable dust.
		10 mg/m ³	Total dust.
Lead (CAS 7439-92-1)	MAC	0,15 mg/m ³	
Tin (CAS 7440-31-5)	MAC	2 mg/m ³	
TRADE SECRET	MAC	0,5 mg/m ³	
		0,1 mg/m ³	

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

Components	Type	Value	Form
TRADE SECRET	TWA	1 mg/m ³	
		0,1 mg/m ³	Dust and fume.

Czech Republic. OELs. Government Decree 361

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	10 mg/m ³	Dust.
Lead (CAS 7439-92-1)	Ceiling	0,2 mg/m ³	
	TWA	0,05 mg/m ³	
Tin (CAS 7440-31-5)	Ceiling	4 mg/m ³	
	TWA	2 mg/m ³	
TRADE SECRET	Ceiling	1 mg/m ³	
		0,1 mg/m ³	
	TWA	10 mg/m ³	
		0,5 mg/m ³	
		0,05 mg/m ³	

Denmark. Exposure Limit Values

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TLV	5 mg/m ³	Dust and fume.
		5 mg/m ³	Fume.
		2 mg/m ³	Respirable dust and/or fume.
Lead (CAS 7439-92-1)	TLV	0,05 mg/m ³	Dust and fume.
TRADE SECRET	TLV	0,05 mg/m ³	Dust.
		0,01 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
Aluminium (CAS 7429-90-5)	TWA	4 mg/m ³	Respirable dust.
		10 mg/m ³	Total dust.
Lead (CAS 7439-92-1)	TWA	0,1 mg/m ³	Total dust.
		0,05 mg/m ³	Respirable dust.
TRADE SECRET	TWA	0,5 mg/m ³	
		0,05 mg/m ³	

Finland. Workplace Exposure Limits

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1,5 mg/m ³	Welding fume.
Lead (CAS 7439-92-1)	TWA	0,1 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	
TRADE SECRET	TWA	0,02 mg/m ³	
		0,01 mg/m ³	Respirable.

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	VME	5 mg/m ³	Dust.
		5 mg/m ³	Welding fume.
		10 mg/m ³	
		0,1 mg/m ³	
Lead (CAS 7439-92-1)	VME	0,1 mg/m ³	
TRADE SECRET	VME	1 mg/m ³	

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
Aluminium (CAS 7429-90-5)	TWA	4 mg/m ³	Inhalable dust.
		1,5 mg/m ³	Respirable dust.
Tin (CAS 7440-31-5)	TWA	0,02 mg/m ³	Vapor and aerosol, inhalable fraction.
		0,004 ppm	Vapor and aerosol, inhalable fraction.

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	AGW	10 mg/m ³	Inhalable fraction.
		1,25 mg/m ³	Respirable fraction.

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m ³	Inhalable
		10 mg/m ³	Welding fume.
		10 mg/m ³	Respirable.
		10 mg/m ³	Pyrophoric powder.
		0,15 mg/m ³	
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	
TRADE SECRET	TWA	1 mg/m ³	
		0,1 mg/m ³	Dust and fume.

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	6 mg/m ³	Respirable.
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	
Tin (CAS 7440-31-5)	STEL	8 mg/m ³	
	TWA	2 mg/m ³	
TRADE SECRET	Ceiling	0,1 mg/m ³	
	STEL	0,4 mg/m ³	
	TWA	0,1 mg/m ³	

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m ³	Fume.
		10 mg/m ³	Dust.
Lead (CAS 7439-92-1)	TWA	0,05 mg/m ³	Dust and fume.
	TWA	0,05 mg/m ³	Dust.
TRADE SECRET		0,02 mg/m ³	Dust and fume.

Ireland. Occupational Exposure Limits

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 ppm	Respirable dust.
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	
TRADE SECRET	TWA	0,5 mg/m ³	
		0,1 mg/m ³	

Italy. Occupational Exposure Limits

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	1 mg/m ³	Respirable fraction.
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	
Tin (CAS 7440-31-5)	TWA	2 mg/m ³	
TRADE SECRET	TWA	1,5 mg/m ³	Inhalable fraction.

Italy. Occupational Exposure Limits Components

Type	Value	Form
	0,02 mg/m3	

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

Type	Value
Aluminium (CAS 7429-90-5)	TWA 2 mg/m3
Lead (CAS 7439-92-1)	STEL 0,01 mg/m3
	TWA 0,005 mg/m3
TRADE SECRET	TWA 0,5 mg/m3 0,05 mg/m3

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

Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA 5 mg/m3 2 mg/m3	Inhalable fraction. Respirable fraction.
Lead (CAS 7439-92-1)	TWA 0,15 mg/m3 0,07 mg/m3	Inhalable fraction. Respirable fraction.
Tin (CAS 7440-31-5)	TWA 2 mg/m3	
TRADE SECRET	TWA 0,5 mg/m3 0,05 mg/m3	

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

Type	Value
Lead (CAS 7439-92-1)	TWA 0,15 mg/m3

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/m3

Netherlands. OELs (binding) Components

Type	Value	Form
Lead (CAS 7439-92-1)	TWA 0,15 mg/m3	Dust and fume.
TRADE SECRET	TWA 0,02 mg/m3	Dust and fume.

Norway. Administrative Norms for Contaminants in the Workplace Components

Type	Value	Form
Aluminium (CAS 7429-90-5)	TLV 5 mg/m3 5 mg/m3	Pyrophoric powder. Welding fume.
Lead (CAS 7439-92-1)	TLV 0,05 mg/m3	Dust and fume.
Tin (CAS 7440-31-5)	TLV 2 mg/m3	
TRADE SECRET	TLV 0,05 mg/m3 0,02 mg/m3	Fume.

Poland. MACs. Minister of Labour and Social Policy Regarding Maximum Allowable Concentrations and Intensities in Working Environment Components

Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA 2,5 mg/m3 1,2 mg/m3	Inhalable fraction. Respirable fraction.
Lead (CAS 7439-92-1)	TWA 0,05 mg/m3	
Tin (CAS 7440-31-5)	TWA 2 mg/m3	Inhalable fraction.
TRADE SECRET	TWA 0,25 mg/m3 0,02 mg/m3	

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/m3

Portugal. OELs. Decree-Law n. 290/2001 (Journal of the Republic - 1 Series A, n.266) Components

Type	Value
Tin (CAS 7440-31-5)	TWA 2 mg/m3

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

Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA 10 mg/m3	Dust.

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

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,05 mg/m3	Inhalable fraction.
Tin (CAS 7440-31-5)	TWA	2 mg/m3	
TRADE SECRET	TWA	1,5 mg/m3	
		0,02 mg/m3	

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	STEL	3 mg/m3	Fume.
		10 mg/m3	Dust.
	TWA	3 mg/m3	Dust.
		1 mg/m3	Fume.
Lead (CAS 7439-92-1)	STEL	0,1 mg/m3	
	TWA	0,05 mg/m3	
Tin (CAS 7440-31-5)	TWA	2 mg/m3	
TRADE SECRET	STEL	0,5 mg/m3	
		0,1 mg/m3	
	TWA	0,1 mg/m3	
		0,05 mg/m3	

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

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	4 mg/m3	Inhalable fraction.
		1,5 mg/m3	Respirable fraction.
Lead (CAS 7439-92-1)	TWA	0,5 mg/m3	Inhalable fraction.
		0,15 mg/m3	Respirable fraction.
Tin (CAS 7440-31-5)	STEL	4 mg/m3	
	TWA	2 mg/m3	
TRADE SECRET	TWA	6 mg/m3	
		0,05 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)

Components	Type	Value	Form
Lead (CAS 7439-92-1)	TWA	0,1 mg/m3	Inhalable fraction.
Tin (CAS 7440-31-5)	TWA	2 mg/m3	
TRADE SECRET	TWA	0,5 mg/m3	Inhalable fraction.
		0,1 mg/m3	Inhalable fraction.

Spain. Occupational Exposure Limits

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3	Welding fume.
		10 mg/m3	Dust.
Lead (CAS 7439-92-1)	TWA	0,15 mg/m3	
Tin (CAS 7440-31-5)	TWA	2 mg/m3	
TRADE SECRET	TWA	1 mg/m3	
		0,02 mg/m3	

Sweden. Occupational Exposure Limit Values

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	5 mg/m3	Total dust.
		2 mg/m3	Respirable dust.
Lead (CAS 7439-92-1)	TWA	0,1 mg/m3	Inhalable dust.
		0,05 mg/m3	Respirable dust.
Tin (CAS 7440-31-5)	TWA	2 mg/m3	Inhalable dust.
	TRADE SECRET	0,5 mg/m3	Total dust.
		0,02 mg/m3	Inhalable dust.

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	3 mg/m3	Respirable dust.
Lead (CAS 7439-92-1)	STEL	0,8 mg/m3	Inhalable dust.
	TWA	0,1 mg/m3	Inhalable dust.
TRADE SECRET	TWA	0,5 mg/m3	Inhalable dust.
		0,05 mg/m3	Dust/aerosol, inhalable.

UK. EH40 Workplace Exposure Limits (WELs)

Components	Type	Value	Form
Aluminium (CAS 7429-90-5)	TWA	4 mg/m ³	Respirable dust.
		10 mg/m ³	Inhalable dust.
Lead (CAS 7439-92-1)	TWA	0,15 mg/m ³	
TRADE SECRET	TWA	0,5 mg/m ³	
		0,1 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

EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU

Components	Type	Value
Tin (CAS 7440-31-5)	TWA	2 mg/m ³

Biological limit values**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	*
TRADE SECRET	0,077 µmol/mmol	Nickel	Creatinine in urine	*
	0,04 mg/g	Nickel	Creatinine in urine	*

* - 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	Value	Determinant	Specimen	Sampling time
Lead (CAS 7439-92-1)	1,4 µmol/l	Lead	Blood	*
TRADE SECRET	0,1 µmol/l	Nickel	Urine	*

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

France. Biological indicators of exposure (IBE) (National Institute for Research and Security (INRS, ND 2065)

Components	Value	Determinant	Specimen	Sampling time
TRADE SECRET	15 µg/l	Cobalt	Urine	*
	1 µg/l	Cobalt	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	
TRADE SECRET	0,03 mg/g	Cobalt	Creatinine in urine	*
	0,02 mg/g	Nickel	Creatinine in urine	*
	0,058 µmol/mmol	Cobalt	Creatinine in urine	*

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
	0,038 µmol/mmol	Nickel	Creatinine in urine	*

* - 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 µg/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
Aluminium (CAS 7429-90-5)	60 µg/g	Aluminium	Creatinine in urine	*
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	*
TRADE SECRET	20,03 µg/g	Cobalt	Creatinine in urine	*
	30 µg/l	Cobalt	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	*
TRADE SECRET	15 µg/l	Cobalto	Urine	*
	1 µg/l	Cobalto	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
Aluminium (CAS 7429-90-5)	60 µg/g	Aluminium	Creatinine in urine	*
Lead (CAS 7439-92-1)	100 µg/l	Blei (Frauen < 45 Jahre)	Blood	*
TRADE SECRET	45 µg/l	Nickel	Urine	*
	30 µg/l	Cobalt	Urine	*

* - 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

Not available.

Derived no-effect level (DNEL)

Not available.

Predicted no effect concentrations (PNECs)

Not available.

8.2. Exposure controls

Appropriate engineering controls

Not available.

Individual protection measures, such as personal protective equipment

Eye/face protection	Not available.
Skin protection	
- Hand protection	Not available.
- Other	Not available.
Respiratory protection	Not available.
Thermal hazards	Not available.
Hygiene measures	Not available.
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.
Colour	Not available.
Odour	Not applicable.
Odour threshold	Not available.
pH	Not available.
Melting point/freezing point	231,9 °C (449,42 °F) estimated
Initial boiling point and boiling range	1740 °C (3164 °F) estimated
Flash point	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Vapour pressure	0,00001 hPa estimated
Vapour density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Solubility (other)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	630 °C (1166 °F) estimated
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not available.
Oxidizing properties	Not available.

9.2. Other information

Density	11,10 g/cm ³ estimated
Specific gravity	11,1 estimated

SECTION 10: Stability and reactivity

10.1. Reactivity	Not available.
10.2. Chemical stability	Not available.
10.3. Possibility of hazardous reactions	Not available.
10.4. Conditions to avoid	Not available.
10.5. Incompatible materials	Not available.

10.6. Hazardous decomposition products Not available.

SECTION 11: Toxicological information

General information Not available.

Information on likely routes of exposure

Inhalation Not available.

Skin contact Not available.

Eye contact Not available.

Ingestion Not available.

Symptoms Not available.

11.1. Information on toxicological effects

Acute toxicity No data available.

Skin corrosion/irritation Not available.

Serious eye damage/eye irritation Not available.

Respiratory sensitisation Not available.

Skin sensitisation Not available.

Germ cell mutagenicity Not available.

Carcinogenicity

IARC Monographs. Overall Evaluation of Carcinogenicity

Lead (CAS 7439-92-1)

TRADE SECRET (CAS Proprietary)

2B Possibly carcinogenic to humans.

2B Possibly carcinogenic to humans.

2B Possibly carcinogenic to humans.

Reproductive toxicity Not available.

Specific target organ toxicity - single exposure Not available.

Specific target organ toxicity - repeated exposure Not available.

Aspiration hazard Not available.

Mixture versus substance information Not available.

Other information Not available.

SECTION 12: Ecological information

12.1. Toxicity

Components		Species	Test results
Aluminium (CAS 7429-90-5)			
Aquatic			
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0,16 mg/l, 96 hours
TRADE SECRET			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas)	2,923 mg/l, 96 hours

12.2. Persistence and degradability Not available.

12.3. Bioaccumulative potential Not available.

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

Bioconcentration factor (BCF) Not available.

12.4. Mobility in soil Not available.

12.5. Results of PBT and vPvB assessment Not a PBT or vPvB substance or mixture.

12.6. Other adverse effects Not available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Residual waste Not available.
Contaminated packaging Not available.
EU waste code Not available.

SECTION 14: Transport information

ADR

14.1. UN number UN3077
14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.
14.3. Transport hazard class(es)
Class 9
Subsidiary risk -
Label(s) 9
Hazard No. (ADR) 90
Tunnel restriction code E
14.4. Packing group III
14.5. Environmental hazards Yes
14.6. Special precautions for user Not available.

RID

14.1. UN number UN3077
14.2. UN proper shipping name Environmentally hazardous substance, 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 Yes
14.6. Special precautions for user Not available.

ADN

14.1. UN number UN3077
14.2. UN proper shipping name Environmentally Hazardous 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 Yes
14.6. Special precautions for user Not available.

IATA

14.1. UN number UN3077
14.2. UN proper shipping name Environmentally hazardous substance, solid, n.o.s.
14.3. Transport hazard class(es)
Class 9
Subsidiary risk -
14.4. Packing group III
14.5. Environmental hazards Yes
ERG Code 9L
14.6. Special precautions for user Not available.

Other information

Passenger and cargo aircraft Allowed.
Cargo aircraft only Allowed.

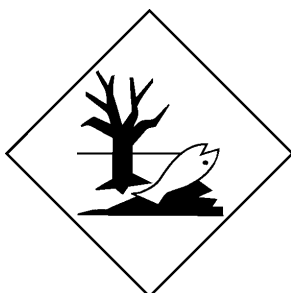
IMDG

14.1. UN number UN3077
14.2. UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
14.3. Transport hazard class(es)
Class 9
Subsidiary risk -
14.4. Packing group III
14.5. Environmental hazards
Marine pollutant Yes
EmS F-A, S-F
14.6. Special precautions for user Not available.

ADN; ADR; IATA; IMDG; RID



Marine pollutant



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, as amended
Not listed.

Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex II, as amended
Not listed.

Regulation (EC) No. 850/2004 on persistent organic pollutants, Annex I
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 1
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 2
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex I, part 3
Not listed.

Regulation (EC) No. 689/2008 concerning the export and import of dangerous chemicals, Annex V
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.

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

Lead (CAS 7439-92-1)

Restrictions on use

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use

Aluminium (CAS 7429-90-5)

Lead (CAS 7439-92-1)

TRADE SECRET (CAS Proprietary)

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.

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breastfeeding, as amended

Lead (CAS 7439-92-1)

Other EU regulations

Directive 2012/18/EU on major accident hazards involving dangerous substances

Aluminium (CAS 7429-90-5)

Lead (CAS 7439-92-1)

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

Lead (CAS 7439-92-1)

TRADE SECRET (CAS Proprietary)

Directive 94/33/EC on the protection of young people at work, as amended

Lead (CAS 7439-92-1)

TRADE SECRET (CAS Proprietary)

National regulations

Not available.

15.2. Chemical safety assessment

Not available.

SECTION 16: Other information

List of abbreviations

Not available.

References

Not available.

Information on evaluation method leading to the classification of mixture

Not available.

Full text of any statements or R-phrases and H-statements under Sections 2 to 15

R20/22 Harmful by inhalation and if swallowed.

R22 Also harmful if swallowed.

R26 Also very toxic by inhalation.

R33 Danger of cumulative effects.

R42/43 May cause sensitisation by inhalation and skin contact.

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R61 May cause harm to the unborn child.

R62 Possible risk of impaired fertility.

H302 Harmful if swallowed.

H317 May cause an allergic skin reaction.

H332 Harmful if inhaled.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

H360FD May damage fertility. May damage the unborn child.

H373 May cause damage to organs through prolonged or repeated exposure.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

H412 Harmful to aquatic life with long lasting effects.

Revision information

None.

Training information

Not available.