SAFETY DATA SHEET

MATERION

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

1.1. Product identifier

Name of the substance	Cobalt (ii) Chloride Hexahydrate
Identification number	027-004-00-5 (Index number)
Synonyms	None.
Document number	1VR
Materion Code	1VR
Issue date	07-March-2017
Version number	02
Revision date	12-January-2018
Supersedes date	07-March-2017

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 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	Noreen Atkinson

1.4. Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Health hazards

Acute toxicity, oral	Category 4
Respiratory sensitisation	Category 1
Skin sensitisation	Category 1
Germ cell mutagenicity	Category 2
Carcinogenicity (inhalation)	Category 1B
Reproductive toxicity (fertility)	Category 1B

Environmental hazards

Hazardous to the aquatic environment, acute aquatic hazard	Category 1 M-factor = 10.
Hazardous to the aquatic environment, long-term aquatic hazard	Category 1 M-factor = 10.

Hazard summary Not available.

2.2. Label elements

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

Contains:	Cobalt (ii) Chloride Hexahydrate
Hazard pictograms	None.
Signal word	None.
Hazard statements	The substance does not meet the criteria for classification.

Precautionary statements

Prevention	Not available.
Response	Not available.
Storage	Not available.
Disposal	Not available.
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
Cobalt (ii) Chloride Hexahydrate	100	7791-13-1 231-589-4	-	027-004-00-5	M=10
Classification: -					1

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

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

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,1 mg/m3

Czech Republic. OELs. Government Decree 361

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	Ceiling	0,1 mg/m3
	TWA	0,05 mg/m3

Denmark. Exposure Limit Values

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TLV	0,01 mg/m3

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

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,05 mg/m3

Finland. Workplace Exposure Limits

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3

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

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,1 mg/m3

Hungary. OELs. Joint Decree on Chemical Safety of Workplaces

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	STEL	0,4 mg/m3
	TWA	0,1 mg/m3

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

Material	Type	Value	Form
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3	Dust and fume.

Ireland. Occupational Exposure Limits

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,1 mg/m3

Italy. Occupational Exposure Limits

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3

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

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,05 mg/m3

Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3

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

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3

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

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,05 mg/m3

Spain. Carcinogens and Mutagens with Limit Values (Table 2)

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3

Spain. Occupational Exposure Limits

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,02 mg/m3

Switzerland. SUVA Grenzwerte am Arbeitsplatz

Material	Type	Value	Form
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,05 mg/m3	Dust/aerosol, inhalable.

UK. EH40 Workplace Exposure Limits (WELs)

Material	Type	Value
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	TWA	0,1 mg/m3

Biological limit values

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

Material	Value	Determinant	Specimen	Sampling time
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	15 µg/l	Cobalt	Urine	*
	1 µg/l	Cobalt	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

Material	Value	Determinant	Specimen	Sampling time
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	0,03 mg/g	Cobalt	Creatinine in urine	*
	0,058 µmol/mmol	Cobalt	Creatinine in urine	*

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

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

Material	Value	Determinant	Specimen	Sampling time
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	15 µg/l	Cobalto	Urine	*
	1 µg/l	Cobalto	Blood	*

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

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 Not available.

Individual protection measures, such as personal protective equipment

General information Not available.

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 available.

Odour threshold Not available.

pH Not available.

Melting point/freezing point 735 °C (1355 °F)

Initial boiling point and boiling range 1049 °C (1920,2 °F)

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	< 0,0000001 kPa at 25 °C
Vapour density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Not available.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	400 °C (752 °F)
Viscosity	Not available.
Explosive properties	Not available.
Oxidising properties	Not available.
9.2. Other information	
Density	3,36 g/cm3 estimated at 25 °C
Molecular formula	Cl2-Co
Molecular weight	129,84 g/mol
Specific gravity	3,36 at 25 °C

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

Product	Species	Test results
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)		
Acute		
Oral		
LD50	Rat	80 mg/kg

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

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

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)

Slovenia. CMR. Protection of workers from exposure to carcinogen and mutagen agents (ULRS 101/2005, as amended)

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1) Carcinogenic, Category 1B.

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

Product		Species	Test results
Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)			
Aquatic			
Crustacea	EC50	Water flea (Daphnia magna)	1,11 mg/l, 48 hours
Fish	LC50	Rainbow trout,donaldson trout (Oncorhynchus mykiss)	0,569 - 3,474 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.

12.7. Additional information

Estonia Dangerous substances in groundwater Data

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	Cobalt (Co) 300 UG/L Cobalt (Co) 5 UG/L

Estonia Dangerous substances in soil Data

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)	Cobalt (Co) 20 mg/kg Cobalt (Co) 300 mg/kg Cobalt (Co) 50 mg/kg

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	UN3288
14.2. UN proper shipping name	Toxic solid, inorganic, n.o.s.
14.3. Transport hazard class(es)	
Class	6.1(PGIII)
Subsidiary risk	-
Label(s)	6.1
Hazard No. (ADR)	60
Tunnel restriction code	E
14.4. Packing group	III
14.5. Environmental hazards	No.

14.6. Special precautions for user Not available.

RID

14.1. UN number UN3288

14.2. UN proper shipping name Toxic solid, inorganic, n.o.s.

14.3. Transport hazard class(es)

Class 6.1(PGIII)

Subsidiary risk -

Label(s) 6.1

14.4. Packing group III

14.5. Environmental hazards No.

14.6. Special precautions for user Not available.

ADN

14.1. UN number UN3288

14.2. UN proper shipping name Toxic Solid, N.o.s.

14.3. Transport hazard class(es)

Class 6.1(PGIII)

Subsidiary risk -

Label(s) 6.1

14.4. Packing group III

14.5. Environmental hazards No.

14.6. Special precautions for user Not available.

IATA

14.1. UN number UN3288

14.2. UN proper shipping name Toxic solid, inorganic, n.o.s.

14.3. Transport hazard class(es)

Class 6.1(PGIII)

Subsidiary risk -

14.4. Packing group III

14.5. Environmental hazards No.

ERG Code 6L

14.6. Special precautions for user Not available.

Other information

Passenger and cargo aircraft Allowed with restrictions.

Cargo aircraft only Allowed with restrictions.

IMDG

14.1. UN number UN3288

14.2. UN proper shipping name TOXIC SOLID, INORGANIC, N.O.S.

14.3. Transport hazard class(es)

Class 6.1(PGIII)

Subsidiary risk -

14.4. Packing group III

14.5. Environmental hazards

Marine pollutant No.

EmS F-A, S-A

14.6. Special precautions for user Not available.

ADN; ADR; IATA; IMDG; 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

Not listed.

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

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)

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

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)

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

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)

Other EU regulations

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

Cobalt (ii) Chloride Hexahydrate (CAS 7791-13-1)

National regulations Not available.

15.2. Chemical safety assessment Not available.

SECTION 16: Other information

List of abbreviations Not available.

Information on evaluation method leading to the classification of mixture Not available.