



# PRODUCT INFORMATION 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** Palladium Based Products

**Synonyms** None.

**Document number** 10

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### 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 product information sheet

#### Supplier

**Company name** Materion Advanced Materials Group

**Address** 42 Mt. Ebo Road South  
Brewster, NY 10509  
United States

#### Division

**Telephone** Supplier Phone 1+845.279.0900

**e-mail** Not available.

**Contact person** Not available.

**1.4. Emergency telephone number** Chemtrec 1+703.527.3887

## 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** R42/43, R53

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

#### Health hazards

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.

Specific target organ toxicity - single exposure Category 3 respiratory tract irritation H335 - May cause respiratory irritation.

#### Environmental hazards

Hazardous to the aquatic environment, acute aquatic hazard Category 1 H400 - Very toxic to aquatic life.

#### Hazard summary

**Physical hazards** Not classified for physical hazards.

**Health hazards** May cause sensitisation by inhalation and skin contact.

**Environmental hazards** 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:** Cobalt, Copper, Nickel, Palladium, Platinum, Silver

**Hazard pictograms** None.

**Signal word** Danger

**Hazard statements**

H317 May cause an allergic skin reaction.  
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
H335 May cause respiratory irritation.  
H351 Suspected of causing cancer.  
H400 Very toxic to aquatic life.

**Precautionary statements**

**Prevention**

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.  
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**

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.  
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**

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

**Disposal**

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

**Supplemental label information**

64,72 % of the mixture consists of component(s) of unknown acute 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
Palladium	35 - < 99	7440-05-3 231-115-6	-	-	
<b>Classification:</b>					
<b>DSD:</b>	-				
<b>CLP:</b>	-				
Silver	20 - < 40	7440-22-4 231-131-3	-	-	#
<b>Classification:</b>					
<b>DSD:</b>	R53				
<b>CLP:</b>	-				
Copper	15 - < 40	7440-50-8 231-159-6	01-2119480154-42-0080	-	
<b>Classification:</b>					
<b>DSD:</b>	-				
<b>CLP:</b>	STOT SE 3;H335				

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Cobalt	0 - < 35	7440-48-4 231-158-0	-	027-001-00-9	
<b>Classification:</b>	<b>DSD:</b> R42/43				
	<b>CLP:</b> Skin Sens. 1;H317, Resp. Sens. 1;H334, Carc. 2;H351				
Nickel	1 - < 30	7440-02-0 231-111-4	-	-	
<b>Classification:</b>	<b>DSD:</b> R52/53				
	<b>CLP:</b> Carc. 2;H351, Aquatic Chronic 3;H412				
Platinum	1 - < 10	7440-06-4 231-116-1	-	-	#
<b>Classification:</b>	<b>DSD:</b> -				
	<b>CLP:</b> -				

## 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
Copper (CAS 7440-50-8)	MAK	1 mg/m <sup>3</sup>	Inhalable fraction.
		0,1 mg/m <sup>3</sup>	Fume and respirable dust.
	STEL	4 mg/m <sup>3</sup>	Inhalable fraction.
		0,4 mg/m <sup>3</sup>	Fume and respirable dust.
Platinum (CAS 7440-06-4)	MAK	1 mg/m <sup>3</sup>	Inhalable fraction.
Silver (CAS 7440-22-4)	MAK	0,1 mg/m <sup>3</sup>	Inhalable fraction.
	STEL	0,1 mg/m <sup>3</sup>	Inhalable fraction.

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	STEL	0,4 mg/m <sup>3</sup>	Inhalable fraction.
	TWA	0,1 mg/m <sup>3</sup>	Inhalable fraction.
Nickel (CAS 7440-02-0)	STEL	2 mg/m <sup>3</sup>	Inhalable dust.
	TWA	0,5 mg/m <sup>3</sup>	Inhalable dust.

##### Belgium. Exposure Limit Values.

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	Dust and fume.
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0,2 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value
Cobalt (CAS 7440-48-4)	TWA	0,1 mg/m <sup>3</sup>
Copper (CAS 7440-50-8)	TWA	0,1 mg/m <sup>3</sup>
Nickel (CAS 7440-02-0)	TWA	0,05 mg/m <sup>3</sup>
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	MAC	0,1 mg/m <sup>3</sup>	
		0,21 mg/m <sup>3</sup>	Dust and fume.
Copper (CAS 7440-50-8)	STEL	2 mg/m <sup>3</sup>	Dust and fume.
		0,5 mg/m <sup>3</sup>	
Nickel (CAS 7440-02-0)	MAC	0,5 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	MAC	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	MAC	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,1 mg/m <sup>3</sup>	Dust and fume.
Copper (CAS 7440-50-8)	TWA	0,2 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m <sup>3</sup>	

**Czech Republic. OELs. Government Decree 361 Components**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	Ceiling	0,1 mg/m <sup>3</sup>	
	TWA	0,05 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	Ceiling	2 mg/m <sup>3</sup>	Dust.
	TWA	0,2 mg/m <sup>3</sup> 1 mg/m <sup>3</sup>	Fume. Dust.
Nickel (CAS 7440-02-0)	Ceiling	0,1 mg/m <sup>3</sup> 1 mg/m <sup>3</sup>	Fume.
	TWA	0,5 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	Ceiling	1 mg/m <sup>3</sup>	
	TWA	0,5 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	Ceiling	0,3 mg/m <sup>3</sup>	
	TWA	0,1 mg/m <sup>3</sup>	

**Denmark. Exposure Limit Values Components**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TLV	0,01 mg/m <sup>3</sup>	Dust and fume.
Copper (CAS 7440-50-8)	TLV	1 mg/m <sup>3</sup>	Dust.
		0,1 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TLV	0,05 mg/m <sup>3</sup>	Dust.
Platinum (CAS 7440-06-4)	TLV	1 mg/m <sup>3</sup>	Dust.
Silver (CAS 7440-22-4)	TLV	0,01 mg/m <sup>3</sup>	Dust.

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,05 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Total dust.
		0,2 mg/m <sup>3</sup>	Respirable dust.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

**Finland. Workplace Exposure Limits Components**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	
		0,1 mg/m <sup>3</sup>	Respirable dust and/or fume.
Nickel (CAS 7440-02-0)	TWA	0,01 mg/m <sup>3</sup>	Respirable.
Palladium (CAS 7440-05-3)	TWA	0,5 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Copper (CAS 7440-50-8)	VLE	2 mg/m <sup>3</sup>	Dust.
	VME	1 mg/m <sup>3</sup>	Dust.
		0,2 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	VME	1 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	VME	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	VME	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Copper (CAS 7440-50-8)	TWA	0,01 mg/m <sup>3</sup>	Respirable fraction.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	Inhalable fraction.

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

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	AGW	1 mg/m <sup>3</sup>	Inhalable fraction.
Silver (CAS 7440-22-4)	AGW	0,1 mg/m <sup>3</sup>	Inhalable fraction.

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,1 mg/m3	Dust and fume.
Copper (CAS 7440-50-8)	STEL	2 mg/m3	Dust.
	TWA	1 mg/m3	Dust.
		0,2 mg/m3	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m3	
Platinum (CAS 7440-06-4)	TWA	5 mg/m3	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m3	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	STEL	0,4 mg/m3	
	TWA	0,1 mg/m3	
Copper (CAS 7440-50-8)	STEL	4 mg/m3	
		0,4 mg/m3	Smoke.
	TWA	1 mg/m3	
		0,1 mg/m3	Smoke.
Nickel (CAS 7440-02-0)	Ceiling	0,1 mg/m3	
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	
Silver (CAS 7440-22-4)	STEL	0,4 mg/m3	
	TWA	0,1 mg/m3	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m3	Dust and fume.
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Total dust.
		0,1 mg/m3	Respirable dust.
Nickel (CAS 7440-02-0)	TWA	0,05 mg/m3	Dust.
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	Dust.
Silver (CAS 7440-22-4)	TWA	0,01 mg/m3	Dust.

**Ireland. Occupational Exposure Limits**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,1 mg/m3	
Copper (CAS 7440-50-8)	STEL	2 mg/m3	Dust and mist.
	TWA	1 mg/m3	Dust and mist.
		0,2 mg/m3	Fume.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m3	
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m3	

**Italy. Occupational Exposure Limits**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m3	
Nickel (CAS 7440-02-0)	TWA	1,5 mg/m3	Inhalable fraction.
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m3	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,5 mg/m3	
Copper (CAS 7440-50-8)	STEL	1 mg/m3	
	TWA	0,5 mg/m3	
Nickel (CAS 7440-02-0)	TWA	0,05 mg/m3	
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m3	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,05 mg/m3	
Copper (CAS 7440-50-8)	TWA	1 mg/m3	Inhalable fraction.
		0,2 mg/m3	Respirable fraction.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m3	
Platinum (CAS 7440-06-4)	TWA	1 mg/m3	

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

Components	Type	Value	Form
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	

**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	Form
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

**Netherlands. OELs (binding)**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	Dust and fume.
Copper (CAS 7440-50-8)	TWA	0,1 mg/m <sup>3</sup>	Inhalable fraction.
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TLV	0,02 mg/m <sup>3</sup>	Fume.
Copper (CAS 7440-50-8)	TLV	1 mg/m <sup>3</sup>	Dust.
		0,1 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TLV	0,05 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TLV	0,1 mg/m <sup>3</sup>	Dust and fume.

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	TWA	0,2 mg/m <sup>3</sup>	
Nickel (CAS 7440-02-0)	TWA	0,25 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,05 mg/m <sup>3</sup>	Inhalable fraction.

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

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0,2 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TWA	1,5 mg/m <sup>3</sup>	Inhalable fraction.
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	STEL	0,1 mg/m <sup>3</sup>	
	TWA	0,05 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	STEL	1,5 mg/m <sup>3</sup>	Dust.
		0,2 mg/m <sup>3</sup>	Fume.
	TWA	0,5 mg/m <sup>3</sup>	Dust.
Nickel (CAS 7440-02-0)	STEL	0,5 mg/m <sup>3</sup>	
	TWA	0,1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,05 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Inhalable fraction.
		0,2 mg/m <sup>3</sup>	Respirable fume.

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

Components	Type	Value	Form
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

**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
Cobalt (CAS 7440-48-4)	TWA	0,1 mg/m <sup>3</sup>	Inhalable fraction.
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Inhalable fraction.
		0,1 mg/m <sup>3</sup>	Respirable fume.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m <sup>3</sup>	Inhalable fraction.
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,01 mg/m <sup>3</sup>	

**Spain. Occupational Exposure Limits**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Dust and mist.
		0,2 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TWA	1 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

**Sweden. Occupational Exposure Limit Values**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,02 mg/m <sup>3</sup>	Inhalable dust.
Copper (CAS 7440-50-8)	TWA	1 mg/m <sup>3</sup>	Total dust.
		0,2 mg/m <sup>3</sup>	Respirable dust.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m <sup>3</sup>	Total dust.
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	Total dust.
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	Total dust.

**Switzerland. SUVA Grenzwerte am Arbeitsplatz**

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,05 mg/m <sup>3</sup>	Dust/aerosol, inhalable.
Copper (CAS 7440-50-8)	STEL	0,2 mg/m <sup>3</sup>	Inhalable dust.
	TWA	0,1 mg/m <sup>3</sup>	Inhalable dust.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m <sup>3</sup>	Inhalable dust.
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>	Inhalable dust.
Silver (CAS 7440-22-4)	STEL	0,8 mg/m <sup>3</sup>	Inhalable dust.
	TWA	0,1 mg/m <sup>3</sup>	Inhalable dust.

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

Components	Type	Value	Form
Cobalt (CAS 7440-48-4)	TWA	0,1 mg/m <sup>3</sup>	
Copper (CAS 7440-50-8)	STEL	2 mg/m <sup>3</sup>	Inhalable dusts and mists.
	TWA	1 mg/m <sup>3</sup>	Inhalable dusts and mists.
		0,2 mg/m <sup>3</sup>	Fume.
Nickel (CAS 7440-02-0)	TWA	0,5 mg/m <sup>3</sup>	
Platinum (CAS 7440-06-4)	TWA	5 mg/m <sup>3</sup>	
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>	

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

Components	Type	Value
Platinum (CAS 7440-06-4)	TWA	1 mg/m <sup>3</sup>
Silver (CAS 7440-22-4)	TWA	0,1 mg/m <sup>3</sup>

**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
Nickel (CAS 7440-02-0)	0,077 µmol/mmol	Nickel	Creatinine in urine	*



**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
	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
Nickel (CAS 7440-02-0)	0,1 umol/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
Cobalt (CAS 7440-48-4)	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**

Components	Value	Determinant	Specimen	Sampling time
Cobalt (CAS 7440-48-4)	0,03 mg/g	Cobalt	Creatinine in urine	*
	0,058 µmol/mmol	Cobalt	Creatinine in urine	*
Nickel (CAS 7440-02-0)	0,02 mg/g	Nickel	Creatinine in urine	*
	0,038 µmol/mmol	Nickel	Creatinine in urine	*

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

**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
Cobalt (CAS 7440-48-4)	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
Cobalt (CAS 7440-48-4)	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
Cobalt (CAS 7440-48-4)	30 µg/l	Cobalt	Urine	*
Nickel (CAS 7440-02-0)	45 µg/l	Nickel	Urine	*

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

**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	960,5 °C (1760,9 °F) estimated
Initial boiling point and boiling range	2000 °C (3632 °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	0,11 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	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Explosive properties	Not available.
Oxidizing properties	Not available.

### 9.2. Other information

Density	11,15 g/cm <sup>3</sup> estimated
Specific gravity	11,15 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.
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## 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

Cobalt (CAS 7440-48-4)

2B Possibly carcinogenic to humans.

Nickel (CAS 7440-02-0)

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** No toxicity data noted for the ingredient(s).

**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** No.  
**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** No.  
**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** No.  
**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** No.  
**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** No.  
**EmS** F-A, S-F  
**14.6. Special precautions for user** Not available.



## 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**

Not listed.

#### Restrictions on use

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

Nickel (CAS 7440-02-0)

**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**

Not listed.

#### Other EU regulations

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

Not listed.

**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**

Cobalt (CAS 7440-48-4)

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

Cobalt (CAS 7440-48-4)

#### 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>Information on evaluation method leading to the classification of mixture</b>	Not available.
<b>Training information</b>	Not available.
<b>Further information</b>	Not available.