



EOS NickelAlloy HX

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2020/878

Date of issue: 29/12/2022 Version: 5.4

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

1.1. Product identifier

Product form : Mixture
Name : EOS NickelAlloy HX
Product code : 9011-0023, 9011-0034
Type of product : Alloy, Powder

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

1.2.1. Relevant identified uses

Main use category : Industrial use
Industrial/Professional use spec : Heat resistant Nickel alloy for DMLS processes in EOS M systems
Industrial

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier

Electro Optical Systems Finland Oy
Lemminkäisenkatu 36
20520 Turku - FINLAND
T +358 (0) 20 765 9144/9147 - F +358 (0) 20 765 9141
MSDSInfo@eos.info - <https://www.eos.info/>

1.4. Emergency telephone number

Emergency number : +49 (0) 89 / 893 36 - 0 (8 am - 5 pm);
+49 (0) 89 / 893 36 - 151 (Mon-Thurs 9 am - 12 pm & 1 pm - 6 pm; Fri 1 pm - 4 pm (CET))

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Respiratory sensitisation, Category 1	H334
Skin sensitisation, Category 1	H317
Germ cell mutagenicity, Category 2	H341
Carcinogenicity, Category 1B	H350
Reproductive toxicity, Category 1B	H360F
Specific target organ toxicity — Repeated exposure, Category 1	H372
Hazardous to the aquatic environment — Acute Hazard, Category 1	H400
Hazardous to the aquatic environment — Chronic Hazard, Category 1	H410

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS08

GHS09

Signal word (CLP) : Danger
Hazardous ingredients : Cobalt; Nickel
Hazard statements (CLP) : H317 - May cause an allergic skin reaction.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.

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Precautionary statements (CLP)	<p>H341 - Suspected of causing genetic defects. H350 - May cause cancer. H360F - May damage fertility. H372 - Causes damage to organs through prolonged or repeated exposure. H410 - Very toxic to aquatic life with long lasting effects.</p> <p>: P202 - Do not handle until all safety precautions have been read and understood. P273 - Avoid release to the environment. P280 - Wear protective gloves. P284 - [In case of inadequate ventilation] wear respiratory protection. P308+P313 - IF exposed or concerned: Get medical advice/attention. P405 - Store locked up.</p>
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2.3. Other hazards not contributing to the classification

Contains no PBT/vPvB substances $\geq 0.1\%$ assessed in accordance with REACH Annex XIII

The mixture does not contain substance(s) included in the list established in accordance with Article 59(1) of REACH for having endocrine disrupting properties, or is not identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at a concentration equal to or greater than 0,1 %

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Nickel	(CAS-No.) 7440-02-0 (EC-No.) 231-111-4 (EC Index-No.) 028-002-00-7 (REACH-no) 01-2119438727-29	30 - 54	Skin Sens. 1, H317 Carc. 2, H351 STOT RE 1, H372 Aquatic Chronic 3, H412
Chromium substance with a Community workplace exposure limit	(CAS-No.) 7440-47-3 (EC-No.) 231-157-5 (REACH-no) 01-2119485652-31	20.5 - 23	Not classified
Cobalt	(CAS-No.) 7440-48-4 (EC-No.) 231-158-0 (EC Index-No.) 027-001-00-9 (REACH-no) 01-2119517392-44	0,5 - 2,5	Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350 Repr. 1B, H360F Aquatic Acute 1, H400 <i>M-factor: 10</i> Aquatic Chronic 1, H410 <i>M-factor: 10</i>
Copper	(CAS-No.) 7440-50-8 (EC-No.) 231-159-6 (REACH-no) 01-2119480154-42	0 - 0,1	Aquatic Acute 1, H400 Aquatic Chronic 3, H412

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
First-aid measures after inhalation	: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER/doctor.
First-aid measures after skin contact	: Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. If skin irritation or rash occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Obtain medical attention if pain, blinking or redness persists.
First-aid measures after ingestion	: Rinse mouth. Do NOT induce vomiting. Obtain emergency medical attention.

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

Symptoms/effects	: May damage fertility or the unborn child. May cause cancer. Suspected of causing genetic defects. Causes damage to organs through prolonged or repeated exposure.
Symptoms/effects after inhalation	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.

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

No additional information available

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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Dry extinguishing powder. Dry sand.
Unsuitable extinguishing media : Carbon dioxide. Water.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Nickel monoxide. Cobalt oxide. Molybdenum trioxide. Carbon monoxide. Carbon dioxide.

5.3. Advice for firefighters

Firefighting instructions : Exercise caution when fighting any chemical fire. Prevent fire fighting water from entering the environment.
Protective equipment for firefighters : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Collect spill using a vacuum cleaner with a HEPA filter or wet and scoop up dry spills. Minimize generation of dust. Store away from other materials.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid raising powdered materials into airborne dust. Provide local exhaust or general room ventilation to minimize exposure to dust. Do not breathe dust. Take precautionary measures against static discharge. Keep away from open flames, hot surfaces and sources of ignition.
Hygiene measures : Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Wash both hands and main part of the arms thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep only in the original container in a cool well ventilated place. Keep container closed when not in use.
Incompatible products : Strong bases. Strong acids.
Incompatible materials : Sources of ignition. Direct sunlight.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Chromium (7440-47-3)		
EU	IOELV TWA (mg/m ³)	2 mg/m ³
United Kingdom	WEL TWA (mg/m ³)	0,5 mg/m ³
United Kingdom	WEL STEL (mg/m ³)	1,5 mg/m ³ (calculated)
Copper (7440-50-8)		
United Kingdom	WEL TWA (mg/m ³)	1 mg/m ³ (dust and mists) 0,2 mg/m ³ (fume)
United Kingdom	WEL STEL (mg/m ³)	0,6 mg/m ³ (calculated-fume) 2 mg/m ³ (dust and mist)
Cobalt (7440-48-4)		
United Kingdom	WEL TWA (mg/m ³)	0,1 mg/m ³

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Cobalt (7440-48-4)		
United Kingdom	WEL STEL (mg/m ³)	0,3 mg/m ³ (calculated)
Nickel (7440-02-0)		
EU	IOELV TWA (mg/m ³)	0,005 mg/m ³ (respirable fraction) 0,01 mg/m ³ (inhalable fraction)
EU	Notes	SCOEL Recommendations (2011)
EU	Regulatory reference	SCOEL Recommendations
United Kingdom	Local name	Nickel
United Kingdom	WEL TWA (mg/m ³)	0,1 mg/m ³ and its inorganic compounds (except nickel tetracarbonyl), water-soluble nickel compounds (as Ni) 0,5 mg/m ³ and its inorganic compounds (except nickel tetracarbonyl), nickel and water insoluble nickel compounds (as Ni)
United Kingdom	Remark (WEL)	Sk (Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity), Carc (nickel oxides and sulphides)(Capable of causing cancer and/or heritable genetic damage. See paragraphs 49–51), Sen (nickel sulphate)(Capable of causing occupational asthma. See paragraphs 53–56)
United Kingdom	Regulatory reference	EH40. HSE

DNEL/DMEL (Workers)	
Acute - systemic effects, inhalation	680 mg/m ³ Nickel
Acute - local effects, inhalation	4 mg/m ³ Nickel
Long-term - local effects, dermal	0,035 mg/cm ² Nickel
Long-term - systemic effects, inhalation	0,05 mg/m ³ Nickel
Long-term - local effects, inhalation	0,05 mg/m ³ Nickel
PNEC (Water)	
PNEC aqua (freshwater)	0,00051 mg/l Cobalt
PNEC aqua (marine water)	0,00236 mg/l Cobalt
PNEC (Sediment)	
PNEC sediment (freshwater)	9,5 mg/kg dwt Cobalt
PNEC sediment (marine water)	9,5 mg/kg dwt Cobalt

8.2. Exposure controls

Appropriate engineering controls:

Dust must be extracted directly at the point of origin. During standard processing, release of components above the exposure limit concentrations is not anticipated. However, with excessive heating creating the potential for decomposition, there is the potential for release of components at or above the exposure limit concentrations. Use appropriate engineering controls to ensure airborne concentrations are maintained below exposure limit concentrations.

Personal protective equipment:

Avoid all unnecessary exposure.

Hand protection:

In case of repeated or prolonged contact (industrial environment), wear gloves; Chemical resistant gloves (according to European standard EN 374 or equivalent). Appropriate material: butyl rubber; nitrile rubber.

Eye protection:

Chemical goggles or safety glasses

Skin and body protection:

Wear suitable protective clothing. Wear protective shoes. ESD according to EN 61340-4-3 or equivalent.

Respiratory protection:

In case of insufficient ventilation, wear suitable particle mask (P3).



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Environmental exposure controls:

Prevent entry to sewers and public waters.

Other information:

Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Powder.
Colour	: Grey.
Odour	: None.
Odour threshold	: Not applicable
pH	: Not applicable
Relative evaporation rate (butylacetate=1)	: Not determined
Melting point	: 1200 - 1500 °C
Freezing point	: Not determined
Boiling point	: Not determined
Flash point	: Not determined
Auto-ignition temperature	: Not determined
Decomposition temperature	: Not applicable
Flammability (solid, gas)	: Not determined
Vapour pressure	: Not determined
Relative vapour density at 20 °C	: Not determined
Relative density	: Not determined
Density	: 3500 - 5000 kg/m ³
Solubility	: Not determined.
Log Pow	: Not applicable
Viscosity, kinematic	: Not applicable
Viscosity, dynamic	: Not applicable
Explosive properties	: Not explosive.
Oxidising properties	: Not determined.
Explosive limits	: Not applicable

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

May form toxic gaseous nickel carbonyl under: high pressure; high carbon monoxide concentration. Hydrogen gas may be released in contact with mineral acids. Spontaneously flammable when finely dispersed.

10.4. Conditions to avoid

Direct sunlight. Extremely high temperatures. Remove all sources of ignition.

10.5. Incompatible materials

Strong acids. Strong bases.

10.6. Hazardous decomposition products

Refer to section 5.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

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Chromium (7440-47-3)	
LD50 oral rat	> 5000 mg/kg (OECD TG 420)
LC50 inhalation rat (Dust/Mist - mg/l/4h)	> 5,41 mg/l/4h (OECD TG 403)

Cobalt (7440-48-4)	
LD50 oral rat	6171 mg/kg
LC50 inhalation rat (mg/l)	> 10 mg/l (Exposure time: 1 h)

Skin corrosion/irritation	: Not classified pH: Not applicable
Additional information	: Based on available data, the classification criteria are not met
Serious eye damage/irritation	: Not classified pH: Not applicable
Additional information	: Based on available data, the classification criteria are not met
Respiratory or skin sensitisation	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity	: Suspected of causing genetic defects.
Carcinogenicity	: May cause cancer.

Nickel (7440-02-0)	
Carcinogenicity (inhalation, rat, 12-30 months)	0.4 mg/m ³ /6h/d, 5d/wk (Oller et al. 2008, Toxicol Appl Pharmacol. 233: 262-275)

Reproductive toxicity : May damage fertility or the unborn child.

Cobalt (7440-48-4)	
NOAEL (animal/female, F0/P)	100 mg/kg bodyweight

STOT-single exposure	: Not classified
Additional information	: Based on available data, the classification criteria are not met
STOT-repeated exposure	: Causes damage to organs through prolonged or repeated exposure.

Chromium (7440-47-3)	
LOAEC (inhalation, rat,dust/mist/fume, 90 days)	>= 4,4 mg/l/6h/day (Derelanko, M. J., W. E. Rinehart, et al., 1999, Toxicol Sci.52: 278-288)
NOAEL (oral, rat, 90 days)	1216 mg/kg bodyweight/day (Ivankovic, S. and R. Preussman, 1975, Food Cosmet Toxicol.13(3): 347-51)

Aspiration hazard	: Not classified
Additional information	: Based on available data, the classification criteria are not met

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

IARC group : 2B

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

No additional information available

11.2.2. Other information

Potential Adverse human health effects and symptoms : Harmful in contact with skin, Harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity	: Very toxic to aquatic life.
Chronic aquatic toxicity	: Very toxic to aquatic life with long lasting effects.

Copper (7440-50-8)	
LC50 fish 1	0,0068 - 0,0156 mg/l (Exposure time: 96 h - Species: Pimephales promelas)
LC50 fish 2	< 0,3 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])
EC50 Daphnia 1	0,03 mg/l (Exposure time: 48 h - Species: Daphnia magna [Static])
EC50 72h algae (1)	0,0426 - 0,0535 mg/l (Species: Pseudokirchneriella subcapitata [static])
EC50 96h algae (1)	0,031 - 0,054 mg/l (Species: Pseudokirchneriella subcapitata [static])

Cobalt (7440-48-4)	
LC50 fish 1	> 100 mg/l (Exposure time: 96 h - Species: Brachydanio rerio [static])
NOEC (chronic)	0,003 mg/l (Exposure time: 28-day, reproduction and survival, Daphnia magna)
NOEC chronic crustacea	<= 0,05 mg/l (Exposure time: 21-day, reproduction and survival, Daphnia magna)

12.2. Persistence and degradability

EOS NickelAlloy HX	
Persistence and degradability	Not established.

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12.3. Bioaccumulative potential

EOS NickelAlloy HX	
Log Pow	Not applicable
Bioaccumulative potential	Not established.
Cobalt (7440-48-4)	
BCF fish 1	(no bioaccumulation)

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

EOS NickelAlloy HX	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	

12.6. Endocrine disrupting properties

No additional information available

12.7. Other adverse effects

Additional information : Avoid release to the environment.

SECTION 13: Disposal considerations





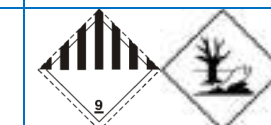
13.1. Waste treatment methods

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with applicable local, national and international regulation.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

ADR	IMDG	IATA	ADN	RID
14.1. UN number				
3077	3077	3077	3077	3077
14.2. UN proper shipping name				
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	Environmentally hazardous substance, solid, n.o.s.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Transport document description				
UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, III, (E)	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, III, MARINE POLLUTANT	UN 3077 Environmentally hazardous substance, solid, n.o.s., 9, III	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, III	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., 9, III
14.3. Transport hazard class(es)				
9	9	9	9	9
				
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
No supplementary information available				

14.6. Special precautions for user

- Overland transport

Classification code (ADR) : M7
 Hazard identification number (Kemler No.) : 90
 Tunnel restriction code (ADR) : E
 Danger releasing substance : Cobalt

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- Transport by sea

EmS-No. (Fire) : F-A
EmS-No. (Spillage) : S-F
Danger releasing substance : Cobalt

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

Nickel

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

According to Regulation (EU) 2015/830 (REACH Annex II).

Sources of Key data : REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

Other information : None.

Full text of H- and EUH-statements:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment — Chronic Hazard, Category 3
Carc. 1B	Carcinogenicity, Category 1B
Carc. 2	Carcinogenicity, Category 2
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Muta. 2	Germ cell mutagenicity, Category 2
Repr. 1B	Reproductive toxicity, Category 1B
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Sens. 1	Skin sensitisation, Category 1
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H351	Suspected of causing cancer.
H360	May damage fertility or the unborn child.
H360F	May damage fertility.
H372	Causes 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.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Resp. Sens. 1	H334	Calculation method
Skin Sens. 1	H317	Calculation method

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Muta. 2	H341	Calculation method
Carc. 1B	H350	Calculation method
Repr. 1B	H360	Calculation method
STOT RE 1	H372	Calculation method
Aquatic Acute 1	H400	Summation method
Aquatic Chronic 1	H410	Summation method

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product