SAFETY DATA SHEET

Selenium powder

The safety data sheet is in accordance with Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

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

Date issued	08.06.2017
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1.1. Product identifier

Product name	Selenium powder
REACH Reg. No.	01-2119981706-25-0001
CAS No.	7782-49-2
EC No.	231-957-4
Article no.	CT 0, CT 1, ST 0, ST 1
Extended SDS with ES incorporated	Yes

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

Use of the substance / preparation	ES1 Formulation in materials - Production of Alloys - industrial use ES2 Use in the production of electronic devices, coated drums, TFT, semiconductive layers and other articles - industrial use ES3 Use as intermediate - industrial use ES4 Surface treatment - industrial use ES5 Use as additive in glass manufacture ES6 Use in Thin Film Production by Physical Vapor Deposition (PVD) ES7 Use in the vulcanization of rubber

1.3. Details of the supplier of the safety data sheet

Manufacturer

Company name	Polar division PJSC «MMC «NORILSK NICKEL»
Office address	2 Gvardeyskaya Pl
Postcode	663302
City	Norilsk, Krasnoyarsk region
Country	Russia
Telephone number	+7 (3919) 25-43-03

Fax	+7 (3919) 25-88-86
Email	product.safety@nornickel.fi

1.4. Emergency telephone number

Emergency telephone	Description: 3E EH&S Mission Control Center: +44 20 35147487 / Access Code: 334656

SECTION 2: Hazards identification

2.1. Classification of substance or mixture

Classification according to Regulation (EC) No 1272/ 2008 [CLP / GHS]	Acute tox. 3; H331 Acute tox. 3; H301 STOT RE 2; H373 Aquatic Chronic 4; H413

2.2. Label elements

Hazard pictograms (CLP)

Signal word	Danger
Hazard statements	H331 Toxic if inhaled. H301 Toxic if swallowed. H373 May cause damage to organs through prolonged or repeated exposure H413 May cause long lasting harmful effects to aquatic life.
Precautionary statements	P261 Avoid breathing dust / fume / gas / mist / vapours / spray. P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P273 Avoid release to the environment. P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor / physician. P403+P233 Store in a well-ventilated place. Keep container tightly closed.

2.3. Other hazards

PBT / vPvB	Not Classified as PBT/vPvB by current EU criteria.

SECTION 3: Composition / information on ingredients

3.1. Substances

Substance	Identification	Classification	Contents
Selenium	CAS No.: 7782-49-2 EC No.: 231-957-4	Acute tox. 3; H301 Acute tox. 3; H331 STOT RE2; H373 Aquatic Chronic 4; H413	99,0 - 99,8 %

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation	If breathed in, move person into fresh air. Consult a physician.
Skin contact	Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. If skin irritation occurs, seek medical advice/attention.
Eye contact	Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Call a physician if irritation persists.
Ingestion	Rinse mouth with water. Drink 1 or 2 glasses of water. Never give anything by mouth to an unconscious person. Consult a physician.

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

General symptoms and effects	No data available.

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

Medical treatment	No data available.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Dry powder; Foam; Carbon dioxide (CO2)
Improper extinguishing media	Strong water jet;

5.2. Special hazards arising from the substance or mixture

Fire and explosion hazards	In the event of fire the following can be released: Selenium dioxide

5.3. Advice for firefighters

Personal protective equipment	Wear self-contained breathing apparatus and protective suit. Fine dust dispersed in air may ignite.
Other information	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Prevent fire extinguishing water from contaminating surface water or the ground water system. Fine dust dispersed in air may ignite.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	Refer to protective measures listed in sections 7 and 8. Avoid contact with skin, eyes and clothing. Avoid dust formation. Provide good ventilation of working area (local exhaust ventilation if necessary).

6.2. Environmental precautions

Environmental precautionary measures	Avoid dust formation. Do not discharge into the drains/surface waters/groundwater.

6.3. Methods and material for containment and cleaning up

Other information	Pick up mechanically. Send in suitable containers for recovery or disposal. (Section 13)

6.4. Reference to other sections

Other instructions	See also section 8,13

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Handling	Safe handling advice Avoid contact with skin, eyes and clothing. If workplace exposure limits are exceeded, respiratory protection approved for this particular job must be worn. Avoid dust formation. Technical measures/Precautions Provide good ventilation of working area (local exhaust ventilation if necessary).

7.2. Conditions for safe storage, including any incompatibilities

Storage	Always keep in containers of same material as the original one. Keep containers tightly closed in a dry, cool and well-ventilated place. Incompatible products Acids; Oxidizing agents;

7.3. Specific end use(s)

Specific use(s)	No data available.

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Substance	Identification	Value	TWA Year
Selenium	CAS No.: 7782-49-2	TWA (8h) : 0.1 mg/m3 Source: Se, HTP Finland **OEL short term value** Value: 0.3 mg/m3 **Exposure limit letter** Letter description: Se, HTP Finland	TWA Year: 2015

DNEL / PNEC

DNEL	Group: Professional Route of exposure: Long term (repeated) - Inhalation - Systemic effect Value: 0.05 mg/m3 Group: Professional Route of exposure: Long term (repeated) - Dermal - Systemic effect Value: 7 mg/kg BW/d
PNEC	Comments: Fresh water PNEC aqua (fresh water)=2.67 µg/l Fresh water sediment PNEC sediment (fresh water) 8.2 mg/kg sediment dw

	Sea water PNEC aqua (marine water) = 2 µg/l Sea sediment PNEC sediment (marine water) 6.2mg/kg sediment dw Sewage Treatment Plant 1500 µg/l Agricultural soil PNEC soil = 0.1 mg/kg soil dw

8.2. Exposure controls

Precautionary measures to prevent exposure

Product related measures to prevent exposure	Do not breathe dust. Wear suitable protective equipment. Ensure that eyewash stations and safety showers are close to the workstation location. Remove soiled or soaked clothing immediately. Keep away from food, drink and animal feedingstuffs. Keep working clothes separately. Avoid contact with skin, eyes and clothing. Avoid repeated exposure. Clean skin thoroughly after work.

Eye / face protection

Suitable eye protection	Use eye protection. Wear full-face visor or shield.

Hand protection

Suitable gloves type	Wear protective gloves.
Suitable materials	Rubber (natural, latex).

Skin protection

Suitable protective clothing	Wear appropriate clothing to prevent reasonably probable skin contact. Wear special protective clothing.

Respiratory protection

Recommended type of equipment	Use respiratory equipment with particle filter, type P3.

Appropriate environmental exposure control

Environmental exposure controls	The employer shall fulfill requirements of IPPC Directive.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid. Fine powder.
Colour	Grey. Dark.
Odour	Odourless
Odour limit	Comments: Not determined.
pH	Status: In delivery state Comments: Technical impossibility to obtain the data.
Melting point / melting range	Comments: 217°C
Boiling point / boiling range	Comments: 684-685°C

Flash point	Comments: Not relevant.
Flammability (solid, gas)	The product is not flammable.
Vapour pressure	Value: 0.133 Pa Temperature: 20 °C
Specific gravity	Value: 4,809 Temperature: 20 °C
Density	Value: 4.28 -4.78 g/cm³
Solubility	Medium: Water Value: 3,774 µg/l Temperature: 21.2 °C
Spontaneous combustability	Comments: No self-ignition temperature was observed up to the maximum test temperature of 400°C.
Viscosity	Comments: Not relevant. Solid
Oxidising properties	Not relevant.

9.2. Other information

Other physical and chemical properties

Physical and chemical properties	Particle size : 1 mm (maximum)

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No dangerous reaction known under conditions of normal use.

10.2. Chemical stability

Stability	Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

Conditions to avoid	Avoid dust formation.

10.5. Incompatible materials

Materials to avoid	Strong acids and oxidizing agents , Chlorine , Bromine , Bases , Hydrogen , Fluorine

10.6. Hazardous decomposition products

Hazardous decomposition products	No hazardous decomposition products are known.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	Type of toxicity: Acute Effect tested: LD50 Route of exposure: Oral Value: 5000 mg/kg Species: rat Comments: CLP Annex VI Acute tox. 3 Type of toxicity: Acute Effect tested: LC50 Route of exposure: Inhalation. Duration: 4 h Value: 5.67 mg/l Species: rat Comments: CLP Annex VI Acute tox. 3

Other information regarding health hazards

Assessment of skin corrosion / irritation, classification	According to the classification criteria of the European Union, the product is not considered as being a skin irritant. According to the classification criteria of the European Union, the product is not considered as being an eye irritant.
General respiratory or skin sensitisation	Not classified as skin and respiratory sensitizer.
Mutagenicity	Not classified as dangerous.
Carcinogenicity, other information	Not classified as dangerous.
Reproductive toxicity	Not classified as dangerous.
Assessment of specific target organ toxicity RE, classification	STOT RE 2 May cause damage to organs through prolonged or repeated exposure . (CLP) NOAEL /oral / rat 0,4 mg/kg bw/d
Aspiration hazard, comments	Not relevant.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity	Aquatic chronic 4 H413 (CLP) LC50/96h/rainbow trout = 26,2 µg/l 440/2008/EC C.1 NOEC Oncorhynchus mykiss (rainbow trout) = 1,57 µg/l OECD 215 LC50/48h/daphnia = 160,3 µg/l OECD 202 NOEC Daphnia magna (Water flea) = 3,42 µg/l OECD 211 EC50/72h/algae = 1,73 µg/l EC10 algae 0,547 µg/l OECD 201 No data available.

12.2. Persistence and degradability

Persistence and degradability, comments	Not applicable. inorganic

12.3. Bioaccumulative potential

Bioconcentration factor (BCF)	Value: 944

12.4. Mobility in soil

Mobility	No data available.

12.5. Results of PBT and vPvB assessment

PBT assessment results	Not Classified as PBT/vPvB by current EU criteria.

12.6. Other adverse effects

Other adverse effects, comments	no data available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Specify the appropriate methods of disposal	Council Directive 91/689/EEC on hazardous waste. The listed waste code numbers, according to the European Waste Catalogue (EWC), are to be understood as a recommendation (2000/532/EC). Contaminated packaging should be emptied as far as possible. Packaging that cannot be cleaned should be disposed as special waste in compliance with local and national regulations.
Other information	Contact manufacturer. Dispose of as special waste in compliance with local and national regulations.

SECTION 14: Transport information

14.1. UN number

Comments	Not classified as dangerous in the meaning of transport regulations.

14.2. UN proper shipping name

Comments	Not classified as dangerous in the meaning of transport regulations.

14.3. Transport hazard class(es)

Comments	Not classified as dangerous in the meaning of transport regulations.

14.4. Packing group

Comments	Not classified as dangerous in the meaning of transport regulations.

14.5. Environmental hazards

Comments	Not classified as dangerous in the meaning of transport regulations.

14.6. Special precautions for user

Special safety precautions for user	Not classified as dangerous in the meaning of transport regulations.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Transport in bulk (yes/no)	No

SECTION 15: Regulatory information

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

Restriction of chemicals according to Annex XVII (REACH)	None.

15.2. Chemical safety assessment

Chemical safety assessment performed	Yes

SECTION 16: Other information

List of relevant H-phrases (Section 2 and 3)	H301 Toxic if swallowed. H331 Toxic if inhaled. H373 May cause damage to organs through prolonged or repeated exposure H413 May cause long lasting harmful effects to aquatic life.
Classification according to Regulation (EC) No 1272/2008 [CLP / GHS]	Acute tox. 3; H331 Acute tox. 3; H301 STOT RE 2; H373 Aquatic Chronic 4; H413
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Exposure scenario	ES_ 0_Selenium [GB-ENG].pdf