

Nickel Concentrate

Version number: 1.0

First version: 2021-04-14

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

1.1 Product identifier

Trade name	<u>Nickel Concentrate</u>
Product number	FLX-142
Registration number (REACH)	Not relevant (mixture).
CAS number	not relevant (mixture)

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

Relevant identified uses	Industrial use
Uses advised against	Do not use for private purposes (household)

1.3 Details of the supplier of the safety data sheet

FLUXANA® GmbH & Co. KG	Telephone: +49 (0) 2821 - 48011-10
Borschelstraße 3	Telefax: +49 (0) 2821 - 48011-99
D-47551 Bedburg-Hau	e-mail: info@fluxana.de
Germany	Website: www.fluxana.de

1.4 Emergency telephone number

As above or nearest toxicological information centre.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

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

Classification				
Section	Hazard class	Category	Hazard class and category	Hazard statement
3.1I	acute toxicity (inhal.)	4	Acute Tox. 4	H332
3.4R	respiratory sensitisation	1B	Resp. Sens. 1B	H334
3.4S	skin sensitisation	1	Skin Sens. 1	H317
3.5	germ cell mutagenicity	2	Muta. 2	H341
3.6	carcinogenicity	1B	Carc. 1B	H350
3.7	reproductive toxicity	1B	Repr. 1B	H360

Nickel Concentrate

Classification				
Section	Hazard class	Category	Hazard class and category	Hazard statement
3.9	specific target organ toxicity - repeated exposure	1	STOT RE 1	H372
4.1C	hazardous to the aquatic environment - chronic hazard	2	Aquatic Chronic 2	H411

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Delayed or immediate effects can be expected after short or long-term exposure.
Spillage and fire water can cause pollution of watercourses.

2.2 Label elements

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

Signal word danger

Pictograms

GHS07, GHS08,
GHS09



Hazard statements

H317	May cause an allergic skin reaction.
H332	Harmful if inhaled.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341	Suspected of causing genetic defects.
H350	May cause cancer.
H360	May damage fertility or the unborn child.
H372	Causes damage to organs (respiratory system, lung) through prolonged or repeated exposure (if inhaled).
H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

P201	Obtain special instructions before use.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P311	IF exposed or concerned: Call a POISON CENTER/doctor.
P391	Collect spillage.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Nickel Concentrate

Supplemental hazard information

For professional users only.

Hazardous ingredients for labelling

nickel
Cobalt
quartz

2.3 Other hazards

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.




SECTION 3: Composition/information on ingredients

3.1 Substances




Not relevant (mixture).

3.2 Mixtures

Description of the mixture

Hazardous ingredients					
Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
nickel	CAS No 7440-02-0 EC No 231-111-4 Index No 028-002-01-4	≥ 10	Skin Sens. 1 / H317 Carc. 2 / H351 STOT RE 1 / H372 Aquatic Chronic 3 / H412		GHS-HC
quartz	CAS No 14808-60-7 EC No 238-878-4	≤ 20	STOT RE 1 / H372		IOELV
chromium	CAS No 7440-47-3 EC No 231-157-5	≤ 10	-	-	IOELV
zinc powder - zinc dust (stabilized)	CAS No 7440-66-6 EC No 231-175-3 Index No 030-001-01-9	≤ 5	Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410		GHS-HC

Nickel Concentrate

Hazardous ingredients					
Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
sulfur	CAS No 7704-34-9 EC No 231-722-6 Index No 016-094-00-1 REACH Reg. No 01-2119422098- 42-xxxx 01-2119520616- 43-xxxx	≤ 3	Skin Irrit. 2 / H315		GHS-HC
copper	CAS No 7440-50-8 EC No 231-159-6	≤ 2	Aquatic Acute 1 / H400 Aquatic Chronic 3 / H412		-
Cobalt	CAS No 7440-48-4 EC No 231-158-0 Index No 027-001-00-9	≤ 1	Acute Tox. 4 / H302 Acute Tox. 1 / H330 Eye Irrit. 2 / H319 Resp. Sens. 1B / H334 Skin Sens. 1 / H317 Muta. 2 / H341 Carc. 1B / H350 Repr. 1B / H360 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410		-

Notes

GHS- Harmonised classification (the classification of the substance corresponds to the entry in the list according to

HC: 1272/2008/EC, Annex VI)

IOELV: Substance with a community indicative occupational exposure limit value

Name of substance	Specific Conc. Limits	M-Factors	ATE	Exposure route
Cobalt	-	M-factor (acute) = 10.0	550 mg/kg ≤ 0.05 mg/l/4h	oral inhalation: dust/ mist

for full text of H-phrases: see SECTION 16

Nickel Concentrate

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Self-protection of the first aider.

Do not leave affected person unattended.

Remove victim out of the danger area.

Keep affected person warm, still and covered.

Take off immediately all contaminated clothing.

In all cases of doubt, or when symptoms persist, seek medical advice.

In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

Provide fresh air.

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

Get medical advice/attention.

Following skin contact

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.

Brush off loose particles from skin.

If skin irritation or rash occurs: Get medical advice/attention.

Following eye contact

Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

Following ingestion

Rinse mouth. Do not induce vomiting.

Get medical advice/attention.

Notes for the doctor

None.

4.2 Most important symptoms and effects, both acute and delayed

These information are not available.

4.3 Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Co-ordinate firefighting measures to the fire surroundings

Unsuitable extinguishing media

water jet

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5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.

Hazardous combustion products

gas/ vapor, toxic

5.3 Advice for firefighters

Non-combustible.

In case of fire and/or explosion do not breathe fumes.

Co-ordinate firefighting measures to the fire surroundings.

Do not allow firefighting water to enter drains or water courses.

Collect contaminated firefighting water separately.

Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

self-contained breathing apparatus (EN 133)

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

Ventilate affected area.

Do not get in eyes, on skin, or on clothing.

Avoid breathing dust.

Control of dust.

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Knock down dust with water spray.

Keep away from drains, surface and ground water.

Retain contaminated washing water and dispose of it.

If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Take up mechanically.

Advice on how to clean up a spill

Take up mechanically.

Collect spillage.

Other information relating to spills and releases

Place in appropriate containers for disposal.

Ventilate affected area.

Nickel Concentrate

6.4 Reference to other sections

Hazardous combustion products: see section 5.
Personal protective equipment: see section 8.
Incompatible materials: see section 10.
Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Provision of sufficient ventilation.
Use only outdoors or in a well-ventilated area.
Do not breathe dust.
Control of dust.
Removal of dust deposits.

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.
Take precautionary measures against static discharge.

Specific notes/details

Dust deposits may accumulate on all deposition surfaces in a technical room.

Measures to protect the environment

Avoid release to the environment.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.
Wash hands after use.
Preventive skin protection (barrier creams/ointments) is recommended.
Remove contaminated clothing and protective equipment before entering eating areas.
Wash contaminated clothing before reuse.

7.2 Conditions for safe storage, including any incompatibilities

Flammability hazards

None.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, UV-radiation/sunlight

Consideration of other advice

Keep away from food, drink and animal feeding stuffs.

Ventilation requirements

Keep any substance that emits harmful vapours or gases in a place that allows these to be permanently extracted.
Provision of sufficient ventilation.

Nickel Concentrate

Specific designs for storage rooms or vessels

Keep container tightly closed and in a well-ventilated place.

Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)									
Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m ³]	STEL [ppm]	STEL [mg/m ³]	Notation	Source
EU	silica, crystalline	14808-60-7	IOELV	-	0.1	-	-	r	2017/2398/EU
EU	chromium	7440-47-3	IOELV	-	2	-	-	-	2006/15/EC
GB	dust	-	WEL	-	10	-	-	i	EH40/2005
GB	dust	-	WEL	-	4	-	-	r	EH40/2005
GB	aluminium oxides	1344-28-1	WEL	-	10	-	-	i	EH40/2005
GB	aluminium oxides	1344-28-1	WEL	-	4	-	-	r	EH40/2005
GB	silica, crystalline	14808-60-7	WEL	-	0.1	-	-	r	EH40/2005
GB	nickel	7440-02-0	WEL	-	0.1	-	-	-	EH40/2005
GB	chromium	7440-47-3	WEL	-	0.5	-	-	-	EH40/2005
GB	cobalt	7440-48-4	WEL	-	0.1	-	-	-	EH40/2005
GB	copper	7440-50-8	WEL	-	1	-	2	dm	EH40/2005
GB	copper	7440-50-8	WEL	-	0.2	-	-	fume	EH40/2005

Notation

dm	as dusts and mists
fume	as fume
i	inhalable fraction
r	respirable fraction

Nickel Concentrate

Notation

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

Relevant DNELs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
nickel	7440-02-0	DNEL	0.05 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
nickel	7440-02-0	DNEL	0.05 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
chromium	7440-47-3	DNEL	0.5 mg/m ³	human, inhalatory	worker (industry)	chronic - local effects
zinc powder - zinc dust (stabilized)	7440-66-6	DNEL	5 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
zinc powder - zinc dust (stabilized)	7440-66-6	DNEL	83 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
copper	7440-50-8	DNEL	137 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Cobalt	7440-48-4	DNEL	40 µg/m ³	human, inhalatory	worker (industry)	chronic - local effects

Relevant PNECs of components of the mixture				
Name of substance	CAS No	Endpoint	Threshold level	Environmental compartment
nickel	7440-02-0	PNEC	0.0086 mg/cm ³	marine water
nickel	7440-02-0	PNEC	29.9 mg/cm ³	soil
nickel	7440-02-0	PNEC	0.0036 mg/cm ³	freshwater
nickel	7440-02-0	PNEC	0.33 mg/cm ³	sewage treatment plant (STP)
nickel	7440-02-0	PNEC	7.1 µg/l	freshwater
nickel	7440-02-0	PNEC	8.6 µg/l	marine water
nickel	7440-02-0	PNEC	0.33 mg/l	sewage treatment plant (STP)
nickel	7440-02-0	PNEC	109 mg/kg	freshwater sediment
nickel	7440-02-0	PNEC	109 mg/kg	marine sediment

Nickel Concentrate

Relevant PNECs of components of the mixture				
Name of substance	CAS No	Endpoint	Threshold level	Environmental compartment
nickel	7440-02-0	PNEC	29.9 mg/kg	soil
chromium	7440-47-3	PNEC	6.5 µg/l	freshwater
chromium	7440-47-3	PNEC	205.7 mg/kg	freshwater sediment
chromium	7440-47-3	PNEC	21.1 mg/kg	soil
zinc powder - zinc dust (stabilized)	7440-66-6	PNEC	20.6 µg/l	freshwater
zinc powder - zinc dust (stabilized)	7440-66-6	PNEC	117.8 mg/kg	freshwater sediment
zinc powder - zinc dust (stabilized)	7440-66-6	PNEC	56.5 mg/kg	marine sediment
zinc powder - zinc dust (stabilized)	7440-66-6	PNEC	6.1 µg/l	marine water
zinc powder - zinc dust (stabilized)	7440-66-6	PNEC	100 µg/l	sewage treatment plant (STP)
zinc powder - zinc dust (stabilized)	7440-66-6	PNEC	35.6 mg/kg	soil
copper	7440-50-8	PNEC	7.8 µg/l	freshwater
copper	7440-50-8	PNEC	5.2 µg/l	marine water
copper	7440-50-8	PNEC	230 µg/l	sewage treatment plant (STP)
copper	7440-50-8	PNEC	87 mg/kg	freshwater sediment
copper	7440-50-8	PNEC	676 mg/kg	marine sediment
copper	7440-50-8	PNEC	65 mg/kg	soil
Cobalt	7440-48-4	PNEC	0.6 µg/l	freshwater
Cobalt	7440-48-4	PNEC	2.36 µg/l	marine water
Cobalt	7440-48-4	PNEC	0.37 mg/l	sewage treatment plant (STP)
Cobalt	7440-48-4	PNEC	53.8 mg/kg	freshwater sediment
Cobalt	7440-48-4	PNEC	69.8 mg/kg	marine sediment
Cobalt	7440-48-4	PNEC	10.9 mg/kg	soil

8.2 Exposure controls

Nickel Concentrate

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Hand protection

Protective gloves		
Material	Material thickness	Breakthrough times of the glove material
CR: chloroprene (chlorobutadiene) rubber	≥ 0,5 mm	>480 minutes (permeation: level 6)
IIR: isobutene-isoprene (butyl) rubber	≥ 0,7 mm	>480 minutes (permeation: level 6)
NBR: acrylonitrile-butadiene rubber	≥ 0,4 mm	>480 minutes (permeation: level 6)

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Particulate filter device (EN 143).

Type: ABEK (combined filters against gases and vapours, colour code: Brown/Grey/Yellow/Green).

P3 (filters at least 99,95 % of airborne particles, colour code: White).

Environmental exposure controls

Use appropriate container to avoid environmental contamination.

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid (powder, granular)
Colour	grey - brown
Odour	characteristic
Melting point/freezing point	not determined
Boiling point or initial boiling point and boiling range	not determined
Flammability	non-combustible

Nickel Concentrate

Lower and upper explosion limit	not determined
Flash point	not applicable
Auto-ignition temperature (liquids and gases)	not applicable (solid)
Decomposition temperature	not relevant
pH (value)	not applicable
Viscosity	not relevant (solid)
Solubility(ies)	
Water solubility	not miscible in any proportion
Partition coefficient n-octanol/water (log value)	not determined
Vapour pressure	not determined
Density and/or relative density	
Density	not determined
Particle characteristics	
Particle size	0 – 1.5 cm
9.2 Other information	
Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics	there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

10.5 Incompatible materials

acids, bases, oxidisers, alcohol, halogen, nitrate

Nickel Concentrate

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known.

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Classification procedure

If not otherwise specified the classification is based on:

Ingredients of the mixture (additivity formula).

Classification according to GHS (1272/2008/EC, CLP)

Acute toxicity

Test data are not available for the complete mixture.

Harmful if inhaled.

Acute toxicity estimate (ATE)

Inhalation: dust/mist 5 mg/l/4h

Name of substance	CAS No	Exposure route	End-point	Value	Species	Method	Source
nickel	7440-02-0	oral	LD50	>9,000 mg/kg	rat	OECD Guideline 401	ECHA
chromium	7440-47-3	inhalation: dust/mist	LC50	>5.41 mg/l/4h	rat	OECD Guideline 403	ECHA
chromium	7440-47-3	oral	LD50	>3,400 mg/kg	rat	OECD Guideline 420	ECHA
zinc powder - zinc dust (stabilized)	7440-66-6	oral	LD50	>2,000 mg/kg	rat	-	ECHA
sulfur	7704-34-9	oral	LD50	>2,000 mg/kg	rat	OECD Guideline 401	ECHA
sulfur	7704-34-9	inhalation: dust/mist	LC50	>5.43 mg/l/4h	rat	OECD Guideline 403	ECHA
sulfur	7704-34-9	dermal	LD50	>2,000 mg/kg	rat	OECD Guideline 402	ECHA

Nickel Concentrate

Name of substance	CAS No	Exposure route	End-point	Value	Species	Method	Source
copper	7440-50-8	inhalation: dust/mist	LC50	5.11 mg/μ4h	rat	OECD Guideline 436	ECHA
Cobalt	7440-48-4	oral	LD50	550 mg/kg	rat	OECD Guideline 425	ECHA
Cobalt	7440-48-4	inhalation: dust/mist	LC50	≤0.05 mg/μ4h	rat	OECD Guideline 436	ECHA

Skin corrosion/irritation

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Serious eye damage/eye irritation

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

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

Germ cell mutagenicity

Suspected of causing genetic defects.

Carcinogenicity

May cause cancer.

Reproductive toxicity

May damage the unborn child.

May damage fertility.

Specific target organ toxicity - single exposure

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Nickel Concentrate

Specific target organ toxicity - repeated exposure

Hazard category	Target organ	Exposure route
1	respiratory system	if inhaled
1	lung	if inhaled
2	respiratory system	if inhaled
2	lung	if inhaled

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

There is no additional information.

Endocrine disrupting properties

None of the ingredients are listed.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Test data are not available for the complete mixture.

Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Notes	Exposure time
nickel	7440-02-0	LC50	15.3 mg/l	rainbow trout (Oncorhynchus mykiss)	-		96 h
nickel	7440-02-0	LC50	40 µg/l	Ceriodaphnia dubia (water flea)	-		96 h
nickel	7440-02-0	EC50	>0.081 – <0.148 mg/l	algae (pseudokirchneriella subcapitata)	OECD Guideline 201		48 h
nickel	7440-02-0	EC50	0.013 mg/l	daphnia	-		48 h
nickel	7440-02-0	ErC50	<148 µg/l	algae (pseudokirchneriella subcapitata)	OECD Guideline 201		72 h
chromium	7440-47-3	EC50	≥17.7 – ≤18.9 mg/l	daphnia magna	OECD Guideline 202	read-across	48 h

Nickel Concentrate

Name of substance	CAS No	Endpoint	Value	Species	Method	Notes	Exposure time
copper	7440-50-8	LC50	193 µg/l	fathead minnow (pimephales promelas)	-	CAS 7758-98-7	96 h
Cobalt	7440-48-4	LC50	85.3 mg/l	Palaemonetes vulgaris	ASTM guideline (1996)	read-across, CoCl2	96 h
Cobalt	7440-48-4	EC50	0.89 mg/l	daphnia magna	OECD Guideline 202		48 h
Cobalt	7440-48-4	ErC50	144 µg/l	algae (pseudokirchneriella subcapitata)	OECD Guideline 201	read-across, CoCl2	72 h

Aquatic toxicity (chronic)

Toxic to aquatic life with long lasting effects.

Test data are not available for the complete mixture.

Aquatic toxicity (chronic) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Notes	Exposure time
nickel	7440-02-0	NOEC	15.3 µg/l	Ceriodaphnia dubia (water flea)	-	-	7 d
nickel	7440-02-0	NOEC	40 µg/l	striped brill (Brachydanio rerio)	-	-	28 d
nickel	7440-02-0	NOEC	1.4 µg/l	daphnia	-	-	28 d
nickel	7440-02-0	NOEC	12.4 µg/l	algae	-	-	28 d
nickel	7440-02-0	LOEC	0.141 mg/l	saltwater invertebrates (Mysidopsis bahia)	-	-	36 d
nickel	7440-02-0	growth rate (ErCx) 10%	3,599 µg/l	fish	-	-	40 d
copper	7440-50-8	NOEC	11.4 µg/l	rainbow trout (Oncorhynchus mykiss)	-	-	45 d

Nickel Concentrate

Name of substance	CAS No	Endpoint	Value	Species	Method	Notes	Exposure time
Cobalt	7440-48-4	LC50	>1,757 µg/l	fathead minnow (Pimephales promelas)	-	read-across, CoCl ₂	7 d
Cobalt	7440-48-4	EC50	82.2 µg/l	daphnia magna	OECD Guideline 211	read-across, CoCl ₂	21 d
Cobalt	7440-48-4	ErC50	20 µg/l	algae (pseudokirchneriella subcapitata)	-	-	70 h
Cobalt	7440-48-4	NOEC	0.21 mg/l	fathead minnow (Pimephales promelas)	-	read-across, CoCl ₂	34 d
Cobalt	7440-48-4	NOEC	60.8 µg/l	daphnia magna	OECD Guideline 211	read-across, CoCl ₂	21 d
Cobalt	7440-48-4	LOEC	0.34 mg/l	fathead minnow (Pimephales promelas)	-	read-across, CoCl ₂	34 d
Cobalt	7440-48-4	LOEC	93.3 µg/l	daphnia magna	OECD Guideline 211	read-across, CoCl ₂	21 d

12.2 Persistence and degradability

Biodegradation

The study does not need to be conducted, the relevant substances in the mixture are inorganic.

Persistence

No data available.

12.3 Bioaccumulative potential

Test data are not available for the complete mixture.

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	BCF	Log KOW
nickel	7440-02-0	270	-
chromium	7440-47-3	90	-
zinc powder - zinc dust (stabilized)	7440-66-6	69.48	-

Nickel Concentrate

Name of substance	CAS No	BCF	Log KOW
Cobalt	7440-48-4	23	-

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

12.6 Endocrine disrupting properties

None of the ingredients are listed.

12.7 Other adverse effects

Data are not available.

Remarks

Wassergefährdungsklasse, WGK (water hazard class): 2

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

Completely emptied packages can be recycled.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

SECTION 14: Transport information


14.1 UN number or ID number

ADR/RID/ADN	UN3077
IMDG-Code	UN3077
ICAO-TI	UN3077

14.2 UN proper shipping name

ADR/RID/ADN	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
IMDG-Code	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.

Nickel Concentrate

	ICAO-TI	Environmentally hazardous substance, solid, n.o.s.
	Technical name (hazardous ingredients)	zinc powder - zinc dust (stabilized), copper
14.3	Transport hazard class(es)	
	ADR/RID/ADN	9
	IMDG-Code	9
	ICAO-TI	9
14.4	Packing group	
	ADR/RID/ADN	III
	IMDG-Code	III
	ICAO-TI	III
14.5	Environmental hazards	hazardous to the aquatic environment
	Environmentally hazardous substance (aquatic environment)	zinc powder - zinc dust (stabilized), copper
14.6	Special precautions for user	-
14.7	Maritime transport in bulk according to IMO instruments	-
14.8	<u>Information for each of the UN Model Regulations</u>	
	Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)	
	Additional information	
	Particulars in the transport document	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (contains: zinc powder - zinc dust (stabilized), copper), 9, III, (-)
	Classification code	M7
	Danger label(s)	9, fish and tree
		
	Environmental hazards	yes (hazardous to the aquatic environment)
	Special provisions (SP)	274, 335, 375, 601
	Excepted quantities (EQ)	E1
	Limited quantities (LQ)	5 kg
	Transport category (TC)	3
	Tunnel restriction code (TRC)	-

Nickel Concentrate

Hazard identification No 90

Emergency Action Code 2Z

International Maritime Dangerous Goods Code (IMDG) Additional information

Marine pollutant yes
(hazardous to the aquatic environment)
(zinc powder - zinc dust (stabilized))

Danger label(s) 9, fish and tree



Special provisions (SP) 274, 335, 966, 967, 969

Excepted quantities (EQ) E1

Limited quantities (LQ) 5 kg

EmS F-A, S-F

Stowage category A

International Civil Aviation Organization (ICAO-IATA/DGR) Additional information

Environmental hazards yes
(hazardous to the aquatic environment)

Danger label(s) 9, fish and tree



Special provisions (SP) A97, A158, A179, A197

Excepted quantities (EQ) E1

Limited quantities (LQ) 30 kg

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

Restrictions according to REACH, Annex XVII

Name	Name acc. to inventory	CAS No	Restriction
zinc powder - zinc dust (stabilized)	this product meets the criteria for classification in accordance with Regulation No 1272/2008/EC	-	R3
nickel	nickel	7440-02-0	R27
nickel	nickel compounds	-	R27

Nickel Concentrate

Name	Name acc. to inventory	CAS No	Restriction
Cobalt	carcinogenic	-	R28-30
Cobalt	toxic for reproduction	-	R28-30

Legend

- R27 1. Shall not be used:
- (a) in any post assemblies which are inserted into pierced ears and other pierced parts of the human body unless the rate of nickel release from such post assemblies is less than 0,2 µg/cm²/week (migration limit);
- (b) in articles intended to come into direct and prolonged contact with the skin such as:
- earrings,
 - necklaces, bracelets and chains, anklets, finger rings,
 - wrist-watch cases, watch straps and tighteners,
 - rivet buttons, tighteners, rivets, zippers and metal marks, when these are used in garments,
- if the rate of nickel release from the parts of these articles coming into direct and prolonged contact with the skin is greater than 0,5 µg/cm²/week.
- (c) in articles referred to in point (b) where these have a non-nickel coating unless such coating is sufficient to ensure that the rate of nickel release from those parts of such articles coming into direct and prolonged contact with the skin will not exceed 0,5 µg/cm²/week for a period of at least two years of normal use of the article.
2. Articles which are the subject of paragraph 1 shall not be placed on the market unless they conform to the requirements set out in that paragraph.
3. The standards adopted by the European Committee for Standardisation (CEN) shall be used as the test methods for demonstrating the conformity of articles to paragraphs 1 and 2.
- R28-30 1. Shall not be placed on the market, or used,
- as substances,
 - as constituents of other substances, or,
 - in mixtures,
- for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:
- either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or,
 - the relevant concentration specified in Directive 1999/45/EC where no specific concentration limit is set out in Part 3 of Annex VI to Regulation (EC) No 1272/2008.
- Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows:
- 'Restricted to professional users'.
2. By way of derogation, paragraph 1 shall not apply to:
- (a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC;
- (b) cosmetic products as defined by Directive 76/768/EEC;
- (c) the following fuels and oil products:
- motor fuels which are covered by Directive 98/70/EC,
 - mineral oil products intended for use as fuel in mobile or fixed combustion plants,
 - fuels sold in closed systems (e.g. liquid gas bottles);
- (d) artists' paints covered by Directive 1999/45/EC;
- (e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of Appendix 11, the derogation shall apply until the said date.

Nickel Concentrate

Legend

- R3
1. Shall not be used in:
 - ornamental articles intended to produce light or colour effects by means of different phases, for example in ornamental lamps and ashtrays,
 - tricks and jokes,
 - games for one or more participants, or any article intended to be used as such, even with ornamental aspects,
 2. Articles not complying with paragraph 1 shall not be placed on the market.
 3. Shall not be placed on the market if they contain a colouring agent, unless required for fiscal reasons, or perfume, or both, if they:
 - can be used as fuel in decorative oil lamps for supply to the general public, and,
 - present an aspiration hazard and are labelled with R65 or H304,
 4. Decorative oil lamps for supply to the general public shall not be placed on the market unless they conform to the European Standard on Decorative oil lamps (EN 14059) adopted by the European Committee for Standardisation (CEN).
 5. Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of dangerous substances and mixtures, suppliers shall ensure, before the placing on the market, that the following requirements are met:
 - (a) lamp oils, labelled with R65 or H304, intended for supply to the general public are visibly, legibly and indelibly marked as follows: 'Keep lamps filled with this liquid out of the reach of children'; and, by 1 December 2010, 'Just a sip of lamp oil - or even sucking the wick of lamps - may lead to life-threatening lung damage';
 - (b) grill lighter fluids, labelled with R65 or H304, intended for supply to the general public are legibly and indelibly marked by 1 December 2010 as follows: 'Just a sip of grill lighter may lead to life threatening lung damage';
 - (c) lamp oils and grill lighters, labelled with R65 or H304, intended for supply to the general public are packaged in black opaque containers not exceeding 1 litre by 1 December 2010.
 6. No later than 1 June 2014, the Commission shall request the European Chemicals Agency to prepare a dossier, in accordance with Article 69 of the present Regulation with a view to ban, if appropriate, grill lighter fluids and fuel for decorative lamps, labelled R65 or H304, intended for supply to the general public.
 7. Natural or legal persons placing on the market for the first time lamp oils and grill lighter fluids, labelled with R65 or H304, shall by 1 December 2011, and annually thereafter, provide data on alternatives to lamp oils and grill lighter fluids labelled R65 or H304 to the competent authority in the Member State concerned. Member States shall make those data available to the Commission.

List of substances subject to authorisation (REACH, Annex XIV) / SVHC - candidate list

None of the ingredients are listed.

Seveso Directive

2012/18/EU (Seveso III)			
No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements	Notes
E2	environmental hazards (hazardous to the aquatic environment, cat. 2)	200 500	57)

Notation

57) hazardous to the Aquatic Environment in category Chronic 2

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

None of the ingredients are listed.

Nickel Concentrate

Regulation (EU) 2019/1148 of the European Parliament and of the Council of 20 June 2019 on the marketing and use of explosives precursors, amending Regulation (EC) No 1907/2006 and repealing Regulation (EU) No 98/2013

None of the ingredients are listed.

Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)

None of the ingredients are listed.

Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)

None of the ingredients are listed.

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this mixture by the supplier.

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
2006/15/EC	Commission Directive establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC
2017/2398/EU	Directive of the European Parliament and of the Council amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
Acute Tox.	Acute toxicity
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	European Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
Aquatic Acute	Hazardous to the aquatic environment - acute hazard
Aquatic Chronic	Hazardous to the aquatic environment - chronic hazard
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
Carc.	Carcinogenicity
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level

Nickel Concentrate

Abbr.	Descriptions of used abbreviations
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
index No	The Index number is the identification code given to the substance in Part 3 of Annex VI to Regulation (EC) No 1272/2008
IOELV	Indicative occupational exposure limit value
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LOEC	Lowest Observed Effect Concentration
log KOW	n-Octanol/water
M-factor	Means a multiplying factor. It is applied to the concentration of a substance classified as hazardous to the aquatic environment acute category 1 or chronic category 1, and is used to derive by the summation method the classification of a mixture in which the substance is present
Muta.	Germ cell mutagenicity
NLP	No-Longer Polymer
NOEC	No Observed Effect Concentration

Nickel Concentrate

Abbr.	Descriptions of used abbreviations
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
Repr.	Reproductive toxicity
Resp. Sens.	Respiratory sensitisation
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
Skin Sens.	Skin sensitisation
STEL	Short-term exposure limit
STOT RE	Specific target organ toxicity - repeated exposure
SVHC	Substance of Very High Concern
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative
WEL	Workplace exposure limit

Key literature references and sources for data

Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.
Regulation (EC) No. 1907/2006 (REACH).

Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN).

International Maritime Dangerous Goods Code (IMDG).

Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties.

Health hazards.

Environmental hazards.

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.

Nickel Concentrate

Code	Text
H330	Fatal if inhaled.
H332	Harmful if inhaled.
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.
H372	Causes damage to organs (respiratory system, lung) through prolonged or repeated exposure (if inhaled).
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Responsible for the safety data sheet

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Disclaimer

This information is based upon the present state of our knowledge.
This SDS has been compiled and is solely intended for this product.