

	SAFETY DATA SHEET Complies with EC Regulations No. 1907/2006 (REACH) and 1272/2008(CLP)
Date: April 1992 Revision 4: February 2011	CRYSTALLIZED NICKEL CHLORIDE

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

- Product Name: CRYSTALLIZED NICKEL CHLORIDE
- Commercial Names: SELNIC[®] / ANHYDROUS
- EC No.: 231-743-0
- CAS: 7791-20-0
- REACH registration number: 01-2119486973-20-0000

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

- The main applications are nickel-plating and other chemical applications.

1.3. Details of the supplier of the safety data sheet

- Company Name: ERAMET.
- Address: Tour Maine-Montparnasse - 33, avenue du Maine.75755.Paris Cedex 15.France.
- Telephone: 24/24: 33 (0) 2 35 55 64 00 Fax: 33 (0) 1 45 38 73 48.
- Email: msds.ni@erametgroup.com
- <http://www.eramet.fr>

1.4. Emergency telephone number: +33 (0)1 45 42 59 59

- Company/Organisation: INRS / ORFILA <http://www.centres-antipoison.net>.
- Yellow Tox: <http://www.who.int/ipcs/poisons/centre/directory/en/index.html>

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture.

In accordance with Regulation (EC) No 1272/2008 and its adopted acts.

- Acute oral toxicity Category 3.
- Acute toxicity by inhalation, Category 3.
- Chronic toxicity, Category 1
- Skin corrosion/irritation, Category 2.
- Respiratory sensitisation, Category 1.
- Skin sensitisation, Category 1.
- Germ cell mutagenicity, Category 2.
- Carcinogenicity, category 1A.
- Reproductive toxicity, Category 1B.
- Target organ toxicity (repeated exposure), Category 1.



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- Chronic toxicity to the aquatic environment, Category 1.
- This substance does not pose any physical hazard. See recommendations regarding other products present in the premises.

In accordance with Directives 67/548/EEC, 1999/45/EC and its adopted acts.

- Risk of acute lethal toxic effects with symptomatic intoxication by inhalation and ingestion.
- Risk of irritations to the skin.
- The substance is a skin and respiratory system sensitiser. It is also an irritant to the skin and prolonged contact may increase this effect.
- Risk of category 3 mutagenic effects.
- Risk of category 1 carcinogenic effects if inhaled.
- Risk of harmful effects to the unborn child during pregnancy.
- Risk of category 2 reproductive toxicity.
- Risk of serious toxic effects in cases of repeated or prolonged exposure and if inhaled.
- Very toxic to aquatic organisms may cause long-term adverse effects in the aquatic environment.
- This substance does not pose any physical hazard. See recommendations regarding other products present in the premises.
- Hazard symbols:



Toxic Dangerous for the environment

- Contains:
EC 231-743-0: NICKEL DICHLORIDE
- Risk phrases:
R 68: Possible risk of irreversible effects.
R 49: May cause cancer by inhalation.
R 61: May cause harm to the unborn child.
R 48/23: Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R 50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R 38: Irritating to skin.
R 42/43: May cause sensitisation by inhalation and skin contact.
R 23/25: Toxic by inhalation and if swallowed.



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- Safety Phrases:

S 53: Avoid exposure - obtain special instructions before use.

S 45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 60: This material and its container must be disposed of as hazardous waste.

S 61: Avoid release to the environment. Refer to special instructions/safety data sheets.

S 22: Do not breathe dust.

S 36/37: Wear suitable protective clothing and gloves.

S 57: Use appropriate container to avoid environmental contamination.

2.2. Label elements

In accordance with Regulation (EC) No 1272/2008 and its adopted acts.

- Hazard pictograms:



GHS06 GHS08 GHS09

- Signal word code:

HAZARD

- Product identifier:

EC 231-743-0: NICKEL DICHLORIDE

- Hazard statements and additional information on the hazards:

H301: Toxic if swallowed.

H315: May cause skin irritation.

H317: May cause an allergic skin reaction.

H331: Toxic if inhaled.

H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled.

H341: Suspected of causing genetic defects.

H350i: May cause cancer if inhaled.

H360D: May damage the unborn child.

H372: Causes damage to organs through prolonged or repeated exposure.

H410: Very toxic to aquatic life with long lasting effects.



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- Appropriate advice on safety:

P201: Obtain special instructions before use.

P273: Avoid release to the environment.

P280: Wear protective gloves/protective clothing /eye protection/face protection.

P308 + P313: IF exposed or concerned: Get medical advice/attention.

2.3. Other hazards

None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Composition:

Name	Identification	Concentration
Nickel Dichloride	CASE: 7791-20-0 EC: 231-743-0	> 99%

- REACH registration number: 01-2119486973-20-0000

3.2. Mixtures

- Not applicable

SECTION 4: FIRST AID MEASURES

- Generally, in cases of doubt or if symptoms persist, always consult a doctor/physician.
- NEVER FORCE an unconscious person to ingest anything.

4.1. Description of first aid measures

If inhaled:

- If a massive amount of dust is inhaled, take the patient outside for fresh air, keep him warm, and at rest.
- If the person is unconscious, place him in a safe lateral position. In all cases, tell a physician/doctor so he can assess the person's need for monitoring and symptomatic treatment in hospital.
- If breathing is irregular or has stopped, perform artificial respiration and call a physician/doctor.
- Do not perform mouth-to-mouth or mouth-to-nose artificial respiration.
- In case of an allergic reaction, consult a physician/doctor.

In case of contact with eyes:

- Wash eyes thoroughly with clean fresh water for 15 minutes, with the eyelids open.
- If there is any pain, redness, or visual impairment, consult an ophthalmologist.

In case of contact with skin:



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- Remove contaminated clothing and wash skin thoroughly with soap and water or use a good cleanser.
- Beware of the product remaining between the skin and clothes, watch, shoes, ...
- In case of an allergic reaction, consult a physician/doctor.
- If the contaminated area is widespread and/or if skin lesions appear, it is necessary to consult a physician/doctor or transfer the patient to a hospital.

If swallowed:

- Do not give anything by mouth.
- If swallowed and if the quantity is small (not more than one mouthful), rinse the mouth with water, administer activated charcoal and consult a physician/doctor.
- In case of accidental swallowing, do not let the person drink or make him vomit; instead, have him transferred immediately to the hospital by ambulance
- Call a physician/doctor immediately and show him the label.

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

- No data is available.

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

- No data is available.

SECTION 5: FIRE FIGHTING MEASURES

- Non-flammable.

5.1. Extinguishing media

Suitable extinguishing media:

- In case of fire, use:
 - water spray or mist
 - foam
 - powders
 - carbon dioxide (CO₂)

5.2. S Special hazards arising from the substance or mixture

- A fire will often produce thick black smoke. Exposure to decomposing products may be hazardous to health.
- Do not inhale the smoke.
- In case of fire, the following may form:
 - hydrogen chloride (HCl)
 - nickel/nickel oxide



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5.3. Advice for firefighters

- Because of the toxicity of gases emitted during the thermal decomposition of the products, interveners shall be equipped with protective self-insulating respirators.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

- Refer to protective measures listed in sections 7 and 8.

6.1.1. For non-emergency personnel

- Avoid any contact with skin and eyes.
- Avoid inhaling dust.
- If the quantities released are significant, evacuate all personnel and ensure that only trained operators equipped with protective equipment are involved. (Refer to Section 8)

6.1.2. For emergency responders

- Intervenors must be equipped with appropriate personal protective equipment (Refer to Section 8).

6.2. Environmental precautions

- Prevent any leakage into sewers or waterways.

6.3. Methods and material for containment and cleaning up

- Avoid the formation of dust.
- If the product does not appear to be contaminated, collect it using a shovel or a similar tool.
- If the product is contaminated, collect it using a shovel or a vacuum cleaner **and** take it to a certified waste treatment area. If vacuuming, the vacuum must have an effective filter, and staff must wear a nationally approved respirator.
- If the product was dissolved in water, use lime or sodium carbonate. After which collect the sludge using an inert absorbent.

6.4 Reference to other sections

- Refer to sections 8 and 13

SECTION 7: HANDLING AND STORAGE

- The regulations relating to storage premises apply to workshops where the substance is handled.
- People who have a history of skin sensitivity must not, under any circumstances, handle this substance.
- Do not expose pregnant women and issue warnings about possible risks to women of childbearing age.

7.1. Precautions for safe handling

- Wash hands after each use.
- Remove and wash contaminated clothing before re-using them.

Fire Prevention:

- Handle in well-ventilated areas.



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- Deny access to unauthorised persons.

Recommended equipment and procedures:

- For personal protection, see Section 8.
- Observe the precautions on the label as well as work protection regulations.
- Do not inhale dust.
- Also provide protective respirators for certain short-term work, special types of work, or for emergency work.
- In all cases, control emissions at the source.
- Avoid exposure - obtain special instructions before use.

Prohibited equipment and procedures:

- It is forbidden to smoke, eat, or drink in areas where the substance is used.

7.2. Conditions for safe storage, including possible incompatibilities

- No data is available.

Storage

- Keep containers tightly closed in a dry and well ventilated area.
- Keep away from food and drink, including animal food and drink.

Packaging

- Always keep the substance(s) packaged in material identical to the original one (s).
- Appropriate packaging materials: Plastic

7.3. Specific end use(s)



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SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- In France, the average indicated limit value for exposure (on 8-hour VME / TWA) of soluble compounds of nickel is 0.1 mg Ni/m³.

8.1. Control parameters

8.1.1. Exposure Limits

Exposure model	Route	Workers		Consumer-MVE	
		descriptors [corrected]	DNEL/DMEL/not quantifiable	descriptors [corrected]	DNEL/DMEL/not quantifiable
Acute systemic effects	Skin (mg Ni/kg bw/day)	Not applicable			
	Inhalation (mg Ni/m ³)	NOAEC = 120	DNEL = 16 (MMAD=3 µm)	Irrelevant	
	Orally (mg Ni/kg bw/day)	Irrelevant		LOAEL = 0.012	DNEL = 0.012
Acute local effects	Skin (mg Ni/cm ²)	Not applicable			
	Inhalation (mg Ni/m ³)	LOAEC= 0.7 (16-day study)	DNEL = 0.7 (MMAD < 4 µm)	LOAEC= 0.7 (16-day study)	DNEL = 0.4
Long term systemic effects	Skin (mg Ni/kg bw/day)	Not applicable			
	Inhalation (mg Ni/m ³)	SCOEL proposed nickel OEL = 0.01 "inhalable"	OEL = 0.05 (Inhalable fraction)	others: CSTEE (guidelines for ambient air Ni) = 0.00002	DNEL = 0.00002
	Orally (mg Ni/kg bw/day)	Not applicable		NOAEL = 1.1	DNEL = 0.02
Long term local effects	Skin (mg Ni/cm ²)	NOAEL = 0.00044	DNEL = 0.00044	Not applicable	
	Inhalation (mg Ni/m ³)	SCOEL proposed nickel OEL = 0.01 "inhalable"	OEL = 0.05 (Inhalable fraction)	others: CSTEE (guidelines for ambient air Ni) = 0.00002	DNEL = 0.00002



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ENVIRONMENT	Category	threshold value	relative absorption factor(RAF)	assessment factor (AF)	PNEC value
Aquatic	freshwater	7.2 ug Ni/L (HC5)	Not applicable	2	3.6 ug Ni/L
	sea	17.2 ug Ni/L (HC5)	Not applicable	2	8.6 ug Ni/L
Sediments	freshwater	pending outcome of testing program	Not applicable	pending outcome of testing program	pending outcome of testing program
	sea	pending outcome of testing program	Not applicable	pending outcome of testing program	pending outcome of testing program
Terrestrial	soil	59.8 mg Ni/kg (HC5)	Not applicable	2	29.9 mg Ni/kg
Sewage treatment plant	microbial activity	33 mg Ni/L (lowest NOEC)	Not applicable	100	0.33 mg Ni/L
Secondary poisoning: Aquatic	oyster catcher (waterfowl)	123 mg Ni/kg	1	10	12.3 mg Ni/kg
	European otter (freshwater mammal)	23 mg Ni/kg	0.025	10	2.3 mg Ni/kg
	seal (marine mammal)	46 mg Ni/kg	0.025	10	4.6 mg Ni/kg
Secondary poisoning: Terrestrial	earthworms	85 mg Ni/kg	1	10	8.5 mg Ni/kg
	shrew (terrestrial mammal)	1.2 mg Ni/kg	0.036 (100% worms) 0.025 (30% worms, 70% isopods)	10	12 mg Ni/kg

8.2. Exposure controls

8.2.2. Individual protection measures, such as personal protective equipment

- Use clean and properly maintained personal protective equipment.
- Store personal protective equipment in a clean place, away from the work area.
- When using the product, do not eat, drink or smoke. Remove and wash contaminated clothing before re-using them. Ensure adequate ventilation, especially in confined areas.

- Eye / face protection

- Avoid contact with eyes.
- Before handling powders or dust emissions, it is necessary to wear goggles that conform to standard NF EN166.
- Wear gloves impervious to acids.
- Protective creams may be used for exposed parts of the skin; however, they should not be applied after contact with the product.
- Use appropriate protective gloves resistant to chemical agents and which conform to standard NF EN374.
- Glove selection must be made according to the application and duration of use in the workstation.



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- Protection gloves must be chosen based on the workstation: other chemicals that can be handled, physical protection required (cuts, punctures, thermal protection), dexterity required.
- Type of gloves recommended:
 - Natural latex
 - Nitrile Rubber (Acrylonitrile-butadiene copolymer (NBR))
 - PVC (Polyvinyl Chloride)
 - Butyl rubber (isobutylene-isoprene copolymer)
 - Teflon® (polytetrafluoroethylene (PTFE))
 - Viton® (Copolymer of hexafluoro propylene and vinylidene fluoride)
- Features recommended:
 - impervious gloves complying with standard NF EN374
- Work clothes made of acid-resistant fabric should be laundered as frequently as necessary.
- Avoid contact with skin.
- Wear appropriate protective clothing.
- Type of appropriate protective clothing:
- Wear chemical protective clothing against solid chemical particles suspended in the air (type 5) which conform to NF EN13982-1 to avoid contact with skin.
- Personnel must wear work clothes that are regularly laundered.
- After contact with the product, all affected parts of the body should be washed.

- Respiratory protection

- Avoid inhaling dust.
- In case of insufficient ventilation, wear an appropriate respiratory device.
- When workers are exposed to concentrations above the exposure limit, they must wear an appropriate and certified respiratory protection device.
- Type of FFP mask:
- Wear a disposable dust-filtering half mask that complies with the NF EN149 standard.
- Class: FFP3
- Or wear a half mask with a filter attached laterally to the face (disposable filter) which complies with NF EN140 standard. Respect the manufacturer's guidelines for sanitary washing.

8.2.3. Environmental exposure controls

- Do not discharge the product(s) into sewers or in natural water on the soil.



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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	Green, yellow or orange deliquescent crystals
Odour	Odourless
Odour threshold	Not applicable
pH in aqueous solution	6.1 (25 g/l Ni - 25°C).
Melting/freezing point	1001°C (for anhydrous nickel chloride)
Boiling point	Not applicable
Flashpoint	Not applicable
Evaporation rate	Not applicable
Flammability	Fireproof
Upper/lower of flammability or explosive limits	Not applicable
Vapour pressure	Not applicable
Vapour density	Not applicable
Relative density	1.9
Solubility	2500 g/l (20°C) 6000 g/l (95°C) Insoluble in common solvents
Partition co-efficient: n-octanol/water	Not applicable
Ignition temperature	Not applicable
Decomposition temperature	Not applicable
Viscosity	Not applicable
Explosive properties	Not applicable
Combustive properties	Not applicable



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9.2. Other information

Sublimation temperature	973°C (anhydrous form NiCl ₂)
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SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

- No data is available.

10.2. Chemical stability

- This substance is stable when handled and stored in recommended conditions as described in Section 7.

10.3. Possibility of hazardous reactions

- No data is available.

10.4. Conditions to avoid

- Do not heat at high temperatures (> 300°C): emission of hydrochloric acid gas (hazardous gas) and possible conversion to nickel monoxide (hazardous substance).
- May liquefy at temperatures above 45°C.
- Do not heat after it is dissolved in sulfuric acid, as it can form into hydrochloric acid gas, a hazardous gas.

10.5. Incompatible materials

10.6. Hazardous decomposition products

- Thermal decomposition may release/form:
 - hydrogen chloride (HCl)
 - nickel/nickel oxide

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

- Toxic if swallowed.
- Toxic if inhaled.
- May cause reversible skin lesions such as inflammation of the skin or the formation of erythema and eschars or oedema following exposure of up to four hours.
- Prolonged or repeated contacts with the substance could remove natural fat from the skin resulting in non-allergic dermatitis on contact and absorption through the skin's epidermis.
- May cause respiratory tract hypersensitivity that manifests itself as asthma, rhinitis/conjunctivitis or alveolitis.
- May cause an allergic reaction on skin contact.
- Carcinogenic effects if inhaled by humans.
- Of concern, as it may induce hereditary mutations of germ cells in humans.



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- Assumed toxic effect for human reproduction.
- Known risks of serious damage to organs following repeated or prolonged exposure.
- DL50 (rat-4h) = 105 mg/kg (expressed as Ni - equivalent to 425 mg/kg as NiCl₂, 6H₂O).

SECTION 12: ECOLOGICAL INFORMATION

- No ecological data on the product is available.
- Any spillage of the product into sewers or waterways must be avoided.

Ecotoxicity:

- Very toxic to aquatic organisms may cause long-term adverse effects.
- AQUATIC TOXICITY
 - - Chronic ecotoxicity:
 - FISH NOEC = 0.06 - 0.24 mg Ni⁺⁺/l (rainbow trout).
 - DAPHNIA NOEC = 0.01 - 0.22 mg Ni⁺⁺/l (daphnia magna).
- TERRESTRIAL TOXICITY
 - Based on available information, the soluble nickel compounds should not be classified as ecotoxic to earthworms.
 - In acid soils, soluble compounds of nickel must be classified as "toxic" to plants. This toxicity depends on the bioavailability of nickel ions, which is generally low in natural soils with a pH above 5.5.

Other adverse effects:

- Germany: WGK3 (VwVwS vom 27/07/2005, KBws)

SECTION 13: DISPOSAL CONSIDERATIONS

- A proper waste management of the substance and/or its container must be determined in accordance with the provisions of Directive 2008/98/EC.

13.1. Waste treatment methods

- Do not discharge into sewers or in waterways.

Waste:

- Managing waste is performed without endangering human health and the environment, and in particular without risk to water, air, soil, fauna or flora.
- Recycle or dispose of waste in accordance with regulations currently in effect, preferably to be done by a collector or a certified and recognised company.
- Do not contaminate the soil or water with waste and do not dispose of it into the environment.

Soiled packaging:

- Empty the container completely. Keep the label(s) on the container(s).
- Hand over the waste to a certified disposal contractor.



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SECTION 14: TRANSPORT INFORMATION

Transport the product in accordance with ADR regulations relating to road transport, RID regulations for rail transport, IMDG regulations for sea transport, and IATA regulations for air transport.

Classification:



Pollutant to the aquatic environment:



Code:
UN 3288 TOXIC SOLID, INORGANIC, NOS (nickel chloride)

Segregation group (IMDG): 7 (heavy metals and their salts)

	ADR/RID	IMDG	IATA
Class	6.1	6.1	6.1
Packing Group	III	III	III
label	6.1	6.1	6.1
Hazard code	60	n.a.	n.a.
Material code:	3288	3288	3288
Tunnel code:	E	n.a.	n.a.
Limited quantity	LQ9	5 kg	n.a.

SECTION 15: REGULATORY INFORMATION

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

- No data is available.

15.2. Chemical safety assessment

- No data is available.

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SECTION 16: OTHER INFORMATION:

CONSULT:

- - INRS No. 68 Toxicological Profile. www.inrs.fr
- - Toxicological and environmental chemical fact sheet INERIS (DRC-02-25590-02DF44. www.ineris.fr
- - <http://www.nickelinstitute.org>
- - <http://www.nidi.org>
- Given that the working conditions of the user are not known to us, the information given in this safety data sheet is based on the degree of our knowledge and on national and community regulations.
- It is still the user's responsibility to take all measures necessary to meet the requirements of local laws and regulations.
- The information provided in this safety data sheet must be considered as a description of the safety requirements relating to this substance and not as a guarantee of the substance's properties.

Abbreviations:

- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
- IMDG: International Maritime Dangerous Goods.
- IATA: International Air Transport Association.
- ICAO: International Civil Aviation Organisation.
- RID: Regulations concerning the International Carriage of Dangerous Goods by Rail.
- WGK: Wassergefährdungsklasse (Water Hazard Class).
- Nomenclature of Class A facilities: Authorisation, E: Registration, D: Declaration, S: Public easement, C: subject to periodic inspections as provided for in Article L. 512-11 of the Environmental Code