# MATERIAL SAFETY DATA SHEET

according to the Global Harmonized System (and with all of the information required by the CPR)

Date of issue: 06/07/2013 Version 1.0

## SECTION 1.Identification

### Product identifier

| | |
|---|---|
| Product number | 109989 |
| Product name | Nickel standard 1000 mg Ni, ($NiCl_2$ in $H_2O$) Titrisol® |

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

| | |
|---|---|
| Identified uses | Reagent for analysis |

### Details of the supplier of the safety data sheet

| | |
|---|---|
| Company | EMD Millipore Corporation \| 290 Concord Road, Billerica, MA 01821, United States of America \| SDS Phone Support: +1-978-715-1335 \| General Inquiries: +1-978-751-4321 \| Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)<br><br>e-mail: mm_sds@merckgroup.com |
| **Emergency telephone** | 613-996-6666 CANUTEC (Canada)<br>+1-703-527-3887 CHEMTREC (International)<br>24 Hours/day; 7 Days/week |

## SECTION 2. Hazards identification

### GHS Classification

Carcinogenicity, Category 1A, H350i
Germ cell mutagenicity, Category 2, H341
Reproductive toxicity, Category 1B, H360D
Specific target organ systemic toxicity - repeated exposure, Category 1, H372
Skin sensitization, Category 1, H317
Chronic aquatic toxicity, Category 2, H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

### GHS-Labeling

*Hazard pictograms*

*Signal Word*
Danger

*Hazard Statements*
H350i May cause cancer by inhalation.
H341 Suspected of causing genetic defects.
H360D May damage the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H317 May cause an allergic skin reaction.
H411 Toxic to aquatic life with long lasting effects.

*Precautionary Statements*
P281 Use personal protective equipment as required.
P273 Avoid release to the environment.
P201 Obtain special instructions before use.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

Restricted to professional users.

**Other hazards**
None known.

## SECTION 3. Composition/information on ingredients

Chemical nature Aqueous solution

**Hazardous ingredients**
*Chemical Name (Concentration)*
CAS-No.
*nickel(II) chloride (>= 1 % - < 5 % )*
7718-54-9

## SECTION 4. First aid measures

**Description of first-aid measures**

*Inhalation*
After inhalation: fresh air. Call in physician.

*Skin contact*
After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

*Eye contact*
After eye contact: rinse out with plenty of water. Call in ophthalmologist.

*Ingestion*
After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

Never give anything by mouth to an unconscious person.

**Most important symptoms and effects, both acute and delayed**
irritant effects, Allergic reactions

The following applies to soluble nickel compounds in general: inorganic nickel has an adstringent effect on mucous membranes. Sensitization with allergic manifestations is possible in predisposed persons. In some cases nickel dermatitis may manifest itself. Depending on the water-solubility, nickel and its compounds display a more or less distinct carcinogenicity, with the readily soluble nickel compounds obviously entailing the lesser risk.

### Indication of any immediate medical attention and special treatment needed

No information available.

## SECTION 5. Fire-fighting measures

### Extinguishing media

*Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

*Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

### Special hazards arising from the substance or mixture

Not combustible.
Ambient fire may liberate hazardous vapors.

### Advice for firefighters

*Special protective equipment for fire-fighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*

Prevent fire extinguishing water from contaminating surface water or the ground water system.

## SECTION 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

### Environmental precautions

Do not empty into drains.

### Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.
Observe possible material restrictions (see sections 7 and 10).
Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

## SECTION 7. Handling and storage

### Precautions for safe handling

Observe label precautions.

Work under hood. Do not inhale substance/mixture. Avoid generation of vapors/aerosols.

**Conditions for safe storage, including any incompatibilities**

Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Storage temperature: no restrictions.

## SECTION 8. Exposure controls/personal protection

**Exposure limit(s)**

*Ingredients*

| Basis | Value | Threshold limits | Remarks |
|---|---|---|---|
| *nickel(II) chloride 7718-54-9* | | | |
| CAD AB OEL | Time Weighted Average (TWA): | 0.1 mg/m³ | Expressed as: as Ni |
| | Time Weighted Average (TWA): | 0.2 mg/m³ | Expressed as: as Ni |
| CAD BC OEL | Time Weighted Average (TWA): | 0.05 mg/m³ | Expressed as: as Ni |
| | Time Weighted Average (TWA): | 0.05 mg/m³ | Expressed as: as Ni |
| CAD MB OEL | Time Weighted Average (TWA): | 0.1 mg/m³ | Form of exposure: Inhalable fraction.<br>Expressed as: as Ni |
| | Time Weighted Average (TWA): | 0.2 mg/m³ | Form of exposure: Inhalable fraction.<br>Expressed as: as Ni |
| CAD ON OEL | Time Weighted Average (TWAEV): | 0.1 mg/m³ | Form of exposure: Inhalable<br>Expressed as: as Ni |
| | Time Weighted Average (TWAEV): | 0.2 mg/m³ | Form of exposure: Inhalable<br>Expressed as: as Ni |
| | Time Weighted Average (TWAEV): | 0.1 mg/m³ | Form of exposure: Inhalable fraction.<br>Expressed as: as Ni |
| | Time Weighted Average (TWAEV): | 0.2 mg/m³ | Form of exposure: Inhalable fraction.<br>Expressed as: as Ni |
| OEL (QUE) | Time Weighted Average (TWA): | 0.1 mg/m³ | Expressed as: as Ni |
| | Time Weighted Average (TWA): | 1 mg/m³ | Expressed as: as Ni |

**Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

**Individual protection measures**

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

*Hygiene measures*

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance.

*Eye/face protection*
Safety glasses

*Hand protection*
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

*Other protective equipment:*
protective clothing

*Respiratory protection*
required when vapors/aerosols are generated.
Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

## SECTION 9. Physical and chemical properties

| | |
|---|---|
| Physical state | liquid |
| Color | light green |
| Odor | odorless |
| Odor Threshold | No information available. |
| pH | ca. 4.4<br>at 68 °F (20 °C) |
| Melting point | No information available. |
| Boiling point | No information available. |
| Flash point | No information available. |
| Evaporation rate | No information available. |
| Flammability (solid, gas) | No information available. |
| Lower explosion limit | No information available. |
| Upper explosion limit | No information available. |
| Vapor pressure | No information available. |
| Relative vapor density | No information available. |
| Relative density | ca.1.04 g/cm³<br>at 68 °F (20 °C) |
| Water solubility | at 68 °F (20 °C)<br>soluble |

| | |
|---|---|
| Partition coefficient: n-octanol/water | No information available. |
| Autoignition temperature | No information available. |
| Decomposition temperature | No information available. |
| Viscosity, dynamic | No information available. |
| Explosive properties | No information available. |

## SECTION 10. Stability and reactivity

### Reactivity
See below

### Chemical stability
The product is chemically stable under standard ambient conditions (room temperature) .

### Possibility of hazardous reactions
Dangerous reactions are not expected handling the product according to its intented use.

### Conditions to avoid
no information available

### Incompatible materials
The generally known reaction partners of water.

### Hazardous decomposition products
no information available

## SECTION 11. Toxicological information

### Information on toxicological effects

*Likely route of exposure*
Eye contact, Skin contact

*Acute oral toxicity*
Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

absorption

Acute toxicity estimate: > 2,000 mg/kg
Calculation method

*Acute inhalation toxicity*
Acute toxicity estimate: > 5 mg/l; 4 h
Calculation method

*Sensitization*
Mixture may cause an allergic skin reaction.

*CMR effects*
Carcinogenicity:
May cause cancer by inhalation.
Mutagenicity:
Suspected of causing genetic defects.
Teratogenicity:
May damage the unborn child.

*Specific target organ systemic toxicity - single exposure*
The substance or mixture is not classified as specific target organ toxicant, single exposure.

*Specific target organ systemic toxicity - repeated exposure*
Mixture causes damage to organs through prolonged or repeated exposure.

*Aspiration hazard*
Regarding the available data the classification criteria are not fulfilled.

**Carcinogenicity**

| | | |
|---|---|---|
| IARC | Group 1: Carcinogenic to humans | |
| | nickel(II) chloride | 7718-54-9 |
| OSHA | No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. | |
| NTP | Known carcinogen. | |
| | nickel(II) chloride | 7718-54-9 |
| ACGIH | A1: Confirmed human carcinogen | |
| | nickel(II) chloride | 7718-54-9 |

**Further information**
Quantitative data on the toxicity of this product are not available.
Further toxicological data:
The following applies to soluble nickel compounds in general: inorganic nickel has an adstringent effect on mucous membranes. Sensitization with allergic manifestations is possible in predisposed persons. In some cases nickel dermatitis may manifest itself. Depending on the water-solubility, nickel and its compounds display a more or less distinct carcinogenicity, with the readily soluble nickel compounds obviously entailing the lesser risk.
Further data:
Other dangerous properties can not be excluded.
This substance should be handled with particular care.

**Ingredients**

*nickel(II) chloride*

*Acute oral toxicity*
LD50 rat: 105 mg/kg (for the hexahydrate) (Lit.)

*Acute inhalation toxicity*
Acute toxicity estimate: 0.6 mg/l; dust/mist
Expert judgment

*Germ cell mutagenicity*

*Genotoxicity in vivo*
Mutagenicity (mammal cell test): micronucleus.
Result: positive
(Lit.)

*Genotoxicity in vitro*
Ames test
Salmonella typhimurium
Result: negative
(Lit.)

## SECTION 12. Ecological information

### Ecotoxicity

No information available.

### Persistence and degradability

No information available.

### Bioaccumulative potential

No information available.

### Mobility in soil

No information available.

*Additional ecological information*
Discharge into the environment must be avoided.

### Ingredients

*nickel(II) chloride*

*Toxicity to fish*
LC50 Pimephales promelas (fathead minnow): 4.9 mg/l; 96 h (Lit.)

LC50 Lepomis macrochirus (Bluegill sunfish): 5.3 mg/l; 96 h (ECOTOX Database)

*Toxicity to daphnia and other aquatic invertebrates*
EC50 Daphnia magna (Water flea): 0.51 mg/l; 48 h (ECOTOX Database)

*M-Factor*
1

## SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

## SECTION 14. Transport information

### Land transport (DOT)

| | |
|---|---|
| **UN number** | UN 3082 |
| **Proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL(II)-CHLORIDE) |
| **Class** | 9 |
| **Packing group** | III |
| **Environmentally hazardous** | -- |

### Air transport (IATA)

| | |
|---|---|
| **UN number** | UN 3082 |
| **Proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL(II)-CHLORIDE SOLUTION) |
| **Class** | 9 |
| **Packing group** | III |
| **Environmentally hazardous** | -- |
| **Special precautions for user** | no |

### Sea transport (IMDG)

| | |
|---|---|
| **UN number** | UN 3082 |
| **Proper shipping name** | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL(II)-CHLORIDE SOLUTION) |
| **Class** | 9 |
| **Packing group** | III |
| **Environmentally hazardous** | -- |
| **Special precautions for user** | yes |
| EmS | F-A S-F |

## SECTION 15. Regulatory information

### United States of America

### Canada

#### WHMIS Classification

| | |
|---|---|
| D1B | Toxic Material Causing Immediate and Serious Toxic Effects |
| D2A | Very Toxic Material Causing Other Toxic Effects |
| D2B | Toxic Material Causing Other Toxic Effects |

Toxic by ingestion, Teratogen, Carcinogen, Skin irritant, Mutagen, Respiratory irritant, Skin sensitizer

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

### Notification status

| | |
|---|---|
| TSCA: | All components of the product are listed in the TSCA-inventory. |
| DSL: | All components of this product are on the Canadian DSL. |

## SECTION 16. Other information

### Training advice

Provide adequate information, instruction and training for operators.

### Full text of H-Statements referred to under sections 2 and 3.

| | |
|---|---|
| H317 | May cause an allergic skin reaction. |
| H341 | Suspected of causing genetic defects. |
| H350i | May cause cancer by inhalation. |
| H360D | May damage the unborn child. |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H411 | Toxic to aquatic life with long lasting effects. |

### Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Date of issue: 06/07/2013