

**DW-G316L**

Version number: 2.0  
Replaces version of: 2013-09-24 (1)

Revision: 2017-07-12

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

**1.1 Product identifier**

Trade name **DW-G316L** (electrodes for flux cored arc welding)  
Registration number (REACH) not relevant (mixture)

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

Relevant identified uses Welding and soldering product  
The product is intended for professional use  
Specific process or activity welding (welding process)

**1.3 Details of the supplier of the safety data sheet**

Kobelco Welding of Europe B.V.  
Eisterweg 8  
6422 PN Heerlen  
Netherlands

Telephone: +31(0)45-5471111  
Telefax: +31(0)45-5471100  
e-mail: info@kobelcowelding.nl

e-mail (competent person) info@kobelcowelding.nl

**1.4 Emergency telephone number**

Emergency information service +31(0)45-5471111  
This number is only available during the following office hours: Mon-Fri 09:00 - 17:00

| Poison centre  |   |   |
|----------------|---|---|
| Country        | Name  | Telephone   |
| United Kingdom | National Poisons Information Service (NPIS)<br>(medical professionals only) | 0344-8920111                                      |
| United Kingdom | NHS<br>(general public)   | non-emergency: 111 or a doctor;<br>emergency: 999 |

**SECTION 2: Hazards identification**

**2.1 Classification of the substance or mixture**

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

| Section | Hazard class                                       | Category | Hazard class and category | Hazard statement |
|---------|--|----------|---------------------------|------------------|
| 3.2     | skin corrosion/irritation                          | 2        | Skin Irrit. 2             | H315             |
| 3.3     | serious eye damage/eye irritation                  | 2        | Eye Irrit. 2              | H319             |
| 3.4S    | skin sensitisation                                 | 1        | Skin Sens. 1              | H317             |
| 3.6     | carcinogenicity                                    | 2        | Carc. 2                   | H351             |
| 3.9     | specific target organ toxicity - repeated exposure | 1        | STOT RE 1                 | H372             |

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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.

### 2.2 Label elements

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

- signal word danger

- pictograms

GHS07, GHS08



- hazard statements

H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H351 Suspected of causing cancer.  
H372 Causes damage to organs through prolonged or repeated exposure.

- precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P308+P313 IF exposed or concerned: Get medical advice/attention.  
P314 Get medical advice/attention if you feel unwell.  
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.  
P337+P313 If eye irritation persists: Get medical advice/attention.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- hazardous ingredients for labelling nickel powder (particle diameter < 1 mm)

### 2.3 Other hazards

Avoid breathing dust. Avoid contact with eyes. Avoid skin contact.  
When this product is used in a welding process, the most significant hazards are electric shock, fumes, gases, radiation, spatter, slag and heat.  
Shock: electric shock can kill.  
Fumes: Overexposure to welding fumes may result in symptoms like dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function.  
Gases: gases may cause gas poisoning.  
Radiation: arc rays can severely damage eyes or skin.  
Spatter, slag and heat: spatter and slag can damage eyes. Spatter, slag, melting material, arc rays and hot welds can cause burn injuries and start fires.

Results of PBT and vPvB assessment

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

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**SECTION 3: Composition/information on ingredients**

**3.1 Substances**

Not relevant (mixture)

**3.2 Mixtures**

The product does not contain any (other) ingredients which are classified according to present knowledge of the supplier and contribute to the classification of the substance and hence require reporting in this section.

| Name of substance | Identifier   | Wt%     | Classification acc. to GHS   | Pictograms  | Notes               | Specific Conc. Limits | M-Factors |
|-------------------|--|---------|--|---|---------------------|-----------------------|-----------|
| Chromium          | CAS No<br>7440-47-3<br><br>EC No<br>231-157-5<br><br>REACH Reg.<br>No<br>01-<br>2119485652<br>-31-xxxx | 10 – 30 |  |   | IOELV               |                       |           |
| Nickel            | CAS No<br>7440-02-0<br><br>EC No<br>231-111-4<br><br>REACH Reg.<br>No<br>01-<br>2119438727<br>-29-xxxx | 5 – 18  | Skin Sens. 1 / H317<br>Carc. 2 / H351<br>STOT RE 1 / H372<br>Aquatic Chronic 3 /<br>H412 | <br> | IARC:<br>2B         |                       |           |
| Sodium fluoride   | CAS No<br>7681-49-4<br><br>EC No<br>231-667-8<br><br>Index No<br>009-004-00-<br>7                      | ≤ 1     | Acute Tox. 3 / H301<br>Skin Irrit. 2 / H315<br>Eye Irrit. 2 / H319<br>EUH032             |    | GHS-<br>HC<br>IOELV |                       |           |
| disodium oxide    | CAS No<br>1313-59-3<br><br>EC No<br>215-208-9  | ≤ 1     | Skin Corr. 1A /<br>H314<br>Eye Dam. 1 / H318   |    |                     |                       |           |

Notes

GHS-HC: Harmonised classification (the classification of the substance corresponds to the entry in the list according to 1272/2008/EC, Annex VI)

IARC: IARC group 2B: possibly carcinogenic to humans (International Agency for Research on Cancer)

2B:

IOELV: Substance with a community indicative occupational exposure limit value

**Remarks**

For full text of H-phrases: see SECTION 16. All the percentages given are percentages by weight unless stated otherwise.

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**SECTION 4: First aid measures****4.1 Description of first aid measures****General notes**

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. Disconnect and turn off the power. If the victim is semi- or unconscious, open the airway. If the victim cannot breathe, give artificial respiration. If there is no pulse, massage the chest and apply artificial respiration.

**Electrical shock**

Disconnect and turn off the power. If the victim is semi- or unconscious, open the airway. If the victim cannot breathe, give artificial respiration. If there is no pulse, massage the chest and apply artificial respiration.

**Following inhalation**

Provide fresh air. If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. In case of respiratory tract irritation, consult a physician. If experiencing respiratory symptoms: Call a doctor.

**Following skin contact**

Brush off loose particles from skin. Rinse skin with water/shower.

**Following eye contact**

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart.

**Following ingestion**

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting. Call a POISON CENTER or doctor if you feel unwell.

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

No further relevant information available.

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

For specialist advice physicians should contact the anti poison control centre.

**SECTION 5: Firefighting measures****5.1 Extinguishing media****Suitable extinguishing media**

Alcohol resistant foam, Dry extinguishing powder, Carbon dioxide (CO<sub>2</sub>), Water spray

**5.2 Special hazards arising from the substance or mixture**

No further relevant information available.

**Hazardous combustion products**

During fire hazardous fumes/smoke could be produced.

**5.3 Advice for firefighters**

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). Standard protective clothing for firefighters.

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**SECTION 6: Accidental release measures****6.1 Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases. Use personal protective equipment as required.

**6.2 Environmental precautions**

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it.

**6.3 Methods and material for containment and cleaning up**

Advices on how to contain a spill

Covering of drains. Take up mechanically.

Advices on how to clean up a spill

Take up mechanically.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

**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**

Keep away from fire.

Recommendations

- measures to prevent fire as well as aerosol and dust generation

No special measures are necessary.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

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

Managing of associated risks

- explosive atmospheres

Removal of dust deposits.

- flammability hazards

Keep away from fire. Keep away from combustible material.

- incompatible substances or mixtures

Acids, Alkalis, Oxidisers

Control of effects

Protect against external exposure, such as

High temperatures, Humidity

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### Consideration of other advice

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

#### - general rule

Store welding consumables inside a room without humidity. Do not store welding consumables directly on the ground or beside a wall. Keep welding consumables away from chemical substances like acids which could cause chemical reactions.

#### - ventilation requirements

Use local and general ventilation.

### 7.3 Specific end use(s)

Welding (welding process).

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### National limit values

| Occupational exposure limit values (Workplace Exposure Limits) |                               |            |          |            |           |                          |            |                           |             |
|--|-------------------------------|------------|----------|------------|-----------|--------------------------|------------|---------------------------|-------------|
| Country  | Name of agent                 | CAS No     | Notation | Identifier | TWA [ppm] | TWA [mg/m <sup>3</sup> ] | STEL [ppm] | STEL [mg/m <sup>3</sup> ] | Source      |
| EU   | manganese                     | 7439-96-5  | i        | IOELV      |           | 0.2                      |            |                           | 2017/164/EU |
| EU   | chromium                      | 7440-47-3  |          | IOELV      |           | 2                        |            |                           | 2006/15/EC  |
| EU   | fluorine, inorganic compounds | 7681-49-4  |          | IOELV      |           | 2.5                      |            |                           | 2000/39/EC  |
| GB   | dust                          |            | i        | WEL        |           | 10                       |            |                           | EH40/2005   |
| GB   | dust                          |            | r        | WEL        |           | 4                        |            |                           | EH40/2005   |
| GB   | aluminium oxides              | 1344-28-1  | i        | WEL        |           | 10                       |            |                           | EH40/2005   |
| GB   | aluminium oxides              | 1344-28-1  | r        | WEL        |           | 4                        |            |                           | EH40/2005   |
| GB   | titanium dioxide              | 13463-67-7 | i        | WEL        |           | 10                       |            |                           | EH40/2005   |
| GB   | titanium dioxide              | 13463-67-7 | r        | WEL        |           | 4                        |            |                           | EH40/2005   |
| GB   | manganese                     | 7439-96-5  |          | WEL        |           | 0.5                      |            |                           | EH40/2005   |
| GB   | nickel                        | 7440-02-0  |          | WEL        |           | 0.1                      |            |                           | EH40/2005   |
| GB   | silicon                       | 7440-21-3  | i        | WEL        |           | 10                       |            |                           | EH40/2005   |
| GB   | silicon                       | 7440-21-3  | r        | WEL        |           | 4                        |            |                           | EH40/2005   |
| GB   | chromium                      | 7440-47-3  |          | WEL        |           | 0.5                      |            |                           | EH40/2005   |
| GB   | silica, amorphous             | 7631-86-9  | i        | WEL        |           | 6                        |            |                           | EH40/2005   |
| GB   | silica, amorphous             | 7631-86-9  | r        | WEL        |           | 2.4                      |            |                           | EH40/2005   |
| GB   | fluorine, inorganic compounds | 7681-49-4  | F        | WEL        |           | 2.5                      |            |                           | EH40/2005   |

#### Notation

|      |  |
|------|--|
| F    | calculated as F (fluorine)   |
| i    | inhalable fraction   |
| r    | respirable fraction  |
| 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          |

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### Relevant DNELs/DMELs/PNECs and other threshold levels

| 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              |
| Chromium                                    | 7440-47-3 | DNEL      | 0.5 mg/m <sup>3</sup>  | human, inhalatory                  | worker (industry) | chronic - local effects    |
| nickel powder (particle diameter < 1mm)     | 7440-02-0 | DNEL      | 0.05 mg/m <sup>3</sup> | human, inhalatory                  | worker (industry) | chronic - local effects    |
| nickel powder (particle diameter < 1mm)     | 7440-02-0 | DNEL      | 0.05 mg/m <sup>3</sup> | human, inhalatory                  | worker (industry) | chronic - systemic effects |
| nickel powder (particle diameter < 1mm)     | 7440-02-0 | DNEL      | 0.05 mg/m <sup>3</sup> | human, inhalatory                  | worker (industry) | acute - systemic effects   |
| nickel powder (particle diameter < 1mm)     | 7440-02-0 | DNEL      | 4 mg/m <sup>3</sup>    | human, inhalatory                  | worker (industry) | acute - local effects      |
| sodium fluoride                             | 7681-49-4 | DNEL      | 2.5 mg/m <sup>3</sup>  | human, inhalatory                  | worker (industry) | acute - systemic effects   |
| sodium fluoride                             | 7681-49-4 | DNEL      | 2.5 mg/m <sup>3</sup>  | human, inhalatory                  | worker (industry) | chronic - local effects    |
| sodium fluoride                             | 7681-49-4 | DNEL      | 0.36 mg/kg bw/day      | human, dermal                      | worker (industry) | acute - systemic effects   |
| sodium fluoride                             | 7681-49-4 | DNEL      | 0.36 mg/kg bw/day      | human, dermal                      | worker (industry) | chronic - systemic effects |

| Relevant PNECs of components of the mixture |           |           |                 |                       |                              |                              |
|---|-----------|-----------|-----------------|-----------------------|------------------------------|------------------------------|
| Name of substance                           | CAS No    | End-point | Threshold level | Organism              | Environmental compartment    | Exposure time                |
| Chromium                                    | 7440-47-3 | PNEC      | 6.5 µg/l        | aquatic organisms     | freshwater                   | short-term (single instance) |
| Chromium                                    | 7440-47-3 | PNEC      | 205.7 mg/kg     | aquatic organisms     | freshwater sediment          | short-term (single instance) |
| Chromium                                    | 7440-47-3 | PNEC      | 21.1 mg/kg      | terrestrial organisms | soil                         | short-term (single instance) |
| sodium fluoride                             | 7681-49-4 | PNEC      | 0.9 mg/l        | aquatic organisms     | freshwater                   | short-term (single instance) |
| sodium fluoride                             | 7681-49-4 | PNEC      | 51 mg/l         | aquatic organisms     | sewage treatment plant (STP) | short-term (single instance) |
| sodium fluoride                             | 7681-49-4 | PNEC      | 11 mg/kg        | terrestrial organisms | soil                         | short-term (single instance) |

## 8.2 Exposure controls

### Appropriate engineering controls

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below the TLVs in the worker's breathing zone and the general area. Use extra ventilation when welding galvanized plate or coated plate.

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### Individual protection measures (personal protective equipment)

#### Eye/face protection



Wear helmet or use face shield with filter lens. As a rule of thumb, start with a shade which is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles, if necessary, to shield others.

#### Skin protection

Protective clothing (EN 340).

#### - hand protection



Welding gloves according to EN12477:2001 and A1:2005 in case of arc welding. 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. The exact break through time should be requested at the protective glove manufacturer and must be observed.

#### - breakthrough times of the glove material

>480 minutes (permeation: level 6).

#### - other protection measures



Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling. Wear head, hand and body protection which help to prevent injury from radiation, sparks and electric shock. At a minimum this includes welder's gloves and protective face shield and may include arm protectors, aprons, hats, shoulder protection as well as dark substantial clothing.

Train the welder not to touch live electrical parts and to insulate himself from work and ground.

#### Respiratory protection



Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV. Keep head out of the fumes and gases.

#### Ear protection



Wear earplugs or earmuffs when using engine driven arc welding machine or pulsed arc welding machine that generates high-level noise.

#### 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

#### Appearance

|                |                   |
|----------------|-------------------|
| Physical state | solid (electrode) |
| Colour         | grey              |
| Odour          | odourless         |

#### Other safety parameters

|   |                |
|---|----------------|
| pH (value)                              | not applicable |
| Melting point/freezing point            | not determined |
| Initial boiling point and boiling range | not determined |
| Flash point                             | not applicable |



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|                                 |   |
|---------------------------------|---|
| Evaporation rate                | not determined                                |
| Flammability (solid, gas)       | non-combustible                               |
| Explosion limits of dust clouds | not determined                                |
| Vapour pressure                 | not determined                                |
| Density                         | not determined                                |
| Vapour density                  | this information is not available             |
| Relative density                | information on this property is not available |
| Solubility(ies)                 | not determined                                |
| Partition coefficient           |   |
| - n-octanol/water (log KOW)     | this information is not available             |
| Auto-ignition temperature       | information on this property is not available |
| Viscosity                       | not relevant (solid matter)                   |
| Explosive properties            | none  |
| Oxidising properties            | none  |

**9.2 Other information**  
Of no significance.

**SECTION 10: Stability and reactivity**

**10.1 Reactivity**

Contact with chemical substances could cause generation of gas.

**10.2 Chemical stability**

See below "Conditions to avoid".

**10.3 Possibility of hazardous reactions**

Reacts with: Acids. Alkalis. Oxidising substances.

**10.4 Conditions to avoid**

Keep away from heat.

**10.5 Incompatible materials**

Oxidisers, Acids, Alkalis

**10.6 Hazardous decomposition products**

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous decomposition products includes those from the volatilization, reaction or oxidation of the material listed in section 3 and those from the base metal and coating. Manganese has a low exposure limit, in some countries, that may be easily exceeded. Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Reasonably expected fume constituents of this product would include oxides of metals

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### SECTION 11: Toxicological information

#### 11.1 Information on toxicological effects

Inhalation of welding fumes and gases can be dangerous to your health. The composition and quantity of both are dependent upon the material being worked, the process, procedures and consumables used.

##### Classification procedure

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

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

##### Acute toxicity

Overexposure to gases, fumes and dusts may include irritation of the eyes, lungs, nose and throat. Some toxic gases (associated with welding) may cause pulmonary edema, asphyxiation and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing or chest pain. Exposure to the fluoride ion may cause hypocalcaemia-calcium deficiency in the blood that can result in muscle cramps and inflammation and necrosis of mucous membranes.

GHS of the United Nations, annex 4: May be harmful if inhaled.

| Acute toxicity of components of the mixture |           |                |          |              |         |
|---|-----------|----------------|----------|--------------|---------|
| Name of substance                           | CAS No    | Exposure route | Endpoint | Value        | Species |
| Nickel                                      | 7440-02-0 | oral           | LD50     | >9,000 mg/kg | rat     |
| Sodium fluoride                             | 7681-49-4 | oral           | LD50     | 223 mg/kg    | rat     |

##### Skin corrosion/irritation

Causes skin irritation.

##### Serious eye damage/eye irritation

Causes serious eye irritation.

##### Respiratory or skin sensitisation

May cause an allergic skin reaction.

##### Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

##### Carcinogenicity

Suspected of causing cancer.

| IARC Monographs on the Evaluation of Carcinogenic Risks to Humans |           |     |                |         |           |                 |
|---|-----------|-----|----------------|---------|-----------|-----------------|
| Name of substance   | CAS No    | Wt% | Classification | Remarks | Number    | Date indication |
| nickel powder (particle diameter < 1mm)                           | 7440-02-0 | 18  | 2B             |         | Volume 49 | 1990            |
| Chromium  | 7440-47-3 | 30  | 3              |         | Volume 49 | 1990            |

##### Legend

2B Possibly carcinogenic to humans  
3 Not classifiable as to carcinogenicity in humans

##### Reproductive toxicity

Shall not be classified as a reproductive toxicant.

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### Summary of evaluation of the CMR properties

Nickel is considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and oedema. Welding fumes (not otherwise specified) are possibly carcinogenic to humans.

### Specific target organ toxicity - repeated exposure

Causes damage to organs through prolonged or repeated exposure. Nickel is considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and oedema. Overexposure to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest X-rays. The severity of the change is proportional to the length of the exposure. The changes may be caused by non-work factors such as smoking, etc. Long term exposure to welding and allied processes gasses, dusts and fumes may contribute to pulmonary irritation or pneumoconiosis. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances and spastic gait. The effect of manganese on the nervous system is irreversible. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung, which can be seen on a chest x-ray but causes little or no disability. Chronic overexposure to iron (>50-100 mg Fe per day) can result in pathological deposition of iron in body tissues of which are fibrosis of the pancreas, diabetes mellitus and liver cirrhosis. Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth. Chromium (in some forms) is considered carcinogenic. Chromium compounds have a corrosive action on the skin and mucous membranes and forms lesions on exposed skin and the nasal septum. Liver damage and allergic skin rash have also been reported.

### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

## SECTION 12: Ecological information

### 12.1 Toxicity

Shall not be classified as hazardous to the aquatic environment.

| Aquatic toxicity (acute) of components of the mixture |           |          |            |                       |               |
|---|-----------|----------|------------|-----------------------|---------------|
| Name of substance                                     | CAS No    | Endpoint | Value      | Species               | Exposure time |
| nickel powder (particle diameter < 1mm)               | 7440-02-0 | LC50     | 15.3 mg/l  | fish                  | 96 h          |
| nickel powder (particle diameter < 1mm)               | 7440-02-0 | EC50     | 561.3 µg/l | aquatic invertebrates | 96 h          |
| nickel powder (particle diameter < 1mm)               | 7440-02-0 | ErC50    | <148 µg/l  | algae                 | 72 h          |
| sodium fluoride                                       | 7681-49-4 | EC50     | 48 mg/l    | aquatic invertebrates | 96 h          |

| Aquatic toxicity (chronic) of components of the mixture |           |          |            |                       |               |
|---|-----------|----------|------------|-----------------------|---------------|
| Name of substance                                       | CAS No    | Endpoint | Value      | Species               | Exposure time |
| nickel powder (particle diameter < 1mm)                 | 7440-02-0 | ErC50    | 8,363 µg/l | fish                  | 40 d          |
| nickel powder (particle diameter < 1mm)                 | 7440-02-0 | LC50     | 204 µg/l   | aquatic invertebrates | 21 d          |
| nickel powder (particle diameter < 1mm)                 | 7440-02-0 | EbC50    | 6.2 µg/l   | aquatic invertebrates | 30 d          |
| nickel powder (particle diameter < 1mm)                 | 7440-02-0 | EC50     | 406 µg/l   | aquatic invertebrates | 24 h          |

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### 12.2 Persistence and degradability

No further relevant information available.

### 12.3 Bioaccumulative potential

No further relevant information available.

### 12.4 Mobility in soil

Not mobile.

### 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 Other adverse effects

No further relevant information available.

Endocrine disrupting potential

None of the ingredients are listed.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment.

Waste treatment of containers/packages

Handle contaminated packages in the same way as the substance itself.

#### Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

## SECTION 14: Transport information

|      |   |   |
|------|---|---|
| 14.1 | <b>UN number</b>  | not subject to transport regulations                                  |
| 14.2 | <b>UN proper shipping name</b>  | not relevant  |
| 14.3 | <b>Transport hazard class(es)</b>   |   |
|      | Class   | -   |
| 14.4 | <b>Packing group</b>  | not relevant  |
| 14.5 | <b>Environmental hazards</b>  | non-environmentally hazardous acc. to the dangerous goods regulations |
| 14.6 | <b>Special precautions for user</b>                                       |   |
|      | There is no additional information.                                       |   |
| 14.7 | <b>Transport in bulk according to Annex II of MARPOL and the IBC Code</b> |   |
|      | No data available.  |   |

### Information for each of the UN Model Regulations

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

Not subject to ADR, RID and ADN.

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**International Maritime Dangerous Goods Code (IMDG)**

Not subject to IMDG.

**International Civil Aviation Organization (ICAO-IATA/DGR)**

Not subject to ICAO-IATA.

### 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**

| Dangerous substances with restrictions (REACH, Annex XVII) |                        |           |                         |                           |    |
|--|------------------------|-----------|-------------------------|---------------------------|----|
| Name of substance  | Name acc. to inventory | CAS No    | Type of registration    | Conditions of restriction | No |
| nickel powder (particle diameter < 1mm)                    | nickel                 | 7440-02-0 | 1907/2006/EC annex XVII | R27                       | 27 |

Legend

R27

- Shall not be used:
  - 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/cm<sup>2</sup>/week (migration limit);
  - 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/cm<sup>2</sup>/week.
  - 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/cm<sup>2</sup>/week for a period of at least two years of normal use of the article.
- 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.
- 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.

**List of substances subject to authorisation (REACH, Annex XIV)**

None of the ingredients are listed.

**Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)**

| Pollutant release and transfer registers (PRTR) |           |         |   |
|---|-----------|---------|---|
| Name of substance                               | CAS No    | Remarks | Threshold for releases to air (kg/year) |
| nickel powder (particle diameter < 1mm)         | 7440-02-0 | (8)     | 50                                      |
| Chromium  | 7440-47-3 | (8)     | 100                                     |

Legend

(8) All metals shall be reported as the total mass of the element in all chemical forms present in the release

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**Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)**

| Water Framework Directive (WFD)         |           |           |         |
|---|-----------|-----------|---------|
| Name of substance                       | CAS No    | Listed in | Remarks |
| nickel powder (particle diameter < 1mm) | 7440-02-0 | Annex X   |         |

Legend

annex X List of priority substances in the field of water policy

**Regulation 98/2013/EU on the marketing and use of explosives precursors**

None of the ingredients are listed.

**15.2 Chemical Safety Assessment**

No chemical safety assessment has been carried out for this mixture.

**SECTION 16: Other information**

**Indication of changes (revised safety data sheet)**

Complete revised version.

**Abbreviations and acronyms**

| Abbr.           | Descriptions of used abbreviations  |
|-----------------|---|
| 2000/39/EC      | Commission Directive establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC   |
| 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                    |
| 2017/164/EU     | Commission Directive establishing a fourth list of indicative occupational exposure limit values pursuant to Council Directive 98/24/EC, and amending Commission Directives 91/322/EEC, 2000/39/EC and 2009/161/EU    |
| 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)                                       |
| Aquatic Chronic | Hazardous to the aquatic environment - chronic hazard   |
| 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  |
| CMR             | Carcinogenic, Mutagenic or toxic for Reproduction   |
| DGR             | Dangerous Goods Regulations (see IATA/DGR)  |
| DMEL            | Derived Minimal Effect Level  |
| DNEL            | Derived No-Effect Level   |
| 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 ( <a href="http://www.nationalarchives.gov.uk/doc/open-government-licence/">http://www.nationalarchives.gov.uk/doc/open-government-licence/</a> )                                 |
| EINECS          | European Inventory of Existing Commercial Chemical Substances   |
| ELINCS          | European List of Notified Chemical Substances   |
| Eye Dam.        | Seriously damaging to the eye   |
| Eye Irrit.      | Irritant to the eye   |

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| <b>Abbr.</b> | <b>Descriptions of used abbreviations</b>   |
|--------------|---|
| GHS          | "Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations   |
| IARC         | International Agency for Research on Cancer   |
| IATA         | International Air Transport Association   |
| IATA/DGR     | Dangerous Goods Regulations (DGR) for the air transport (IATA)  |
| ICAO         | International Civil Aviation Organization   |
| IMDG         | 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  |
| MARPOL       | International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")   |
| NLP          | No-Longer Polymer   |
| PBT          | Persistent, Bioaccumulative and Toxic   |
| PNEC         | Predicted No-Effect Concentration   |
| ppm          | Parts per million   |
| REACH        | Registration, Evaluation, Authorisation and Restriction of Chemicals  |
| 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  |
| 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), amended by 2015/830/EU.

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: The classification is based on tested mixture.

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)**

| <b>Code</b> | <b>Text</b>                              |
|-------------|--|
| H301        | Toxic if swallowed.                      |
| H314        | Causes severe skin burns and eye damage. |
| H315        | Causes skin irritation.                  |
| H317        | May cause an allergic skin reaction.     |
| H318        | Causes serious eye damage.               |

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| Code | Text  |
|------|---|
| H319 | Causes serious eye irritation.                                  |
| H351 | Suspected of causing cancer.                                    |
| H372 | Causes damage to organs through prolonged or repeated exposure. |
| H412 | Harmful to aquatic life with long lasting effects.              |

**Disclaimer**

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

**Warning text on the label**

WARNING: PROTECT yourself and others. Read and understand this information.

FUMES AND GASES can be hazardous to your health.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can KILL.

- Before use, read and understand the manufacturer's instructions, Material Safety Data Sheets (MSDSs), and your employer's safety practices.
- Keep your head out of the fumes.
- Use adequate ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not touch free electrical parts.