

## DW-A61LSR

Version number: 1.0

Date of compilation: 2021-07-27

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

**1.1 Product identifier**

Trade name **DW-A61LSR**  
Registration number (REACH) not relevant (mixture)

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

Relevant identified uses  
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  
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

### SECTION 2: Hazards identification

**2.1 Classification of the substance or mixture**

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

This mixture does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

It has been observed that the carcinogenic hazard of this substance arises when respirable dust is inhaled in quantities leading to significant impairment of particle clearance mechanisms in the lung.

Code	Supplemental hazard information
EUH208	contains nickel powder (particle diameter < 1mm). May produce an allergic reaction
EUH210	safety data sheet available on request
EUH212	Warning! Hazardous respirable dust may be formed when used. Do not breathe dust

**2.2 Label elements**

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

- signal word Not required.
- pictograms Not required.
- supplemental hazard information
  - EUH208 Contains nickel powder (particle diameter < 1mm). May produce an allergic reaction.
  - EUH210 Safety data sheet available on request.
  - EUH212 Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.

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**2.3 Other hazards**

There is no additional information.

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 and nervous system.

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.

**Substance(s) formed under the conditions of use.**

The welding fumes produced from this welding electrode may contain the listed constituent(s) of Sec.3 and/or their complex metallic oxides as well as solid particles or other constituents from the consumables, base metal, or base metal coating not listed Sec.3. The welding fumes may contain Mn, Ni, Cr(VI) and their compounds. Refer to Sec.8 and 10.

**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**

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 product and hence require reporting in this section.

Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms	Notes
Manganese	CAS No 7439-96-5  EC No 231-105-1  REACH Reg. No 01-2119449803- 34-xxxx	1 - <5			IOELV
Nickel	CAS No 7440-02-0  EC No 231-111-4  REACH Reg. No 01-2119438727- 29-xxxx	< 1	Skin Sens. 1 / H317 Carc. 2 / H351 STOT RE 1 / H372 Aquatic Chronic 3 / H412		IARC: 2B
Respirable Crystalline Silica	CAS No 14808-60-7  EC No 238-878-4	< 1	STOT RE 1 / H372		IARC: 1 IOELV

**Notes**

IARC: 1: IARC group 1: carcinogenic to humans (International Agency for Research on Cancer)

IARC: 2B: 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.

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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. If experiencing respiratory symptoms: Call a doctor.

## Following skin contact

Brush off loose particles from skin. Rinse skin with water/shower. Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

## Following eye contact

Do not rub the eyes. Mechanical stress can cause damage to the cornea. Irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

## Following ingestion

Rinse mouth with water (only if the person is conscious). Call a POISON CENTER or doctor if you feel unwell.

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

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung), central nervous system effects, bronchitis and other pulmonary effects. Refer to Section 11 for more information.

**Hazards.**

Welding hazards are complex and may include physical and health hazards such as but not limited to electric shock, physical strains, radiation burns (eye flash), thermal burns due to hot metal or spatter and potential health effects of overexposure to welding fume or dust. Refer to Section 11 for more information.

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

Treat symptomatically.

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

## Suitable extinguishing media

As shipped, this product is non flammable. However, welding arc and spark can ignite combustible and flammable products, Co-ordinate firefighting measures to the fire surroundings, 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.

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Special protective equipment for firefighters  
Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.

**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. If airborne dust and/or fume is present, use adequate engineering controls and, if needed, personal protection to prevent overexposure. Refer to recommendations in Section 8.

**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**

Advice on how to contain a spill

Covering of drains. Take up mechanically.

Advice 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

**Reduction of fumes and dusts.**

Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Read and understand the manufacturer's instruction and the possible precautionary label on the product.

**Prevention of electric shock.**

Do not touch live electrical parts such as the welding wire and welding machine terminals. Wear insulated gloves and safety boots. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

**Prevention of fire and explosion.**

Remove flammable and combustible materials and liquids.

**Prevention of harm when handling welding consumables.**

Handle with care to avoid stings and cuts. Hold the welding wire manually when loosening the wire.

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.

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- 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

**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	Identifier	TWA [ppm]	TWA [mg/m <sup>3</sup> ]	STEL [ppm]	STEL [mg/m <sup>3</sup> ]	Notation	Source
EU	silica, crystalline	14808-60-7	IOELV		0.1			r	2017/2398/EU
EU	manganese	7439-96-5	IOELV		0.2			i	2017/164/EU
GB	dust		WEL		10			i	EH40/2005
GB	dust		WEL		4			r	EH40/2005
GB	titanium dioxide	13463-67-7	WEL		10			i	EH40/2005
GB	titanium dioxide	13463-67-7	WEL		4			r	EH40/2005
GB	silica, crystalline	14808-60-7	WEL		0.1			r	EH40/2005
GB	manganese	7439-96-5	WEL		0.2			i	EH40/2005
GB	manganese	7439-96-5	WEL		0.05			r	EH40/2005
GB	nickel	7440-02-0	WEL		0.1				EH40/2005

**Notation**

- 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 (unless otherwise specified)

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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
Manganese	7439-96-5	DNEL	0.2 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Manganese	7439-96-5	DNEL	0.004 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Nickel	7440-02-0	DNEL	0.05 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	acute - systemic effects
Nickel	7440-02-0	DNEL	0.05 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - systemic effects
Nickel	7440-02-0	DNEL	0.05 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	chronic - local effects
Nickel	7440-02-0	DNEL	11.9 mg/m <sup>3</sup>	human, inhalatory	worker (industry)	acute - local effects

Relevant PNECs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Manganese	7439-96-5	PNEC	0.034 mg/l	aquatic organisms	freshwater	short-term (single instance)
Manganese	7439-96-5	PNEC	0.003 mg/l	aquatic organisms	marine water	short-term (single instance)
Manganese	7439-96-5	PNEC	0.028 mg/l	aquatic organisms	water	intermittent release
Manganese	7439-96-5	PNEC	100 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Manganese	7439-96-5	PNEC	3.3 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Manganese	7439-96-5	PNEC	0.34 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Manganese	7439-96-5	PNEC	3.4 mg/kg	terrestrial organisms	soil	short-term (single instance)
Nickel	7440-02-0	PNEC	7.1 µg/l	aquatic organisms	freshwater	short-term (single instance)
Nickel	7440-02-0	PNEC	8.6 µg/l	aquatic organisms	marine water	short-term (single instance)
Nickel	7440-02-0	PNEC	0.33 mg/l	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Nickel	7440-02-0	PNEC	109 mg/kg	aquatic organisms	freshwater sediment	short-term (single instance)
Nickel	7440-02-0	PNEC	109 mg/kg	aquatic organisms	marine sediment	short-term (single instance)
Nickel	7440-02-0	PNEC	29.9 mg/kg	terrestrial organisms	soil	short-term (single instance)

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**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. Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder's helmet if worn or in the worker's breathing zone. Improve ventilation if exposures are not below limits.

**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**

Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. At a minimum this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Wear dry gloves free of holes or split seams. Train the welder not to permit electrically live parts or electrodes to contact skin or clothing or gloves if they are wet. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation.

**- hand protection**

Wear suitable gloves. 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.

**- type of material**

Butyl rubber

**- breakthrough times of the glove material**

Use gloves with a minimum 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.

**Ear protection**

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

**Advice on hygiene measures**

Do not eat, drink or smoke when using this product. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

**Respiratory protection**

Keep your head out of fumes. Use enough ventilation and local exhaust to keep fumes and gases from your breathing zone and the general area. 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.

**Environmental exposure controls**

Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.

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**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

Physical state	solid wire or rod
Colour	different
Odour	characteristic
Melting point/freezing point	>723 K
Boiling point or initial boiling point and boiling range	not determined
Flammability	this material is combustible, but will not ignite readily
Lower and upper explosion limit	LEL: UEL: not determined
Flash point	not determined
Auto-ignition temperature	information on this property is not available
Decomposition temperature	no data available
pH (value)	not applicable
Kinematic viscosity	not relevant
Solubility(ies)	not determined

Partition coefficient n-octanol/water (log value)	this information is not available
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Vapour pressure	not determined
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Density	not determined
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Relative vapour density	this information is not available
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Particle characteristics	no data available
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**9.2 Other information**

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
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Other safety characteristics	there is no additional information
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**SECTION 10: Stability and reactivity****10.1 Reactivity**

Contact with chemical substances could cause generation of gas.

**10.2 Chemical stability**

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

**10.3 Possibility of hazardous reactions**

Contact with acids, alkalis and oxidizing agents could cause reaction and generation of gas.

**10.4 Conditions to avoid**

Keep away from heat Acids Alkalis Oxidisers.

**10.5 Incompatible materials**

Oxidisers, Acids, Alkalis

**10.6 Hazardous decomposition products**

Manganese has a low exposure limit, in some countries, that may be easily exceeded. Welding fumes and gases are generated as byproducts during the welding. The composition and quantity of fumes and gases cannot be recognized simply. The composition and quantity of the fumes and gases are dependent upon the base metal being welded (included coating such as solvent, paint, plating), the welding process, welding procedure, welding parameter and electrodes used. Other conditions which also influence the quantity of the fumes and gases to which workers may be exposed include the number of welding spots, the volume of the worker area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume, as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapors from cleaning and degreasing activities.). The fumes and gases are different in percent and form from the ingredients listed in Section 3. The fumes and gases include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 3, plus those from the base metal and coating, etc., as noted above. Reasonably expected fume constituents produced during arc welding include the oxides of iron, manganese and other metals present in the welding consumable or base metal. And, it is known that these metal oxides are complex oxides, not single compounds. Hexavalent chromium compounds may be in the welding fume of consumables or base metals which contain chromium. Nickel compounds may be in the welding fume of consumables or base metals which contain Nickel. Gaseous and particulate fluoride may be in the welding fume of consumables which contain fluoride. Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc.

**SECTION 11: Toxicological information****11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008**

The International Agency for Research on Cancer (IARC) has determined welding fumes and ultraviolet radiation from welding are carcinogenic to humans (Group 1). According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. Read and understand the manufacturer's instructions, Safety Data Sheets and the precautionary labels before using this product.

**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)**

This mixture does not meet the criteria for classification in accordance with Regulation No 1272/2008/EC.

**Acute toxicity**

Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

**Cr:** The presence of chromium/chromate in welding fumes can cause irritation of nasal membranes and skin.

**Ni:** The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever.

**F:** Exposure to the fluoride ion in welding fumes may cause hypocalcemia-calcium deficiency in the blood that can result in muscle cramps and inflammation and necrosis of mucous membranes.

**Gases:** Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death.

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- acute toxicity of components of the mixture

Acute toxicity of components of the mixture					
Name of substance	CAS No	Exposure route	Endpoint	Value	Species
Manganese	7439-96-5	oral	LD50	>2,000 mg/kg	rat
Manganese	7439-96-5	inhalation: dust/ mist	LC50	>5.14 mg/l/4h	rat
Nickel	7440-02-0	oral	LD50	>9,000 mg/kg	rat

**Skin corrosion/irritation**

Shall not be classified as corrosive/irritant to skin.

**Serious eye damage/eye irritation**

Shall not be classified as seriously damaging to the eye or eye irritant.

**Respiratory or skin sensitisation**

Contains nickel powder (particle diameter < 1 mm). May produce an allergic reaction.

**Ni:** Nickel and its compounds are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.

**Cr:** Chromates may cause allergic reactions, including skin rash. Asthma has been reported in some sensitized individuals. Skin contact may result in irritation, ulceration, sensitization, and contact dermatitis.

**Germ cell mutagenicity**

Shall not be classified as germ cell mutagenic.

**Carcinogenicity**

Shall not be classified as carcinogenic.

**Reproductive toxicity**

Shall not be classified as a reproductive toxicant.

**Summary of evaluation of the CMR properties**

Welding fumes (not otherwise specified) are possibly carcinogenic to humans.

**SiO2:** Crystalline silica is classified as a human carcinogen (Group I) by the IARC (International Agency for Research on Cancer).

**Ni:** Nickel is considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and oedema.

**Cr:** Hexavalent chromium and its compounds are on the IARC and NTP lists as posing a cancer risk to humans.

**Arc rays:** Skin cancer has been reported.

Name acc. to inventory	CAS No	Wt%	Classification	Remarks	Number	Date indication
nickel	7440-02-0	0.99	2B			1990
Silica dust, crystalline	14808-60-7	0.99	1	in the form of quartz or cristobalite		2012

**Legend**

- 1 Carcinogenic to humans
- 2B Possibly carcinogenic to humans

**Specific target organ toxicity - single exposure**

Shall not be classified as a specific target organ toxicant (single exposure).

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### Specific target organ toxicity - repeated exposure

Shall not be classified as a specific target organ toxicant (repeated exposure).

Long term exposure to welding and allied processes gasses, dusts and fumes may contribute to pulmonary irritation or pneumoconiosis and other pulmonary effects. 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.

**Ni:** Nickel is considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and oedema.

**Cr:** Chromates may cause ulceration, perforation of the nasal septum, and severe irritation of the bronchial tubes and lungs. Liver damage have also been reported. Chromates contain the hexavalent form of chromium.

**Mn:** 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.

**Cu:** Overexposure to copper fumes may lead to copper poisoning, resulting in hemolytic anemia and liver, kidney and spleen damage.

**Fe:** 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.

**SiO<sub>2</sub>:** Overexposure to crystalline silica present in dust from flux can cause severe lung damage (silicosis). Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death.

**F:** Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth.

### Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

### Other information

Organic polymers may be used in the manufacture of various welding consumables. Overexposure to their decomposition byproducts may result in a condition known as polymer fume fever. Polymer fume fever usually occurs within 4 to 8 hours of exposure with the presentation of flu like symptoms, including mild pulmonary irritation with or without an increase in body temperature. Signs of exposure can include an increase in white blood cell count. Resolution of symptoms typically occurs quickly, usually not lasting longer than 48 hours.

## 11.2 Information on other hazards

There is no additional information.

## 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
Manganese	7439-96-5	LC50	>3.6 mg/l	fish	96 h
Manganese	7439-96-5	EC50	>1.6 mg/l	aquatic invertebrates	48 h
Manganese	7439-96-5	ErC50	4.5 mg/l	algae	72 h
Manganese	7439-96-5	NOEC	3.6 mg/l	fish	96 h
Manganese	7439-96-5	LOEC	5.3 mg/l	algae	72 h
Manganese	7439-96-5	growth rate (ErCx) 10%	3.4 mg/l	algae	72 h
Manganese	7439-96-5	growth (EbCx) 10%	2.6 mg/l	algae	72 h
Nickel	7440-02-0	LC50	15.3 mg/l	fish	96 h
Nickel	7440-02-0	EC50	406 µg/l	aquatic invertebrates	24 h
Nickel	7440-02-0	ErC50	237 µg/l	algae	72 h

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Aquatic toxicity (acute) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Nickel	7440-02-0	NOEC	0.5 mg/l	aquatic invertebrates	72 h
Nickel	7440-02-0	LOEC	>4,407 µg/l	aquatic invertebrates	48 h
Nickel	7440-02-0	growth (EbCx) 10%	662.6 µg/l	aquatic invertebrates	48 h
Nickel	7440-02-0	growth rate (Er-Cx) 10%	18.3 µg/l	algae	72 h

Aquatic toxicity (chronic) of components of the mixture					
Name of substance	CAS No	Endpoint	Value	Species	Exposure time
Manganese	7439-96-5	LC50	<15.61 mg/l	fish	28 d
Manganese	7439-96-5	EC50	19.5 mg/l	aquatic invertebrates	21 d
Manganese	7439-96-5	NOEC	1.7 mg/l	aquatic invertebrates	8 d
Manganese	7439-96-5	growth (EbCx) 20%	<1.1 mg/l	aquatic invertebrates	21 d
Nickel	7440-02-0	ErC50	8,363 µg/l	fish	40 d
Nickel	7440-02-0	LC50	≤144 µg/l	aquatic invertebrates	21 d
Nickel	7440-02-0	EC50	≤108 µg/l	aquatic invertebrates	21 d
Nickel	7440-02-0	EbC50	6.2 µg/l	aquatic invertebrates	30 d
Nickel	7440-02-0	NOEC	0.057 mg/l	fish	32 d
Nickel	7440-02-0	LOEC	0.12 mg/l	fish	32 d
Nickel	7440-02-0	growth (EbCx) 10%	404.3 µg/l	aquatic invertebrates	10 d

**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 Endocrine disrupting properties**

None of the ingredients are listed.

**12.7 Other adverse effects**

No further relevant information available.

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**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/packagings

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 UN number or ID number** not subject to transport regulations
- 14.2 UN proper shipping name** not relevant
- 14.3 Transport hazard class(es)** none
- 14.4 Packing group** not assigned
- 14.5 Environmental hazards** non-environmentally hazardous acc. to the dangerous goods regulations
- 14.6 Special precautions for user**  
There is no additional information.
- 14.7 Maritime transport in bulk according to IMO instruments**  
No data available.

**Information for each of the UN Model Regulations**

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

Not subject to ADR, RID and ADN.

**International Maritime Dangerous Goods Code (IMDG) - additional information**

Not subject to IMDG.

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

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**

Name	Name acc. to inventory	Restriction	No
Nickel	nickel	R27	27

**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/cm<sup>2</sup>/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/

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### Legend

cm<sup>2</sup>/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/cm<sup>2</sup>/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.

### 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
	not assigned		

### Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

Pollutant release and transfer registers (PRTR)			
Name acc. to inventory	CAS No	Remarks	Threshold for releases to air (kg/year)
nickel	7440-02-0	(8)	50

### Legend

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

### Water Framework Directive (WFD)

List of pollutants (WFD)				
Name of substance	Name acc. to inventory	CAS No	Listed in	Remarks
Nickel	nickel	7440-02-0	B)	
Manganese	Substances and preparations, or the breakdown products of such, which have been proved to possess carcinogenic or mutagenic properties or properties which may affect steroidogenic, thyroid, reproduction or other endocrine-related functions in or via the aquatic environment		A)	
Manganese	Metals and their compounds		A)	

### Legend

A) Indicative list of the main pollutants

B) List of priority substances in the field of water policy

### 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 on persistent organic pollutants (POP)

None of the ingredients are listed.

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**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
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
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
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
EbC50	≡ 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
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 ( <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
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
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

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Abbr.	Descriptions of used abbreviations
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
LEL	Lower explosion limit (LEL)
LOEC	Lowest Observed Effect Concentration
NLP	No-Longer Polymer
NOEC	No Observed Effect Concentration
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 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
UEL	Upper explosion limit (UEL)
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 2020/878/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)**

Code	Text
H317	May cause an allergic skin reaction.
H351	Suspected of causing cancer.
H372	Causes damage to organs through prolonged or repeated exposure.
H412	Harmful to aquatic life with long lasting effects.



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### Disclaimer

The information given in this SDS is based on the present level of our knowledge and experience. This information is believed to be accurate as of the revision date shown above. However, no warranty, expressed or implied, is given. Because the conditions or methods of use are beyond KOBELCO STEEL, LTD.'s control, we assume no liability resulting from the use of this product. Regulatory requirements are subject to change and may differ between various locations. Compliance with all applicable Federal, State, Provincial, and local laws and regulations remain the responsibility of the user. If necessary, consult an industrial hygienist or other expert to understand this information and safeguard the environment and protect workers from potential hazards associated with the handling or use of 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.

### Annex to the extended Safety Data Sheet (eSDS)

#### Exposure Scenario:

Read and understand the "Recommendations for Exposure Scenarios, Risk Management Measures and to identify Operational Conditions under which metals, alloys and metallic articles may be safely welded", which is available from your supplier and at <http://european-welding.org/health-safety>.