Safety Data Sheet

acc. to Regulation (EC) No. 1907/2006 (REACH)

GENERIC EU SDS - NO COUNTRY SPECIFIC DATA

LB-52U

Version number: 3.0
Replaces version of: 2012-04-19 (1)

Revision: 2023-05-15

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

1.1 Product identifier

Trade name **LB-52U**

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: 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

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification acc. to GHS

This mixture does not meet the criteria for classification.

Code	Supplemental hazard information
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

- signal word: Not required.
- pictograms: Not required.
- supplemental hazard information

EUH210 Safety data sheet available on request.
EUH212 Warning! Hazardous respirable dust may be formed when used. Do not breathe dust.

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.
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.

Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture).

3.2 Mixtures

The product does not contain (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	< 3			IOELV

Notes
IOELV: Substance with a community indicative occupational exposure limit value

Remarks

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

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 breath, 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 breath, 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 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 poison centre.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Alcohol resistant foam, Dry extinguishing powder, Carbon dioxide (CO_2), 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 (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.

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.

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

- 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

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.

- packaging compatibilities

Keep only in original container.

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^3]	STEL [ppm]	STEL [mg/m^3]	Notation	Source
EU	silica, crystalline	14808-60-7	IOELV		0.1			r	2017/2398/EU

Occupational exposure limit values (Workplace Exposure Limits)									
Cou ntry	Name of agent	CAS No	Identi-fier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Nota-tion	Source
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	silicon	7440-21-3	WEL		10			i	EH40/2005
GB	silicon	7440-21-3	WEL		4			r	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)

Relevant DNELs/DMELs/PNECs and other threshold levels

Relevant DNELs of components of the mixture						
Name of sub-stance	CAS No	End-point	Threshold level	Protection goal, route of expos-ure	Used in	Exposure time
Manganese	7439-96-5	DNEL	0.2 mg/m³	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

Relevant PNECs of components of the mixture						
Name of sub-stance	CAS No	End-point	Threshold level	Organism	Environmental compartment	Exposure time
Manganese	7439-96-5	PNEC	0.028 $^{mg}/_{l}$	aquatic organisms	water	intermittent release
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	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)

Relevant PNECs of components of the mixture						
Name of sub-stance	**CAS No**	**End-point**	**Threshold level**	**Organism**	**Environmental compartment**	**Exposure time**
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 organ-isms	soil	short-term (single instance)

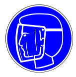
8.2 Exposure controls

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.

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 neces-sary, to shield others.

Skin protection

Chemical protective clothing.

- 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 ex-act break through time should be requested at the protective glove manufacturer and must be observed.

- breakthrough time of the glove material

Use gloves with a minimum breakthrough time of the glove material: >10 minutes (permeation: level 1).

- 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 bodyprotection which help to prevent injury form 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.

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.

Environmental exposure controls

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

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	solid (electrode)
Colour	grey
Odour	odourless
Melting point/freezing point	not determined
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 relevant
Flash point	not applicable
Auto-ignition temperature	information on this property is not available
Decomposition temperature	no data available
pH (value)	not applicable
Kinematic viscosity	not relevant
Solubility	not determined

Partition coefficient n-octanol/water (log value)	this information is not available

Vapour pressure	not determined

Density and/or relative density

Density	not determined
Relative vapour density	information on this property is not available

Particle characteristics	no data available

9.2 Other information

There is no additional information.

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant

Other safety characteristics

Temperature class	T2 (maximum permissible surface temperature on the equipment: 300 °C)

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

Reacts with:. Acids. Alkalis. Oxidising substances.

10.4 Conditions to avoid

There are no specific conditions known which have to be avoided.

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

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 acc. to GHS

This mixture does not meet the criteria for classification.

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).
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.

- 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

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

Shall not be classified as a respiratory or skin sensitiser.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans						
Name of substance	**CAS No**	**Wt%**	**Classification**	**Remarks**	**Number**	**Date indication**
LB-52U		100	1			2018

Legend
1 Carcinogenic to humans

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).
Arc rays: Skin cancer has been reported.

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.
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 systeem is irreversible.
Fe: Inhalation of to much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation"of the lung, which can be seen on a cest 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 firbrosis of the pancreas, diabetes mellitus and lever cirrhosis.
SiO2: 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 fluor sis, increased radiographic density of the bones and mottling of the teeth.

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

Endocrine disrupting properties

Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.

Other information

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

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

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

Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.

12.7 Other adverse effects

No further relevant information available.

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

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

This Safety Data Sheet is purely informative and does comply with EU regulation, but not with country-specific regulation.

Relevant provisions of the European Union (EU)

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)

None of the ingredients are listed.

Water Framework Directive (WFD)

List of pollutants (WFD)				
Name of substance	**Name acc. to inventory**	**CAS No**	**Listed in**	**Remarks**
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

Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

National regulations (GB)

List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list

none of the ingredients are listed

Restrictions according to GB REACH, Annex 17

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.

Section	Former entry (text/value)	Actual entry (text/value)
1.1	Trade name: LB-52U (electrode for Shielded Metal Arc Welding)	
1.1	Registration number (REACH): not relevant (mixture)	
1.1		Trade name: LB-52U
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	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: e-mail: info@kobelcowelding.nl
1.4		Poison centre: change in the listing (table)
2.1	Classification according to Regulation (EC) No 1272/2008 (CLP)	Classification acc. to GHS: This mixture does not meet the criteria for classification.

Section	Former entry (text/value)	Actual entry (text/value)
2.1		Classification according to Regulation (EC) No 1272/2008 (CLP): change in the listing (table)
2.1		Classification acc. to GHS: change in the listing (table)
2.2	- signal word: danger	- signal word: Not required.
2.2	- pictograms	- pictograms: Not required.
2.2		- pictograms: change in the listing (table)
2.2		- hazard statements: change in the listing (table)
2.2		- precautionary statements: change in the listing (table)
2.2	- hazardous ingredients for labelling: Dipotassium oxide	
2.2		- supplemental hazard information: change in the listing (table)
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.	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. 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.
2.3		Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.
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.	Mixtures: The product does not contain (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.
3.2		Mixtures: change in the listing (table)
3.2	Remarks: For full text of H-phrases: see SECTION 16. All the percentages given are percentages by weight unless stated otherwise.	Remarks: All the percentages given are percentages by weight unless stated otherwise. For full text of H-phrases: see SECTION 16.
4.1	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 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.

Section	Former entry (text/value)	Actual entry (text/value)
4.1	Following skin contact: Brush off loose particles from skin. Rinse skin with water/ shower.	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.
4.1	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 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.
4.1	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.	Following ingestion: Rinse mouth with water (only if the person is conscious). Call a doctor if you feel unwell.
4.3	Indication of any immediate medical attention and special treatment needed: For specialist advice physicians should contact the anti poison control centre.	Indication of any immediate medical attention and special treatment needed: For specialist advice physicians should contact the poison centre.
5.1	Suitable extinguishing media: Alcohol resistant foam, Dry extinguishing powder, D-Powder, Dry sand, Carbon dioxide (CO2), Water spray	Suitable extinguishing media: Alcohol resistant foam, Dry extinguishing powder, Carbon dioxide (CO2), Water spray
5.3	Special protective equipment for firefighters: Self-contained breathing apparatus (EN 133). Standard protective clothing for firefighters.	Special protective equipment for firefighters: Self-contained breathing apparatus (SCBA). Standard protective clothing for firefighters.
6.3	Advices on how to contain a spill: Covering of drains. Take up mechanically.	Advice on how to contain a spill: Covering of drains.
7.2		- packaging compatibilities: Keep only in original container.
8.1		Occupational exposure limit values (Workplace Exposure Limits): change in the listing (table)
8.1		Relevant DNELs of components of the mixture: change in the listing (table)
8.1		Relevant PNECs of components of the mixture: change in the listing (table)
8.2	Skin protection: Protective clothing (EN 340).	Skin protection: wear protective clothing Chemical protective clothing.
8.2	Hand protection: safety gloves must be worn 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.	Hand protection: safety gloves must be worn 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.
8.2	Breakthrough times of the glove material: >480 minutes (permeation: level 6).	Breakthrough time of the glove material: Use gloves with a minimum breakthrough time of the glove material: >10 minutes (permeation: level 1).

Section	Former entry (text/value)	Actual entry (text/value)
8.2	Environmental exposure controls: Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.	Environmental exposure controls: Take appropriate precautions to avoid uncontrolled release into the environment. Keep away from drains, surface and ground water.
9.1	Appearance	
9.1	Other safety parameters	
9.1	Flammability (solid, gas): non-combustible	Flammability: this material is combustible, but will not ignite readily
9.1		Lower and upper explosion limit: LEL: UEL: not relevant
9.1	Evaporation rate: not determined	
9.1	Explosion limits of dust clouds: not determined	
9.1		Decomposition temperature: no data available
9.1		Kinematic viscosity: not relevant
9.1	Vapour pressure: 0 Pa at 25 °C	Vapour pressure: not determined
9.1		Density and/or relative density
9.1	Vapour density: this information is not available	
9.1	Partition coefficient	
9.1	Viscosity: not relevant (solid matter)	
9.1	Explosive properties: none	
9.1	Oxidising properties: none	
9.1		Particle characteristics: no data available
9.2	Other information: Of no significance.	Other information: There is no additional information.
9.2		Information with regard to physical hazard classes: hazard classes acc. to GHS (physical hazards): not relevant
9.2		Other safety characteristics
9.2		Temperature class: T2 (maximum permissible surface temperature on the equipment: 300 °C)
10.2	Chemical stability: See below "Conditions to avoid".	Chemical stability: The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
10.4	Conditions to avoid: Keep away from heat.	Conditions to avoid: There are no specific conditions known which have to be avoided.

Section	Former entry (text/value)	Actual entry (text/value)
11.1	Classification according to GHS (1272/2008/EC, CLP)	Classification acc. to GHS: This mixture does not meet the criteria for classification.
11.1	Acute toxicity: Overexposure to gases, fumes and dusts may inclide 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: 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). 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.
11.1		Acute toxicity of components of the mixture
11.1		Acute toxicity of components of the mixture: change in the listing (table)
11.1	Skin corrosion/irritation: Causes skin irritation.	Skin corrosion/irritation: Shall not be classified as corrosive/irritant to skin.
11.1	Serious eye damage/eye irritation: Causes serious eye damage.	Serious eye damage/eye irritation: Shall not be classified as seriously damaging to the eye or eye irritant.
11.1		IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: change in the listing (table)
11.1	Summary of evaluation of the CMR properties: Welding fumes (not otherwise specified) are possibly carcinogenic to humans.	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). Arc rays: Skin cancer has been reported.
11.1	Specific target organ toxicity - repeated exposure: Shall not be classified as a specific target organ toxicant (repeated exposure). 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 systeem is irreversible. Inhalation of to much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation"of the lung, which can be seen on a cest 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 firbrosis of the pancreas, diabetes mellitus and lever cirrhosis. Chronic fluoride absorption can result in osseous fluor sis, increased radiographic density of the bones and mottling of the teeth.	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. 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 systeem is irreversible. Fe: Inhalation of to much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation"of the lung, which can be seen on a cest 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 firbrosis of the pancreas, diabetes mellitus and lever cirrhosis. SiO2: 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 fluor sis, increased radiographic density of the bones and mottling of the teeth.

Section	Former entry (text/value)	Actual entry (text/value)
11.2		Information on other hazards
11.2		Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.
11.2		Other information: There is no additional information.
12.1		Aquatic toxicity (acute) of components of the mixture: change in the listing (table)
12.1		Aquatic toxicity (chronic) of components of the mixture: change in the listing (table)
12.6	Endocrine disrupting potential: None of the ingredients are listed.	Endocrine disrupting properties: Does not contain an endocrine disruptor (EDC) in a concentration of ≥ 0.1%.
14.3	Transport hazard class(es)	Transport hazard class(es): none
14.3	Class: -	
14.4	Packing group: not relevant	Packing group: not assigned
14.7	Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN): Not subject to ADR, RID and ADN.	
15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture	Safety, health and environmental regulations/legislation specific for the substance or mixture: This Safety Data Sheet is purely informative and does comply with EU regulation, but not with country-specific regulation.
15.1	Restrictions according to REACH, Annex XVII: None of the ingredients are listed.	
15.1	List of substances subject to authorisation (REACH, Annex XIV): None of the ingredients are listed.	
15.1		Seveso Directive
15.1		2012/18/EU (Seveso III): change in the listing (table)
15.1	Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD): None of the ingredients are listed.	Water Framework Directive (WFD)
15.1	Regulation 98/2013/EU on the marketing and use of explosives precursors: None of the ingredients are listed.	
15.1		List of pollutants (WFD): change in the listing (table)
15.1		Regulation on persistent organic pollutants (POP): None of the ingredients are listed.
15.1		National regulations (GB)
15.1		List of substances subject to authorisation (GB REACH, Annex 14) / SVHC - candidate list: none of the ingredients are listed

Section	Former entry (text/value)	Actual entry (text/value)
15.1		Restrictions according to GB REACH, Annex 17: none of the ingredients are listed
16		Abbreviations and acronyms: change in the listing (table)
16	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).	Key literature references and sources for data: Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).
16	List of relevant phrases (code and full text as stated in chapter 2 and 3)	
16		List of relevant phrases (code and full text as stated in chapter 2 and 3): change in the listing (table)

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
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EC No	The EC Inventory (EINECS, ELINCS and the NLP-list) is the source for the seven-digit EC number, an identifier of substances commercially available within the EU (European Union)
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
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
GB REACH	The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019, SI 2019/758 (as amended)
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)

Abbr.	Descriptions of used abbreviations
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
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)
STEL	Short-term exposure limit
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

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). 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).

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.