

NICKEL-BASED SOLID WIRES AND RODS FOR MIG/TIG/SAW WELDING**SECTION1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identification**

MW-625

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

Product type: Solid wires and rods (welding filler metals)

Relevant identified use: MIG/TIG/SAW welding (arc welding)

1.3 Details of the supplier

Company name: AES Manufacturing and Distribution Ltd t/a AES Group

Olympic House, Collett, Southmead Park, Didcot, OX11 7WB

Telephone: +44 1235 510717

e-mail: orders@aes-sales.com

1.4 Emergency telephone number

Medical emergencies: NHS 111

Life-threatening emergencies: 999 or 112

National Poisons Information Service (NPIS): For Healthcare Professionals Only – 0344 892 0111

SECTION2: Hazards identification**2.1 Hazard classifications of substance/mixture**

The product is not classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

2.2 Labeling elements

The product does not require labeling in accordance with EC Regulation 1272/2008 (CLP).

2.3 Other hazards

When this product is used in a welding process, the most important hazards are the hereby listed ones:

Welding fumes: Excessive exposure to fumes and gases can be harmful to health.

High temperatures: Extreme caution must be taken with melting metals, hot spatter or slag, which can cause skin injuries and can cause fires.

Radiation: Arc rays can be harmful to eyes and skin.

Electric shocks: Can be fatal. Do not touch current-carrying equipment.

PBT assessment: No testing required according to Annex XIII of Regulation (EC) 1907/2006 (REACH).

vPvB assessment: No testing required according to Annex XIII of Regulation (EC) 1907/2006 (REACH).

This product contains nickel, which is classified as toxic by prolonged inhalation, a skin sensitizer, and a suspect carcinogen. This product could contain traces of cobalt, which is possibly carcinogenic and may cause sensitization by inhalation and skin contact, and long-term adverse effects in the aquatic environment. In the form that nickel and cobalt are present in this product, they do not contribute to any hazard classification of the product.

Skin contact is normally no hazardous but should be avoided to prevent possible allergic reactions.

SECTION3: Composition/information on ingredients**3.1 Substances**

Information not relevant.

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3.2 Mixtures

Chemical name	CAS No. EC No. REACH No.	Concentration	Classification	H-phrase
Nickel	7440-02-0 231-111-4 01-2119438727-29	55-75%	Skin Sens. 1 STOT RE 1 Carc. 2 Aquatic Chronic 3	H317 H372 H351 H412
Chromium	7440-47-3 231-157-5 01-2119485652-31	20-25%	-	-
Molybdenum	7439-98-7 231-107-2 01-2119472304-43	8-10%	-	-
Niobium	7440-03-1 231-113-5 100.028.284	2-5%	-	-
Iron	7439-89-6 231-096-4 01-2119462838-24	0-0.5%	-	-
Cobalt	7440-48-4 231-158-0 01-2119517392-44	0-0.5%	Acute Tox. 4 Resp. Sens. 1B Skin Sens. 1 Repr. 1B Muta. 2 Carc. 1B Aquatic Chronic 4	H302 H334 H317 H360 H341 H350 H413
Copper	7440-50-8 231-159-6 01-2119480154-42	0-0.5%	-	-
Manganese	7439-96-5 231-105-1 01-2119449803-3	0-0.5%	-	-
Silicon	7440-21-3 231-130-8 01-2119480401-47	0-0.5%	-	-
Aluminium	7429-90-5 231-072-3 01-2119529243-45	0-0.5%	Water-react. 2 Flam. Sol. 1 Pyr. Sol. 1	H261 H228 H250
Titanium	7440-32-6 231-142-3 01-2119484878-14	0-0.5%	-	-

SECTION4: First aid measures

4.1 Description of first aid measures

- After inhalation: Not applicable to the product itself. In case of inhalation of welding fumes, ventilate the area. Immediately remove the patient from the contaminated area to fresh air. Call the doctor. Show the doctor this safety data sheet.
- After contact with skin: Not applicable to the product itself. Risk of burns during the welding process. For skin burns from arc radiation, promptly flush with cold water. Get medical attention for burns or irritations that persist. To remove dust or particles wash with mild soap and water.
- After contact with eyes: Rinse cautiously with water for at least fifteen minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If irritation persists, obtain medical assistance. For radiation burns due to arc flash, see doctor.
- After ingestion: Not applicable.

4.2 Most important symptoms and effects, both acute and delayed

See paragraph 2.3.

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- 4.3 Indication of any immediate medical attention and special treatment needed
No other indication available.

SECTION5: Firefighting measures**5.1 Extinguishing media**

Suitable media: No specific recommendations for welding consumables. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation.

5.2 Special hazards arising from the substance or mixture

Solid wires or rods are not flammable.

5.3 Advice for firefighters

Make sure when using that the operating area is free of flammable and / or explosive. Use personal protective equipment, if necessary, wear self-contained breathing apparatus as fumes or vapors may be harmful.

SECTION6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective clothing and eye protection appropriate to arc welding.

6.2 Environmental precautions

See paragraph 13.

6.3 Methods and material for containment and cleaning up

Solid objects may be picked up and placed into a container. Wear proper protective equipment while handling these materials.

6.4 Reference to other sections

See paragraphs 8 and 13.

SECTION7: Handling and storage**7.1 Precautions for safe handling**

No specific precautions are needed for the handling of solid wires and rods.

Handle with care to avoid stings and cuts. Avoid exposure to dust. During welding use adequate individual protective measures and operate in a ventilated area equipped with welding fume extractors. Do not smoke, eat or drink in areas where the product is being used.

7.2 Conditions for safe storage, including any incompatibilities

Keep separate from chemical substances like acids and strong bases, which could cause chemical reactions.

Observe general rules for the storage of welding consumables, store in a dry place and without major temperature fluctuations.

7.3 Specific end use(s)

Arc welding.

SECTION8: Exposure controls/personal protection**8.1 Control parameters**

During welding processes, the hereby listed substances might be generated into welding fumes.

There are no European Union (EU) specific exposure limits (OEL) for welding fumes: anyway, the following limits can be used as guidance. Unless noted, all values are for 8-hour time weighted averages (TWA). Exposure limit values may vary per element and form - as well as per country. All country-specific values are not listed. Refer to your local or national exposure limit values.

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Substance	CAS No.	Limit value - Eight hours [mg/m ³]	Source
Nickel, metal, total dust (inhalable aerosol)	7440-02-0	0.5	GESTIS (Switzerland)
Chromium, metal (inhalable fraction)	7440-47-3	0.5	GESTIS (Switzerland)
Molybdenum compounds (as Mo) (inhalable aerosol)	7439-98-7	10	GESTIS (Switzerland)
Cobalt and its compounds (as Co) (inhalable aerosol)	7440-48-4	0.05	GESTIS (Switzerland)
Copper, dusts and mists (inhalable aerosol)	7440-50-8	0.1	GESTIS (Switzerland)
Manganese and inorganic compounds (as Mn) (inhalable fraction)	7439-96-5	0.2	GESTIS (Switzerland)
Silicon (respirable aerosol)	7440-21-3	3	GESTIS (Switzerland)
Aluminium metal (respirable aerosol)	7429-90-5	3	GESTIS (Switzerland)
Titanium dioxide (respirable aerosol)	13463-67-7	3	GESTIS (Switzerland)

8.2 Exposure control

- Respiratory protection in case of insufficient ventilation: use adequate breathing equipment. Do not breathe gases/fumes/vapors.
- Hand protection: welding gloves.
- Skin protection: provide adequate skin protection under the conditions of use.
- Other: avoid exposure to welding fumes, radiation, spatter, electric shock, heated materials and dust.

SECTION9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Property	Value
Physical state:	Solid, non-volatile
Color:	Metallic
Odor:	Odorless
Odor threshold:	Not applicable
pH:	Not applicable
Melting point/freezing point:	~1500°C / Not applicable
Boiling point or initial boiling point:	No data available
Boiling range:	No data available
Flash point:	No data available
Evaporation rate:	No data available
Flammability (solid, gaseous):	No data available
Lower flammability limit:	No data available
Upper flammability limit:	No data available
Lower explosion limit:	No data available
Upper explosion limit:	No data available
Vapor pressure:	No data available
Vapor density/relative density:	No data available

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Density:	No data available
Solubility:	No data available
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Decomposition temperature:	No data available
Viscosity:	No data available
Explosion Properties:	No data available
Oxidizing properties	No data available

9.2 Other information

No other information available.

SECTION10: Stability and reactivity**10.1 Reactivity**

None in normal conditions.

10.2 Chemical stability

The product is stable in normal conditions of use and storage.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

This product is only intended for normal welding purposes.

10.5 Incompatible materials

In contact with chemical substances like acids or strong bases, the product could cause generation of gas.

10.6 Hazardous decomposition products

When this product is used in a welding process, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in section 3 and those from the base metal / bare wire / bare rod. Welding fumes are classified as carcinogenic by IARC (International Agency for Research on Cancer). Group 1 recognized carcinogen. The quantity of fumes generated varies depending on the welding parameters and the diameter of the consumable.

SECTION11: Toxicological information**11.1 Information on toxicological effects**

Conditions to avoid: none in the form supplied. When welding, fumes and gases generated can be dangerous to health.

Acute toxicity:	Not applicable
Irritation:	Not applicable
Corrosive effects:	Not applicable
Sensitization:	Not applicable
Mutagenicity:	Not applicable
Carcinogenicity:	See sections 8 and 10 for welding fumes
Repeated dose toxicity:	Not applicable
Reproductive toxicity:	Not applicable
Specific target organ toxicity (STOT) Single exposure:	Not applicable

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Specific target organ toxicity (STOT) Repeated exposure:	See sections 8 and 10 for welding fumes
Aspiration hazard:	Not applicable

SECTION12: Ecological information**12.1 Toxicity**

In massive form, solid welding wires do not pose any danger to the environment. Avoid conditions that can lead to their corrosion and release of metals into the environment.

12.2 Persistence and degradability

In massive form, solid welding wires do not pose any danger to the environment. Avoid conditions that can lead to their corrosion and release of metals into the environment.

12.3 Bioaccumulative potential

In massive form, solid welding wires do not pose any danger to the environment. Avoid conditions that can lead to their corrosion and release of metals into the environment.

12.4 Mobility in soil

Immobile.

12.5 Results of PBT and vPvB assessment

This preparation contains no substance considered to be persistent, bio accumulating nor toxic (PBT) and no substance considered to be very persistent nor very bio accumulating (vPvB).

12.6 Other adverse effects

Information not available.

SECTION13: Disposal considerations**13.1 Waste treatment methods**

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with national and local regulations. Do not dispose together with domestic waste. Do not empty into drains.

Recommended waste codes (EWC - 2014/955/UE):

- 12 01 04 - non-ferrous metal dust and particles
- 12 01 13 - welding waste

In the event of non-compliant handling, the end user is personally responsible for a suitable EWC code.

SECTION14: Transport information**14.1 UN number**

Not applicable.

14.2 UN proper shipping name

Not applicable.

14.3 Transport hazard class(es)

Not applicable.

14.4 Packing group

Not applicable.

14.5 Environmental hazards

Not applicable.

14.6 Special precautions for user

Not applicable.

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- 14.7 Transport in bulk according to Annex II to MARPOL and the IBC Code
Not applicable.

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
The product does not need to be labelled in accordance with EC directives or respective national laws.
Regulation (EC) No 1907/2006 of the European Parliament and of the Council, REACH.
European Parliament and Council Regulation (EC) No. 1272/2008, CLP.
- 15.2 Chemical safety assessment
Not available.

SECTION 16: Other information

The content and format of this safety data sheet have been prepared in accordance with Commission Regulation (EU) 2015/830, Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008 (CLP Regulation).

References to key literature and data sources:

- Commission Regulation (EU) 2015/830;
- Regulation (EC) No. 1907/2006;
- Regulation (EC) No. 1272/2008;
- Guidance on compiling safety data sheets, Version 3.1 November 2015;
- <http://echa.europa.eu>;
- <http://limitvalue.ifa.dguv.de>;
- European Welding Association: recommendations for Exposure Scenarios, Risk Management Measures and to Welding Exposure
- WES 2021 Scenario;
- 2014/955/EU: Commission Decision of 18 December 2014 amending Decision 2000/532/EC relating to the list of waste to in accordance with Directive 2008/98/EC of the European Parliament and of the Council Text with EEA relevance.

DISCLAIMER. The information contained in this datasheet is based on the knowledge available to us at the date of the last version. The user must ensure the suitability and completeness of the information in relation to the specific use of the product. They refer exclusively to this product. The product must not be used for purposes other than those indicated, otherwise we will not be held responsible. It is always the user's responsibility to comply with the hygiene, safety and environmental protection regulations required by current laws.

The information contained in this datasheet relates to safety and does not replace the technical information of this product.

This sheet supersedes any previous edition.

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Guidance and Recommendations for Exposure Scenarios, Risk Management Measures and to identify Operational Conditions under which metals, alloys and metallic articles and mixtures may be safely welded regarding welding fumes and gases exposure

Welding/Brazing produces fumes, which can affect human health.

Welding and allied processes generate a varying mixture of fumes (airborne particles) and gases, which, if inhaled or swallowed, constitute a health hazard.

The degree of risk will depend on the composition of the fume, the concentration of the fume and duration of exposure.

The fume composition is dependent upon the material being worked, the process and consumables being used, coatings on the work such as paint, galvanizing or plating, oil or contaminants from cleaning and degreasing activities.

The amount of fumes generated is dependent on the welding process, the welding parameters, the shielding gas, the type of consumable and the potential coating on the work.

A systematic approach to the assessment of exposure is necessary, taking into account the particular circumstances for the operator and ancillary worker that can be exposed.

General Rules to reduce exposure to welding fumes and gases

Considering the emission of fumes when welding brazing or cutting of metals, it is recommended to (1) arrange risk management measures through applying general information and guidelines provided by this document and (2) using the information provided by the Safety Data Sheet, issued in accordance with REACH, by the welding consumable manufacturer.

The employer shall ensure that the risk from welding fumes to the safety and health of workers is eliminated or reduced to a minimum. Start every new work with an Occupational Safety & Health Risk Inventory.

The following principles shall be applied, unless local regulation say otherwise:

1. Substitution:

Select the applicable process/base material combinations with the lowest emission, whenever possible

Set welding process with the lowest emission parameters (e.g. welding parameters/arc mode transfer, shielding gas composition) *

2. Technological Means:

Apply the relevant collective protective measures (general ventilation, local exhaust ventilation) in accordance with class number.

3. Organizational Measures:

Limit the time a worker is exposed to welding fumes,

Establish and apply Welding Procedure Specifications

4. Personal Protective Equipment:

To protect the worker, wear the relevant personal protective equipment in accordance with the duty cycle

In addition, compliance with the National Regulations regarding the exposure of welders and related personnel to welding fumes, their components with specific occupational exposure limit, and gaseous substances with specific occupational exposure limits shall be verified. It is therefore strongly recommended to seek clarification of specific national legislation that may apply.

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Risk Management Measures for Individual process/base material combinations

According to the welding or allied process and the base material to be welded, a general guidance on *Technological means* is proposed in the table below.

An approximate ranking to mitigate the risk of welding fumes and gases exposure is given for each welding or allied process/base material combination.

The individual process/base material combinations are ranked from the lowest emission ones (**Class I**) to the highest emission ones (**Class VIII**).

NOTE: The International Institute of Welding (IIW) assessed the publication of IARC Monograph 118. Based on the current state of knowledge, IIW confirms its statement from 2011 on "Lung cancer and welding" and encourages all those responsible to reduce the exposure to welding fume to a minimum. It also recommends that to eliminate the excess risk of lung cancer, welders and their managers must ensure that exposure to welding fume is minimized, at least to national guidelines. This IIW statement is posted both on IIW and EWA website.

For each class, general recommendations on Ventilation/Extraction/Filtration and Personal Protection Equipment are proposed.

Class ¹	Process (according to ISO 4063)	Base Materials	Remarks	Ventilation / Extraction / Filtration ¹⁴	PPE ² DC<15%	PPE ² DC>15%
Non-confined space¹⁶						
I	GTAW 141	All	Except Aluminum	GV low ³	n.r.	n.r.
	SAW 12					
	Autogenous 3					
	PAW 15					
	ESW/EGW 72/73					
	Resistance 2					
	Stud welding 78					
	Solid state 521					
	Gases Brazing 9					
II	GTAW 141	Aluminum	n.a.	GV medium ⁴	n.a.	FFP2 ⁵
III	MMAW 111	All	Except Be-, V-, Mn-, Ni- alloys and Stainless ⁶	GV low ⁷ LEV low ¹²	Improved helmet ¹⁸	FFP2 ⁵
	FCAW 136/137	All	Except Stainless and Ni- alloys ⁶			
	GMAW 131/135	All	Except Cu-, Be-, V- alloys ⁶			
	Powder Plasma Arc 152	All	Except Be-, V-, Cu-, Mn-, Ni-alloys and Stainless ⁶			
IV	All processes class I	Painted / primed / oiled / galvanized	No Pb containing primer	GV low ³	FFP2 ⁵	FFP3 ⁸ , TH2/P2, or LDH3
	All processes class III	Painted / primed / oiled / galvanized	No Pb containing primer	GV low ⁷ LEV low ¹²		
V	MMAW 111	Stainless, Ni-, Be-, and V- alloys	n.a.	LEV high ¹⁰	TH3/P3, LDH3 ¹¹	TH3/P3, LDH3 ¹¹
	FCAW 136/137	Stainless, Mn- and Ni-alloys				
	GMAW 131	Cu-alloys				
	Powder Plasma Arc 152	Stainless, Mn-, Ni-, and Cu- alloys				

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Class ¹	Process (according to ISO 4063)	Base Materials	Remarks	Ventilation / Extraction / Filtration ¹⁴	PPE ² DC<15%	PPE ² DC>15%
Non-confined space ¹⁶						
VI	GMAW 131	Be-, and V- alloys	n.a.	Reduced (negative) pressured area ⁹ LEV low ¹²	TH3/P3, LDH3 ¹¹	TH3/P3, LDH3 ¹¹
	Powder Plasma Arc 152					
VII	Self shielded FCAW 114	Un-, high alloyed steel	Cored wire, not containing Ba	Reduced (negative) pressured area ⁹ LEV medium ¹³	TH3/P3, LDH3 ¹¹	TH3/P3, LDH3 ¹¹
	Self-shielded FCAW 114	Un-, high alloyed steel	Cored wire, containing Ba	Reduced (negative) pressured area ⁹ LEV high ¹⁰		
	All	Painted / primed / galvanized	Paint / Primer containing Pb			
	Arc Gouging and Cutting 8	All	n.a.			
	Thermal Spray	All	n.a.			
	Gases Brazing 9	Cd- alloys	n.a.			
	Closed system or Confined space ¹⁵					
I	Laser Welding 52	All	Closed system	GV medium ⁴	n.a.	n.a.
	Laser Cutting 84					
	Electron Beam 51					
VIII	All	All	Confined space	LEV high ¹⁰ External air supply	LDH3 ¹¹	LDH3 ¹¹

Notes:

- ¹ Class: approximate ranking to mitigate risk by selecting process/material combinations with the lowest value. Identified collective and individual risk management measures shall be applied
- ² Personal Protective Equipment (PPE) required avoiding exceeding the National Exposure Limit Value (DC: Duty cycle expressed on 8 hours)
- ³ General Ventilation (GV) Low. With additional Local Exhaust Ventilation (LEV) and extracted air to the outside, the GV or LEV capacity may be reduced to 1/5 of the original requirement.
- ⁴ General Ventilation (GV) Medium (double compared to Low)
- ⁵ Filtrating half mask (FFP2)
- ⁶ When an alloyed consumable is used, measures from "Class V" are required
- ⁷ General Ventilation (GV) Low. When no Local Exhaust Ventilation, the ventilation requirement is 5-fold
- ⁸ Filtrating half mask (FFP3), helmet with powered filters (TH2/P2), or helmet with external air supply (LDH2)
- ⁹ Reduced (negative) pressured Area: A separate, ventilated area where reduced (negative) pressure, compared to the surrounded area, is maintained
- ¹⁰ Local Exhaust Ventilation (LEV) High, extraction at source (includes table, hood, arm or torch extraction)
- ¹¹ Helmet with powered filters (TH3/P3), or helmet with external air supply (LDH3)
- ¹² Local Exhaust Ventilation (LEV) Low, extraction at source (includes table, hood, arm or torch extraction)
- ¹³ Local Exhaust Ventilation (LEV) Medium, extraction at source (includes table, hood, arm or torch extraction)
- ¹⁴ Recommended measures to comply with national maximum allowable limits. Extracted fumes, for all materials except unalloyed steel and aluminum, shall be filtered before release in the outside environment.
- ¹⁵ A confined space, despite its name, is not necessarily small. Examples of confined spaces include ship, silos, vats, utility vaults, tanks, etc.
- ¹⁶ Improved helmet, designed to avoid direct flow of welding fumes inside
- n.a. Not applicable
- n.r. Not recommended

International Standards & EU Regulations

The following ISO standards and European Union Directives address general information for risk assessments of exposure to welding fumes and gases released by welding and allied processes. In addition, national regulations and recommendations need to be consulted and applied.

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ISO 4063:2009	Welding and allied processes -- Nomenclature of processes and reference numbers
ISO EN 21904-1:2020	Health and safety in welding and allied processes -- Equipment for capture and separation of welding fume -- Part 1: General requirements
ISO EN 21904-2:2020	Health and safety in welding and allied processes -- Equipment for capture and separation of welding fume -- Part 2: Requirements for testing and marking of separation efficiency
ISO EN 21904-3:2018	Health and safety in welding and allied processes -- Requirements, testing and marking of equipment for air filtration -- Part 3: Determination of the capture efficiency of on-torch welding fume extraction devices
ISO EN 21904-4:2020	Health and safety in welding and allied processes -- Equipment for capture and separation of welding fume -- Part 4: Determination of the minimum air volume flow rate of capture devices
ISO 15607:2003	Specification and qualification of welding procedures for metallic materials -- General rules
EN ISO 15609:	Specification and qualification of welding procedures for metallic materials - Welding procedure specification part1 -> part 6
ISO 17916:2016	Safety of thermal cutting machines
EN 149:2001+A1:2009	Respiratory protective devices. Filtering half masks to protect against particles. Requirements, testing, marking
EN 14594:2018	Respiratory protective devices. Continuous flow compressed air line breathing devices. Requirements, testing and marking
EN 12941:1998+A2:2008	Respiratory protective devices. Powered filtering devices incorporating a helmet or a hood. Requirements, testing, marking
EN 143:2000	Respiratory protective devices. Particle filters. Requirements, testing, marking
Directive 98/24/EC	on the protection of the health and safety of workers from the risks related to chemical agents at work
Directive 2004/37/EC	on the protection of workers from the risks related to exposure to carcinogens or mutagens at work
Directive 2017/2398	Amending Directive 2004/37/EC on chromium VI exposure limit
Directive 2017/164/EU	indicative occupational exposure limit values (for nitrogen oxides)
Directive 2019/130	Amending Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens or mutagens at work



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Use Descriptor System according to REACH Regulation

REACH use descriptor system is a system developed by ECHA¹ to facilitate chemical risk assessment and supply chain communication.

Welding fumes and gases are secondary non-intentional byproducts generated during welding operations. As such, they are not considered as substances or mixtures under REACH definition. They are not intended to be used by workers or consumers.

However, occupational exposure to welding fumes and gases may represent a risk similar to the ones of the substances and mixtures regulated by REACH.

The identification of hazards, the evaluation of their risks and the putting in place of control measures to secure the health and safety can be implemented with REACH methodology.

This system has been applied to welding fumes and gases.

The system firstly describes the Life Cycle Stage. The EWA welding consumable manufacturers define 2 life cycle stages: a) manufacture of the product and b) the application at an industrial site.

In addition, REACH uses five descriptors:

Sector of use (**SU**), [NOTE: previously listed SU3 and SU10 have been removed by ECHA¹]

Process category (**PROC**),

Product category (**PC**),

Article category (**AC**) and

Environmental release category (**ERC**)

to describe identified uses.

The applicable descriptors for welding consumables are:

Manufacture of consumables:

SU14 SU15 PC7 PC38 PROC5 PROC21 PROC22 PROC23 PROC24 PROC25 ERC 2 ERC3 AC7

Industrial and Professional welding:

SU15 SU17 PC7 PC38 PROC21 PROC22 PROC23 PROC24 PROC25 ERC5 ERC8c ERC8f AC1 AC2 AC7

SU14	Manufacture of basic metals, including alloys
SU15	Manufacture of fabricated metal products, except machinery and equipment
SU17	General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
PC7	Base metals and alloys
PC38	Welding and soldering products, flux products
PROC5	Mixing or blending in batch processes
PROC21	Low energy manipulation of substances bound in materials and/or articles
PROC22	Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting
PROC23	Open processing and transfer operations with minerals/metals at elevated temperature
PROC24	High (mechanical) energy work-up of substances bound in materials and/or articles
PROC25	Other hot work operations with metals
ERC2	Formulation of preparations
ERC3	Formulation into solid matrix
ERC5	Industrial use resulting in inclusion into or onto a matrix
AC1	Vehicles
AC2	Machinery, mechanical appliances, electrical/electronic articles
AC7	Metal articles

¹ Guidance on Information Requirements and Chemical Safety Assessment, Chapter R.12: Use description, Version 3.0 December 2015 (https://echa.europa.eu/documents/10162/13632/information_requirements_r12_en.pdf)

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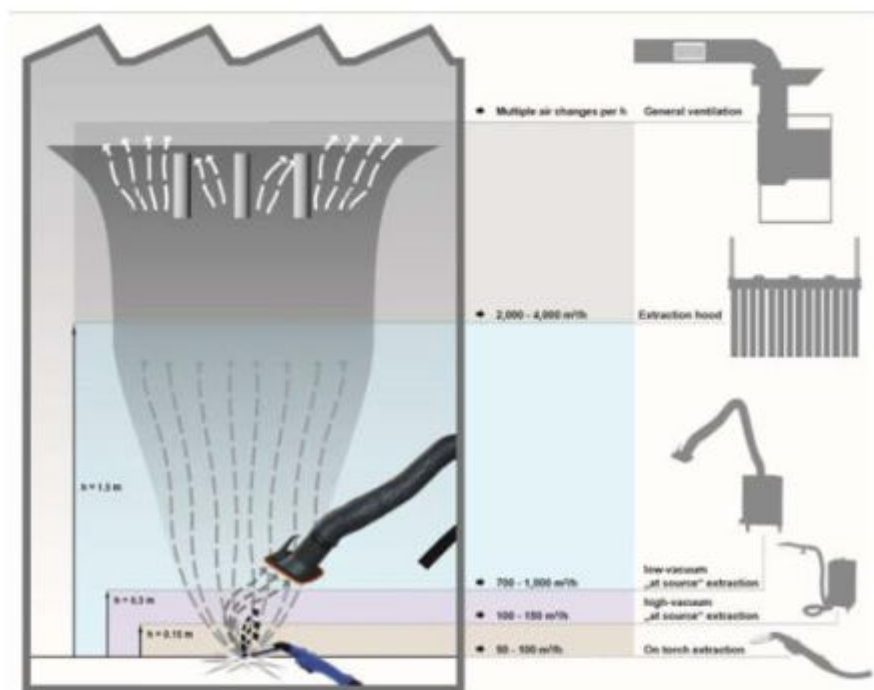
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Annex: Illustration of welding fume extraction systems (optional)



Note: Illustration of welding fume extraction systems is only an example. Compliance, with national country legislation, is needed if different

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This Safety Data Sheet complies with Annex II of 830/2015 amending EC No. 1907/2006, Commissioning Regulation (EU) 2020/878 amending CLP directive 1272/2008, and the requirements of ISO 11014-1.