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

1.1 Product identifier

Trade name: SK CUTARC
CAS Number: -
EINECS Number: -

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

No further relevant information available.

Application of the substance / the mixture

Flux cored wire

The product is a manufactured article in the sense of Article 3 No. 3, 1907/2006/EC (REACH). The purpose of the present safety data sheet is therefore to provide instruction on safe usage of the product.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
voestalpine Böhler Welding Belgium s.a.
Rue de l’Yser, 2
B-7180 SENEFFE

Tel.: +32 (0) 64 52 00 06
Fax.: +32 (0) 64 52 00 01

www.voestalpine.com/welding

Further information obtainable from:

Global R&D Maintenance & Cladding

Mathieu Decherf
T. +32 64 52 00 48
mathieu.decherf@voestalpine.com

1.4 Emergency telephone number:

Carechem24

+44 1235 239670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

The Product does not meet the criteria for classification in any hazard class according to Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008 Void
Hazard pictograms Void
Signal word Void
Hazard statements Void
Additional information:
Safety data sheet available on request.

2.3 Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
SECTION 3: Composition/information on ingredients

- 3.2 Mixtures
  - **Description:** Mixture of substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>CAS</th>
<th>EINECS</th>
<th>Regulation</th>
<th>Substance and properties</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>7439-96-5</td>
<td>231-105-1</td>
<td>Reg.nr.: 01-2119449803-34-XXXX</td>
<td>manganese substance with a Community workplace exposure limit</td>
<td>0.1-2.5%</td>
</tr>
<tr>
<td>7440-32-6</td>
<td>231-142-3</td>
<td>Reg.nr.: 01-2119484878-14-XXXX</td>
<td>titanium Pyr. Sol. 1, H250; Self-heat. 1, H251; Water-react. 1, H260</td>
<td>0.1-2.5%</td>
</tr>
<tr>
<td>7440-21-3</td>
<td>231-130-8</td>
<td>Reg.nr.: 01-2119480401-47-XXXX</td>
<td>silicon Flam. Sol. 2, H228</td>
<td>0.1-2.5%</td>
</tr>
</tbody>
</table>

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

- 4.2 Most important symptoms and effects, both acute and delayed
  - **General information:** Seek medical treatment.
  - **After inhalation:** Supply fresh air; consult doctor in case of complaints.
  - **After skin contact:** Generally the product does not irritate the skin.
  - **After eye contact:** Rinse opened eye for several minutes under running water.
  - **After swallowing:** Seek medical treatment.

- 4.3 Indication of any immediate medical attention and special treatment needed
  - No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
  - **Suitable extinguishing agents:** Suitable to surrounding conditions.

- 5.2 Special hazards arising from the substance or mixture
  - No further relevant information available.

- 5.3 Advice for firefighters
  - For deletion of fire just use dry powders. Don't use any water or halogenated containing extinguishing agents

- **Protective equipment:** Wear fully protective suit.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
  - Ensure adequate ventilation
  - Use respiratory protective device against the effects of fumes/dust/aerosol.

- 6.2 Environmental precautions
  - Do not allow to enter sewers/ surface or ground water.

- 6.3 Methods and material for containment and cleaning up
  - Pick up mechanically.

- 6.4 Reference to other sections
  - See Section 7 for information on safe handling.
SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
  Ensure that suitable extractors are available on processing machines
- Information about fire - and explosion protection: No special measures required.

- 7.2 Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles:
      Store only in the original receptacle.
      Prevent any seepage into the ground.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: None.

- 7.3 Specific end use(s)
  No further relevant information available.

SECTION 8: Exposure controls/personal protection

- 8.1 Control parameters
  - Ingredients with limit values that require monitoring at the workplace:
    7439-96-5 manganese
    IOELV Long-term value: 0.2* 0.05** mg/m³
    as Mn; *inhalable, **respirable fraction
  - Additional information: The lists valid during the making were used as basis.

- 8.2 Exposure controls
  - Individual protection measures, such as personal protective equipment
  - General protective and hygienic measures: Wash hands before breaks and at the end of work.
  - Respiratory protection: Filter P2
  - Hand protection
    EN 12477
    Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation
    - Material of gloves: Leather gloves
    - Penetration time of glove material
      The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye/face protection: Safety glasses
  - Body protection: Protective work clothing

SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties
  - General Information
  - Physical state: Solid
  - Colour: Grey
  - Odour: Odourless
  - Odour threshold: Not determined.
### 55.1.8.1 Flammability
- **Lower and upper explosion limit**
  - Lower: Not determined.
  - Upper: Not determined.
- **Flash point**: Not determined.
- **Decomposition temperature**: Not determined.
- **pH**: Not applicable.
- **Kinematic viscosity**: Not applicable.
- **Dynamic**: Not applicable.
- **Water**: Insoluble.
- **Partition coefficient n-octanol/water (log value)**: Not determined.
- **Density and/or relative density**
  - Density: Not determined.
  - Relative density: Not determined.
  - Vapour density: Not applicable.
- **Particle characteristics**
  See item 3.

### 9.2 Other information
- **Appearance**: Solid
- **Important information on protection of health and environment, and on safety.**
  - **Auto-ignition temperature**: Product is not self-igniting.
  - **Explosive properties**: Product does not present an explosion hazard.
  - **Solvent separation test**: Void
  - **Solids content**: 95.8 %
  - **Evaporation rate**: Not applicable.

### Information with regard to physical hazard classes
- **Explosives**: Void
- **Flammable gases**: Void
- **Aerosols**: Void
- **Oxidising gases**: Void
- **Gases under pressure**: Void
- **Flammable liquids**: Void
- **Flammable solids**: Void
- **Self-reactive substances and mixtures**: Void
- **Pyrophoric liquids**: Void
- **Pyrophoric solids**: Void
- **Self-heating substances and mixtures**: Void
- **Substances and mixtures, which emit flammable gases in contact with water**: Void
- **Oxidising liquids**: Void
- **Oxidising solids**: Void
- **Organic peroxides**: Void
- **Corrosive to metals**: Void
- **Desensitised explosives**: Void
SECTION 10: Stability and reactivity

· 10.1 Reactivity
  No further relevant information available.

· 10.2 Chemical stability
  No decomposition if used and stored according to specifications.

· 10.3 Possibility of hazardous reactions
  Attacks materials containing glass and silicate.

· 10.4 Conditions to avoid
  No further relevant information available.

· 10.5 Incompatible materials
  No further relevant information available.

· 10.6 Hazardous decomposition products
  No dangerous decomposition products known.

SECTION 11: Toxicological information

· 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008
  Acute toxicity: Based on available data, the classification criteria are not met.
  Skin corrosion/irritation: Based on available data, the classification criteria are not met.
  Serious eye damage/irritation: Based on available data, the classification criteria are not met.
  Respiratory or skin sensitisation: Based on available data, the classification criteria are not met.
  Germ cell mutagenicity: Based on available data, the classification criteria are not met.
  Carcinogenicity: Based on available data, the classification criteria are not met.
  Reproductive toxicity: Based on available data, the classification criteria are not met.
  STOT single exposure: Based on available data, the classification criteria are not met.
  STOT-repeated exposure: Based on available data, the classification criteria are not met.
  Aspiration hazard: Based on available data, the classification criteria are not met.

· 11.2 Information on other hazards
  Endocrine disrupting properties: None of the ingredients is listed.

SECTION 12: Ecological information

· 12.1 Toxicity
  Aquatic toxicity: No further relevant information available.
  Persistence and degradability: No further relevant information available.
  Bioaccumulative potential: No further relevant information available.
  Mobility in soil: No further relevant information available.
  Results of PBT and vPvB assessment
  PBT: Not applicable.
  vPvB: Not applicable.
  Endocrine disrupting properties: The product does not contain substances with endocrine disrupting properties.
  Other adverse effects: Additional ecological information:
  General notes: Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
SECTION 13: Disposal considerations

- **13.1 Waste treatment methods**
  - **Recommendation**: Must be specially treated adhering to official regulations.
  - **Uncleaned packaging**: Must be specially treated adhering to official regulations.

SECTION 14: Transport information

- **14.2 UN proper shipping name**
  - ADR, ADN, IMDG, IATA: Void
  - ADR, ADN, IMDG, IATA: Void

- **14.3 Transport hazard class(es)**
  - ADR, ADN, IMDG, IATA: Void

- **14.4 Packing group**
  - ADR, IMDG, IATA: Void

- **14.5 Environmental hazards:**
  - Marine pollutant: No

- **14.6 Special precautions for user**: Not applicable.

- **14.7 Maritime transport in bulk according to IMO instruments**
  - Not applicable.

- **Transport/Additional information**: Not dangerous according to the above specifications.

- **UN "Model Regulation"**: Not applicable.

SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - No further relevant information available.
  - Directive 2012/18/EU
  - Named dangerous substances - ANNEX I None of the ingredients is listed.
  - DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II
    - None of the ingredients is listed.

- **REGULATION (EU) 2019/1148**
  - Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))
    - None of the ingredients is listed.

- **Annex II - REPORTABLE EXPLOSIVES PRECURSORS**
  - None of the ingredients is listed.
SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

**Additional information:**

Recommendations for exposure scenarios, measures for risk management and identification of working conditions under which metals, metal alloys and products made of metal can be safely worked can be found attached.

Detailed information can be found on our webpage www.voestalpine.com (Environment, REACH at voestalpine).
Welding Exposure Scenario WES - ENGL

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 cooling 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.

* In MIG / MAG process, innovative waveform controlled processes generate less welding fumes and particles than conventional processes. The use of such processes can be an additional measure to reduce the exposure of the welder and or workers.
## 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 138. 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 on their IIW and Flickr website.

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

<table>
<thead>
<tr>
<th>Class</th>
<th>Process (according to ISO 4043)</th>
<th>Base Materials</th>
<th>Remarks</th>
<th>Ventilation / Extraction / Filtration</th>
<th>FFFC</th>
<th>PPE * DC=15%</th>
<th>PPE * DC=19%</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>GTAW</td>
<td>All</td>
<td>Except Aluminum</td>
<td>GV low *</td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIG</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Autogenous</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FCAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ESWACM</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>TIG/TIG</td>
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<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Shielded</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid state</td>
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<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gasless</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Melting</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oxidising</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GTAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MMAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FCAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GMAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Powder Plasma Arc</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MMAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FCAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>GMAW</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Powder Plasma Arc</td>
<td>All</td>
<td></td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
</tr>
</tbody>
</table>

(Contd. of page 8)
## Safety data sheet

according to 1907/2006/EC, Article 31

Printing date: 13.12.2022
Version number 5 (replaces version 4)
Revision: 13.12.2022

Trade name: SK CUTARC

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### Welding Exposure Scenario WES - ENGL

**Document Date:** 5-S-2021

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### Class & Process (according to ISO 4063)

<table>
<thead>
<tr>
<th>Class</th>
<th>Process (according to ISO 4063)</th>
<th>Base Materials</th>
<th>Remarks</th>
<th>Ventilation / Extraction / Filtration</th>
<th>PPE D0: IS%</th>
<th>PPE D0: IS%</th>
</tr>
</thead>
<tbody>
<tr>
<td>VI</td>
<td>GMAW E61</td>
<td>Be- and Ti- alloys</td>
<td>n.a.</td>
<td>Reduced (negative) pressured area(^9) LEV low(^9)</td>
<td>TH3SP(^{10}), LD3H(^{11})</td>
<td>TH3SP(^{10}), LD3H(^{11})</td>
</tr>
<tr>
<td></td>
<td>Powder Plasma Arc E Split</td>
<td></td>
<td></td>
<td>Reduced (negative) pressured area(^2) LEV medium(^2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>Self-shielded FCAW E71</td>
<td>Al, high alloyed steel</td>
<td>Coated wire, not containing Be</td>
<td>Paint / primer containing Pb</td>
<td>TH3SP(^{10}), LD3H(^{11})</td>
<td>TH3SP(^{10}), LD3H(^{11})</td>
</tr>
<tr>
<td></td>
<td>Self-shielded FCAW E71</td>
<td>Al, high alloyed steel</td>
<td>Coated wire, containing Be</td>
<td>Paint / primer containing Pb</td>
<td>TH3SP(^{10}), LD3H(^{11})</td>
<td>TH3SP(^{10}), LD3H(^{11})</td>
</tr>
<tr>
<td></td>
<td>All</td>
<td></td>
<td></td>
<td>Reduced (negative) pressured area(^2) LEV high(^2)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Am: Gas Tungsten and Cupping</td>
<td>All</td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Thermal Spray</td>
<td></td>
<td>n.a.</td>
<td>n.a.</td>
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<tr>
<td></td>
<td>Gas tungsten</td>
<td>C(_2) alloys</td>
<td>n.a.</td>
<td>n.a.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Closed system or Confined space\(^{12}\)

| I     | Laser Welding SS                | All            | n.a.    | n.a.                                  |             |             |
|       | Laser Cutting                   |                |         |                                      |             |             |
|       | Electron Beam                  |                |         |                                      |             |             |

### Notes:
1. Class: approximate ranking to mitigate risk by selecting process/material combinations with the lowest value.
2. Identified collective and individual risk management measures shall be applied.
3. Personal Protective Equipment (PPE) required avoiding exceeding the National Exposure Limit Value (NC: Duty cycle expressed in 8 hours).
4. 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.
5. General Ventilation (GV) Medium (double compared to Low)
6. Filtrating half mask (FFP2)
7. When an alloyed consumable is used, measures from "Class V" are required.
8. General Ventilation (GV) Low. When no Local Exhaust Ventilation, the ventilation requirement is 5-fold
9. Filtrating half mask (FFP3), helmet with powered filters (112/5/3), or helmet with external air supply (LD3H)
10. Reduced (negative) pressured area: A separated, ventilated area where reduced (negative) pressure, compared to the surrounding area, is maintained
11. Local Exhaust Ventilation (LEV): high, extraction at source (includes table, hood, arm or torch extraction)
12. Helmet with powered filters (TH3/P3), or helmet with external air supply (LD3H)
13. Local Exhaust Ventilation (LEV) Low, extraction at source (includes table, hood, arm or torch extraction)
14. Local Exhaust Ventilation (LEV) Medium, extraction at source (includes table, hood, arm or torch extraction)
15. 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.
16. A confined space, despite its name, is not necessarily small. Examples of confined spaces include ship, silos, vats, utility vaults, tanks, etc.
17. Improved helmet, designed to avoid direct flow of welding fumes inside
18. Not applicable
19. 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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(Contd. on page 11)

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ISO 4063:2009 Welding and allied processes – Nomenclature of processes and reference numbers
ISO EN 21504-1:2020 Health and safety in welding and allied processes – Equipment for capture and separation of welding fume – Part 1: General requirements
ISO EN 21504-2:2020 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 21504-3:2018 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 21504-4:2020 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
EN ISO 15691: Specification and qualification of welding procedures for metallic materials — Welding procedure specification part 1 — part 6
ISO 17916:2016 Safety of thermal cutting machines
EN 14504:2018 Respiratory protective devices. Continuous flow compressed air line breathing devices. Requirements, testing and 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 2017/68/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
Use Descriptor System according to REACH Regulation

REACH use descriptor system is a system developed by ECHA\(^1\) 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 posting 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), (NOT: previously listed SU3 and SU10 have been removed by ECHA\(^2\))
- 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, ERC2, ERC3, AC7

**Industrial and Professional welding:**
- SU15, SU17, PC7, PC38, PROC21, PROC22, PROC23, PROC24, PROC25, ERC5, ERC6e, 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, repair transport equipment

**PC7** Base metals and alloys

**PC38** Welding and soldering products, flux products

**PROC5** Mining 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 (mechancial) 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

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Relevant phrases
H228 Flammable solid.
H250 Catches fire spontaneously if exposed to air.
### Abbreviations and acronyms:
- NCEC - National Chemical Emergency Centre (=Carechem24)
- ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances
- CAS: Chemical Abstracts Service (division of the American Chemical Society)
- TRGS: Technische Regeln für Gefahrstoffe (Technical Rules for Dangerous Substances, BAuA, Germany)
- PBT: Persistent, Bioaccumulative and Toxic
- vPvB: very Persistent and very Bioaccumulative
- Flam. Sol. 2: Flammable solids – Category 2
- Pyr. Sol. 1: Pyrophoric solids – Category 1
- Self-heat. 1: Self-heating substances and mixtures – Category 1
- Water-react. 1: Substances and mixtures which in contact with water emit flammable gases – Category 1

* Data compared to the previous version altered.