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

1.1 Product identifier
- Trade name: SK 402-O
- 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:
NCEC
+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:
Contains nickel. May produce an allergic reaction.
Safety data sheet available on request.

2.3 Other hazards
- Results of PBT and vPvB assessment
- PBT: Not applicable.

(Contd. on page 2)
SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures
Description: Mixture of substances listed below with nonhazardous additions.

Dangerous components:

<table>
<thead>
<tr>
<th>CAS</th>
<th>EINECS: 231-157-5</th>
<th>Reg.nr.: 01-2119485652-31-XXXX</th>
<th>chromium substance with a Community workplace exposure limit</th>
<th>12.5-25%</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS: 7440-02-0</td>
<td>EINECS: 231-111-4</td>
<td>Index number: 028-002-00-7</td>
<td>nickel</td>
<td>5-12.5%</td>
</tr>
<tr>
<td>CAS: 7439-96-5</td>
<td>EINECS: 231-105-1</td>
<td>Reg.nr.: 01-2119449803-34-XXXX</td>
<td>manganese substance with a Community workplace exposure limit</td>
<td>5-12.5%</td>
</tr>
</tbody>
</table>

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

SECTION 4: First aid measures

Description of first aid measures
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.
4.2 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
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:
    - 7440-47-3 chromium
      - IOELV Long-term value: 2 mg/m³ as Cr
    - 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**
  - Personal protective equipment:
    - General protective and hygienic measures: Wash hands before breaks and at the end of work.
    - Respiratory protection: Filter P2
    - Protection of hands:
      - 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 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
    - **Appearance:**
      - Form: Solid
      - Colour: Grey
Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 22.09.2020
Revision: 09.06.2020
Version number 14

Trade name: SK 402-O

51.0.9

· Odour: Odourless
· Odour threshold: Not determined.
· pH-value: Not applicable.
· Flash point: Not applicable.
· Flammability (solid, gas): Not determined.
· Decomposition temperature: Not determined.
· Auto-ignition temperature: Product is not selfigniting.
· Explosive properties: Product does not present an explosion hazard.

· Explosion limits: Not determined.
   Lower: Not determined.
   Upper: Not determined.
· Density: Not determined.
   Relative density Not determined.
   Vapour density Not applicable.
   Evaporation rate Not applicable.
   water: Insoluble.
· Partition coefficient: n-octanol/water: Not determined.
· Dynamic: Not applicable.
· Kinematic: Not applicable.
· Solids content: 100.0 %

9.2 Other information
No further relevant information available.

SECTION 10: Stability and reactivity

· 10.1 Reactivity No further relevant information available.
· 10.2 Chemical stability
  Thermal decomposition / conditions to be avoided:
  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 toxicological effects
  Acute toxicity Based on available data, the classification criteria are not met.
  Primary irritant effect:
  · 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.
SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.
- 12.2 Persistence and degradability No further relevant information available.
- 12.3 Bioaccumulative potential No further relevant information available.
- 12.4 Mobility in soil No further relevant information available.
- Additional ecological information:
  - General notes: Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
- 12.5 Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- 12.6 Other adverse effects No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
  - Recommendation Must be specially treated adhering to official regulations.
- Uncleaned packaging:
  - Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

- ADR, ADN, IMDG, IATA Void
- 14.2 UN proper shipping name 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 Transport in bulk according to Annex II of Marpol and the IBC Code Not applicable.
- Transport/Additional information: Not dangerous according to the above specifications.
- UN "Model Regulation": Void

(Contd. on page 6)
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.
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 27
- 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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).
Recommendations for Exposure Scenarios, Risk Management Measures and to identify Operational Conditions under which metals, alloys and metallic articles may be safely welded

Welding/Brazing involves fumes which can affect human health and the environment. Fumes are a varying mixture of airborne gases and fine particles which, if inhaled or swallowed, can constitute a health hazard. The degree of risk will depend on the composition of the fume, 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 contaminations from cleaning and degreasing activities. A systematic approach to the assessment of exposure is necessary, taking into account the particular circumstances for the operator and auxiliary worker that can be exposed.

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 exposure scenario 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. The following principle shall be applied:
1. Select the applicable process/material combinations with the lowest class, whenever possible.
2. Set welding process with the lowest emission parameter.
3. The selection of a protective equipment for an individual or collective protection measure in accordance with class number. In general, the use of PPE is taken into account after all other measures are applied.
4. Wear the relevant personal protective equipment in accordance with the duty cycle.

In addition, compliance with the National Regulations regarding the exposure to welding fumes of workers and related personnel shall be verified.

In the table “Risk Management Measures for individual process / material combinations” below, reference is made to the following standards for collective and personal protection measures:

- ISO 4088:2010 Core principles of protection against welding fumes
- EN ISO 16786-1:2008 Health and safety in welding and allied processes - Requirements, testing and marking of equipment for air filtration - Part 1: Testing of the separation efficiency for welding fumes
- EN ISO 16786-2:2008 Health and safety in welding and allied processes - Requirements, testing and marking of equipment for air filtration - Part 2: Determination of the minimum air volume flow-rate of exhaust hoods and notables
- EN 148:2004 Respiratory protective devices - Filtration half masks to protect against particles - Requirements, testing, marking (FFP1, FFP2, FFP3)
- EN 1535:2009 Respiratory protective device - Light-duty construction compressed air line breathing apparatus incorporating a helmet or a hood - Requirements, testing, marking (LDH1 - LDH2 - LDH3)
- EN 12494-1:1996 Respiratory protective devices - Powered filtering devices incorporating a helmet or a hood - Requirements, testing, marking (TH1 - TH2 - TH3)
- EN 143:2000 Respiratory protective devices - Particle filters - Requirements, testing, marking (P1, P2, P3)
- Directive 1996/26/EC Article 6.2 on the protection of the health and safety of workers from the risks related to physical agents at work
- BGR 190 Berufsgenossenschaftliche Regeln für Sicherheit und Gesundheit bei den Arbeitsstätten: Schweiss- und Schweißanlagen (Technische Regeln für Gefahrstoffe)
- TRGS 528 Schweiss-technische Anordnungen (Technische Regeln für Gefahrstoffe)

Also in the table “Risk Management Measures for individual process / material combinations”, reference is made to footnotes.

1. Class: approximate ranking to mitigate risk by selecting process/material combinations with the lowest value.
3. General Ventilation (GV): When additional Local Exhaust Ventilation (LEV) and extracted air to the outside, the GV or LEV capacity may be reduced to 1/3 of the original requirement.
4. General Ventilation (GV) Medium (dual compared to Low)
5. Filtration half mask (FFP5)
6. When an alloyed consumable is used, measures from Class IV are required
7. General Ventilation (GV) Low. When no Local Exhaust Ventilation, the ventilation requirement is 5-fold
8. Local Exhaust Ventilation (LEV) Low: extraction at source (includes table, hood, arm or torch extraction)
9. Local Exhaust Ventilation (LEV) Medium: extraction at source (includes table, hood, arm or torch extraction)
10. Recommended measures to comply with national maximum allowable limits. Extracted fumes, for all materials except unalloyed steel and aluminium, shall be filtered before release into the outside environment
11. A confined space, despite its name, is not necessarily small. Examples of confined spaces include ship, silos, vats, utility vaults, tanks, etc.
12. Improved ventilation and air circulation are necessary.

Trade name: SK 402-O


Risk Management Measures for individual process / base material combinations

<table>
<thead>
<tr>
<th>Class</th>
<th>Process</th>
<th>Base Material</th>
<th>Remarks</th>
<th>Ventilation / Extraction / Filtration</th>
<th>PPE EC &gt; 15</th>
<th>PPE EU &gt; 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>GTAW</td>
<td>All</td>
<td>Except Aluminium</td>
<td>GV/low³</td>
<td>n.r.</td>
<td>n.r.</td>
</tr>
<tr>
<td></td>
<td>GMAW</td>
<td>12</td>
<td>All</td>
<td>GV/medium⁴</td>
<td>n.r.</td>
<td>n.r.</td>
</tr>
<tr>
<td></td>
<td>Shielding</td>
<td>7072</td>
<td>Residual</td>
<td>Improved Helmet³</td>
<td>THSP3, LDHS³</td>
<td>THSP3, LDHS³</td>
</tr>
<tr>
<td></td>
<td>Solid wire 321</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

部门印发本数据表：R&D

- 联系人：Nicolas Turomsza

**Relevant phrases**

- H317 可能引起皮肤过敏反应。
- H351 可疑为致癌物。
- H372 通过长期或反复接触损伤器官。
- H412 对水生生物有害且影响长时效应。

**Department issuing SDS:** R&D

**Contact:** Nicolas Turomsza
Abbreviations and acronyms:

NCEC - National Chemical Emergency Centre (=Carechem24)
ADR: Accord européen sur le transport 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
Skin Sens. 1: Skin sensitisation – Category 1
Carc. 2: Carcinogenicity – Category 2
STOT RE 1: Specific target organ toxicity (repeated exposure) – Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

* Data compared to the previous version altered.