



# Safety Data Sheet

according to 1907/2006/EG, Article 31

Printing date: 07 August 2014

Created: 24 June 2009  
Revision: 7 August 2014

**Trade name:** Anviloy<sup>®</sup>, W60NiFe, W90NiFe, W925NiFe, W90MoNiFe, W95NiFe, W97NiFe, W975NiFe, W98NiFe, W90NiCu, W93NiCu, W95NiCu, W97NiCu

## 1 Identification of substance

### - Product details

#### - Trade name:

Anviloy<sup>®</sup>, W60NiFe, W90NiFe, W925NiFe, W90MoNiFe, W95NiFe, W97NiFe, W975NiFe, W98NiFe, W90NiCu, W93NiCu, W95NiCu, W97NiCu

#### - Application of the substance / the preparation:

Tools for light metal cast, mass bodies, radiation shielding, tool holders

#### - Manufacturer / Supplier:

Weldstone GmbH  
Kunstmühlstrasse 12  
83026 Rosenheim  
Germany  
Telephone: +49 (0) 8131 941 399-0  
Fax: +49 (0) 8131 941 399-09  
E-mail: MSDS@weldstone-europe.com

#### - Informing department:

Technical department

#### - Emergency information:

Federal environmental office, Z 2.4 (GSA)  
Bismarckplatz 1; D-14193 Berlin  
+49 (30) 8903 2441  
+49 (30) 8903 2020  
+49 (30) 8903 2049

## 2 Hazardous identification

### Hazardous designation:



Xn noxious.

### Information pertaining to particular dangers for man and environment:

The product has to be labelled due to the calculation procedure of the "General classification guideline for preparations of the EU" in the latest valid version.

R 40 Suspected of causing cancer.

R 43 Potential skin contact sensitization

R 48/23 Toxic: Potential serious health injury by prolonged inhalation

R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

S (2) Keep out of reach of children (if meant for general public)

S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection

S 45 In case of accident or if you feel unwell seek medical advice immediately (show the label where possible)

S 61 Avoid release to environment. Seek for special instructions/take safety data sheet advice.

### Classification system:

The classification complies with current EC lists. It is expanded, however, by information from technical literature and by information provided by supplier companies.

### GHS label elements:



Warning

H351 – Suspected of causing cancer.



Warning

H317 – May cause allergic skin irritations.

EUH070 – Toxic on contact with eyes.



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|                    |  |
|--------------------|--|
| <b>Prevention:</b> | <p>P201 Obtain special instructions before use.<br/> P202 Do not handle until all safety precautions have been read and understood.<br/> P261 Avoid breathing dust/fume/gas/fog/vapours/spray.<br/> P272 Contaminated work clothing should not be allowed out of the workplace.<br/> P280 Wear protective gloves/protective clothing and eye/face protection.<br/> P281 Use personal protective equipment as required.</p> |
| <b>Reaction:</b>   | <p>P302+P352 IF ON SKIN: Wash thoroughly with plenty of water and soap.<br/> P308+P313 IF exposed or concerned: Get medical advice/attention.<br/> P321 Specific treatment (see on this label).<br/> P333+P313 If skin irritation occurs: Get medical advice/attention.<br/> P363 Wash contaminated clothing before reuse.</p>   |
| <b>Storage:</b>    | P405 Store locked up.  |
| <b>Disposal:</b>   | P501 Dispose of contents / container in accordance with local / regional / national / international regulations to be specified.   |

### 3 Composition / Information on ingredients

| Ingredients                         |             |   |         |
|-------------------------------------|-------------|---|---------|
| CAS: 7440-33-7<br>EINECS: 231-143-9 | Tungsten, W |   | 50-100% |
| CAS: 7439-98-7<br>EINECS: 231-107-2 | Molybdenum  |   | 2,5-10% |
| CAS: 7440-02-0<br>EINECS: 231-111-4 | Nickel      | Xn,  Xi; R 40-43<br>Warning:  3.6/2;  3.4.S/1 | 0,5-25% |
| CAS: 7439-89-6<br>EINECS: 231-096-4 | Iron        |   | 0,5-25% |
| CAS: 7440-50-8<br>EINECS: 231-159-6 | Copper      |   | 0,5-10% |

### 4 First aid measures

#### General information:



Instantly remove any clothing soiled by the product.

No special measures required.

#### After inhalation:

Supply fresh air, consult doctor in case of any symptoms.  
In case of irregular respiration or apnea, artificial respiration is required.

#### After skin contact:

The product is not skin irritating.

#### After eye contact:

Rinse opened eyes for several minutes under running water. Then consult doctor.

#### After swallowing:

Rinse out mouth. Then – when conscious – drink plenty of liquid (water). Get medical attention.

#### Information for doctor:

According to existing experience and because of their known low/delayed solubility in biological media the toxicity of these metals is considered low, compared to their salts. First hand reports and animal studies, which are available so far, have formulated relatively low acute toxicity.

#### Treatment:

In case of swallowing resp. vomiting, risk of lung ingress. Follow-up observation for pneumonia and pulmonary edema.

### 5 Fire fighting measures

#### General information

The metal is in its solid form non-combustible.

#### Suitable extinguishing agents

Water, ABC dry powder, class D dry powder, water jet

#### For safety reasons unsuitable extinguishing agents:

#### Special hazards caused by the material, its products of combustion or flue gases:

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**Main products of combustion:** Tungsten trioxide WO<sub>3</sub> (CAS 1314-35-8)  
**Protective equipment:** Wear self-contained breathing apparatus.  
**Additional information:** Cool endangered containers with water spray jet.  
 Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

## 6 Accidental release measures

**Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.  
 Ensure adequate ventilation.  
 Keep away from ignition sources.  
 Use breathing protection with particulate collector P2 or P3, recommended colour: white<sup>i</sup>, against the effects of fumes/dust/aerosol.  
 Wear protective clothing.

### Measures for environmental protection:



Do not allow product to reach sewage system or water bodies.

Prevent emission into the environment, if at all. Dispose waste, dust collection filter and container in a secure manner and according to the valid national regulations. Retain and dispose impurified water from cleaning and grinding.

**Procedures for cleaning/collecting:** Dispose contaminated material according to chapter 13.  
 Send for recovery or disposal in suitable containers.  
 Dispose of the material collected according to regulations.

**Additional information:** See chapter 13 for information on disposal.

## 7 Handling and storage

**Handling** Prevent incorporation of particulates during processing by using extractions resp. inhalation protection with particulate collector P2 or P3, P3 is recommended, identification colour: white.  
 Prevent dust formation

**Information for safe handling:** -

**Information about protection against explosions and fires:** See chapter 15

**Storage** See chapter 15

**Requirements to be met by storerooms and containers:** No special requirements

**Information about storage in one common storage facility:** Store away from foodstuffs.

**Further information about storage conditions:** See chapter 15

**Recommended storage temperature:** +5°C / +30 °C

**Certain application** This product is designed to be used as a non-melting electrode for TIG welding process. Dusts and vapour, which are created during the process, are to be extracted by corresponding devices by using filters or gas washers. Valid national regulations are to be met.

## 8 Exposure controls and personal protection

**Additional information about design of technical systems:** No further data, see chapter 7.



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## Components with critical values that require monitoring at the workplace:

7440-33-7 Tungsten

|               |   |
|---------------|---|
| MAK (Germany) | Short term exposure limit: 10 mg/m <sup>3</sup><br>Long term exposure limit: 5 mg/m <sup>3</sup><br>See chapter IIb |
|---------------|---|

7439-98-7 Molybdenum

|                   |  |
|-------------------|--|
| MAK (Deutschland) | Short term exposure limit: 25 mg/m <sup>3</sup><br>Long term exposure limit: 5 mg/m <sup>3</sup><br>See chapters IIb and XII |
|-------------------|--|

7439-89-6 Iron

|               |   |
|---------------|---|
| MAK (Germany) | Short term exposure limit: n/a mg/m <sup>3</sup><br>Long term exposure limit: n/a mg/m <sup>3</sup> |
|---------------|---|

7440-50-8 Copper

|               |                        |
|---------------|------------------------|
| MAK (Germany) | 0.1E mg/m <sup>3</sup> |
|---------------|------------------------|

7440-02-0 Nickel

|               |   |
|---------------|---|
| MAK (Germany) | Short term exposure limit: n/a mg/m <sup>3</sup><br>Long term exposure limit: 0.5 mg/m <sup>3</sup><br>Inhalable fraction; see chapter XIII |
|---------------|---|

**- Additional information:**

The lists that were valid during the compilation were used as basis.

**- Personal protective equipment:**

**- General protective and hygienic measures:**

Do not eat, drink, smoke or snuff while working.  
NOTE: pH-neutral skin cleansing and skin care recommended.

**- Breathing protection**

Extraction, particulate filtering mask (protection class P2) recommended at occurrence of dusts/aerosols. Protection class and type of mask are to be adapted to the actual dust loading, especially for cleaning and maintenance works.

**- Protection of hands:**

Not required.

**- Material of protective gloves**

The selection of suitable protection gloves does not only depend on the material, but also on other qualitative characteristics and vary with each manufacturer.

**- Eye protection:**

- not applicable

**- Body protection:**

- Do not eat, drink or smoke at the workplace together with occupational hygiene, e.g. washing hands.

**Exposure environment**

Residual substrates, deposits and contaminated filters are to be deposited according to the valid national regulations.



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## 9 Physical and chemical properties

|   |   |
|---|---|
| <b>- General information</b>              |   |
| Form:                                     | solid   |
| Colour:                                   | metallic grey   |
| Odour:                                    | odourless   |
| <b>- Change in condition</b>              |   |
| Melting point/melting range:              | 3.680 K   |
| Boiling point/boiling range:              | 5.828 K   |
| <b>- Flash point:</b>                     | Not applicable  |
| <b>- Self-inflammability:</b>             | Product is not self igniting  |
| <b>- Danger of explosion:</b>             | Product is not explosive  |
| <b>- Oxidizing properties</b>             | Not applicable  |
| <b>Vapour pressure at 20°C (mm Hg):</b>   | 0 hPa   |
| <b>- Density at 20°C:</b>                 | W60NiFe 12.7 g/cm <sup>3</sup><br>W90NiFe 17.0 g/cm <sup>3</sup><br>W925NiFe 17.5 g/cm <sup>3</sup><br>W95NiFe 18.0 g/cm <sup>3</sup><br>W97NiFe 18.5 g/cm <sup>3</sup><br>W975NiFe 18.6 g/cm <sup>3</sup><br>W98NiFe 18.7 g/cm <sup>3</sup><br>Anviloy <sup>®</sup> 17.3 g/cm <sup>3</sup><br>W90NiCu 17.0 g/cm <sup>3</sup><br>W93NiCu 17.5 g/cm <sup>3</sup><br>W95NiCu 18.0 g/cm <sup>3</sup><br>W97NiCu 18.5 g/cm <sup>3</sup> |
| <b>Electrical conductivity</b>            | 7.7 – 11.1 m/Ωmm <sup>2</sup>   |
| <b>- Change of state</b>                  |   |
| <b>- Solubility in / miscibility with</b> |   |
| Water:                                    | insoluble   |
| Organic solvents:                         | 0.0 %<br>insoluble in grease<br>high resistant against acids; slowly soluble in HNO <sub>3</sub> + HF<br>soluble in alkaline oxidation melts  |
| <b>- Solid content:</b>                   | 100 %   |

## 10 Stability and reactivity

**- Thermal decomposition / conditions to be avoided:**

No decomposition if used according to specifications.

**Stability:**

Product is stable under standard conditions. No decomposition if used according to specifications.

**Conditions to be avoided:**

Oxidation at the presence of oxygen and increased temperatures (> 600°C), sublimation (tungsten trioxide WO<sub>3</sub>, CAS 1314-35-8) from 977°C and up.

**Substances to be avoided:**

Contact with strong acids and/or base; or with halogens (fluorine, chlorine, bromine, iodine and their compounds); or with oxidizing agents (e.g. perchlorates, peroxides, permanganates, chlorates, nitrates, nitrites, chromates); or with alkaline-/alkaline earth metals (e.g. lithium, sodium, potassium, magnesium, calcium) can cause extreme reactions (danger of exothermic reaction, danger of inflammable gas formation, formation of noxious / toxic materials / gases) and is to be prevented.

**Dangerous products of composition:**

Oxidation produces oxides of the product which can evaporate (tungsten trioxide WO<sub>3</sub>, CAS 1314-35-8) or are released.



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## 11 Toxicological information

### Acute toxicity:

The product does not show any oral, dermal or respiratory toxicity.

- W LD<sub>50</sub> oral, rat: >2000 mg/kg<sup>ii</sup>  
 LD<sub>50</sub> dermal, rat: >2000 mg/kg<sup>ii</sup>  
 LC<sub>50</sub> respiratory, rat: >5.4 mg/l, 4h exposure<sup>ii</sup>
- Ni LD<sub>50</sub> oral, rat: > 9000 mg/kg<sup>iii</sup>
- Fe No information about systemic effects in consequence of an acute exposure<sup>iv</sup>.
- Cu There are no reliable information, neither from field reports nor from animal studies about an acute irritation to eyes and skin caused by copper dusts.<sup>v</sup>
- Mo No information about systemic effects in consequence of an acute exposure<sup>vi</sup>
- For more literature please refer to <sup>Fehler! Textmarke nicht definiert.</sup>

### Chronic toxicity:

- W Findings after intratracheal application of 50 mg T.-dust/week for three weeks to guinea pigs led to the estimation that the material is relatively inert. Nevertheless, a minor effect to the lung tissue (interstitial cellular proliferation) was detectable. T.-dust was added to the diet of very young rats in concentration of 2; 5 or 10 % for 70 days. It caused a 15% reduction of the body weight for the female rats, but not for the male rats<sup>vii</sup>.
- Ni Findings after longer-term high inhalation exposure to nickel dust and aerosols of soluble nickel compounds, chronic degradation to the upper respiratory tracts (bronchitis, pulmonary fibrosis) were detectable, and less frequently to the lower respiratory tract (bronchitis, pulmonary fibrosis). Asthmatic diseases (Löffler syndrome) are rather seldom. A chronic inhaling study on rabbits derives an NOAL for nickel of 0.13 mg/m<sup>3</sup>.
- Fe Long-term (mostly > 20 years) high inhalation exposure to iron dust causes dust accumulations (siderosis as special form of pneumoconiosis), but tissue injury, except a higher tendency to emphysema formation and inflammation (especially bronchial infection) mostly does not occur.
- Cu Long-term inhalation of metallic copper dusts or smokes can cause ulcers on the mucous membranes (possibly with perforation of the nasal septum). A presence of arsenic was deemed necessary. Furthermore, gastrointestinal symptoms (feeling of nausea, stomach-ache, diarrhea) were registered upon the inhalation of smokes.  
 Repeated skin contact has caused infections in comparatively few cases (contact dermatitis of probably allergic genesis) or pruritic eczemas.
- Mo Persons with pre-damaged pulmonary function (especially with obstructive respiratory diseases), inhaling insoluble Mo-compound, have to face impairment of their health, due to its irritative impact.  
 X-ray findings and symptoms/typical disorders have confirmed pneumoconiosis to 3 of 19 workers, who had been exposed to M. and Mo-oxide (concentration between 1 and 25 mg/m<sup>3</sup>) for 4 to 7 years.

**Primary irritant effect**      **on the skin:**  
    **on the eye:**

No irritant effect for making a classification<sup>viii</sup>.  
 No irritant effect for making a classification<sup>viii</sup>.

**Sensitization:**

No sensitizing effect known<sup>ii</sup>.

**Additional toxicological information:**

R45 – May cause cancer.

## 12 Ecological information

### - General information:

Water hazard class: non-hazardous for water (rating of the commission for assessment of substances hazardous to water (KBwS))

### Ecotoxicity:

Amphibians: LC<sub>50</sub>:2.9 mg/L (toad, *Gastrophryne carolinensis*, 7d)<sup>ix</sup> fishes: LC<sub>50</sub>:15.6 mg/L (rainbow trout, *Oncorhynchus mykiss*, 28d)<sup>ix</sup>.  
 Microbial degradation: Not applicable.

### Mobility:

Tungsten compounds are found in soil resp. waters as wolframates (e.g. WO<sub>4</sub><sup>2-</sup>) and other polyanions. There are no existing reports about organic tungsten complexes. Absorption coefficient for tungsten increases according to declining pH-value (pH=5:100-50,000; pH=6.5:10-6,000; pH=8-9:5-90). According to these values there is little up to no mobility of tungsten compounds in soil and waters. In the natural environment tungsten compounds in form of ions or insoluble solid substances are found and therefore volatilization of soils and waters does not mean any significant environmental impact. Most tungsten compounds excel by low steam pressures at 25°C. For more literature please refer to<sup>xi</sup>.

### Persistence and degradability:



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**Biodegradability:** Not applicable.

**A biotic degradability:** Tungsten has various oxidation states (0, 2+, 3+, 4+, 5+, 6+), of which 6+ is the most stable one, the others are rather instable. In combination with one or several elements, like for example oxygen, tungsten appears as ion. Tungsten compounds are found in waters in form of wolframate (e.g.  $WO_4^{2-}$ ) and other polyanions. There are no existing reports about organic tungsten complexes. Divalent tungsten only exists as halogen compound. Tungsten has a strong tendency to form a complex (e.g. creating heteropoly acids with oxides of phosphor, arsenic, vanadium, silicon and others). Tungsten forms a series of oxohalogenides (e.g.  $WOCl_4$ ).

**Bioaccumulation potential:** No data available

**Additional information:**

## 13 Disposal considerations

**Waste disposal according to international, national and regional regulation.** Please contact the corresponding institution.

**Product:** -

**Recommendation:** Adhere to the national regulations.

**- Waste disposal key number:** Please refer to the EAK European Waste Catalog (12 01 03 – welding wastes)

**Uncleaned packaging:** Can be treated as non-hazardous disposal.

**- Recommendation:** Disposal must be carried out according to official regulations

## 14 Transport information

|  |    |
|--|----|
| - Land carriage ADR/RID and GGVSEB (transnational/domestic): |    |
| - ADR/RID-GGVSEB class:                                      |    |
| - Water carriage IMDG/GGVSea:                                |    |
| - IMDG/GGVSea-class:   | -  |
| - Marine pollutant:  | No |
| - Carriage by air ICAO-TI and IATA-DGR                       |    |
| - ICAO/IATA class:   | -  |

**- UN "Model Regulation":** -

**- Transport/additional information:** -

**EU-regulations** -



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## 15 Regulatory information

**Designation according to EC guidelines:**

Please observe the regulations applicable to handling of chemicals.  
The product is rated and labelled according to EU-directives/Ordinance on Hazardous Substances.  
215-225-1.

**- Risk phrases:**

R 40 Suspected of causing cancer.  
R 43 May cause sensitization by skin contact  
R 48/23 Toxic: of serious damage to health by prolonged exposure through inhalation  
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment  
S 35 " This material and its container must be disposed of in a safe way". Ask the supplier for information concerning reuse / recycle.

**- Code letter and indication of danger of the product:**



Xn Noxious.

**- Hazard components for labelling:**

Nickel

**- R-phrases:**

R 40 Suspected of causing cancer.  
R 43 May cause sensitization by skin contact  
R 48/23 Toxic: Danger of serious damage to health by prolonged exposure through inhalation  
R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment

**- S-phrases:**

13 Keep away from food, drink and animal feeding stuffs  
20/21 When using do not eat, drink or smoke  
22 Do not breathe dust  
23.7 Do not breathe fumes  
S 35 "This material and its container must be disposed of in a safe way". Ask the supplier for information concerning reuse / recycle.  
53 Avoid exposure – obtain special instructions before use.

**- National regulations:**

**- Information about limitation of use:**

Employment restrictions concerning young persons must be observed (§22 Employment Protection Act)

**- Classification according to VbF:**

no longer valid – refer to PUWER

**- Classification according to Provision and Use of Work Equipment Regulations (PUWER):**

-

**- Class share in %**

-

**- Water hazard class:**

Water hazard class: 2 (D) hazardous for water.

**- Other regulations, limitations and prohibitive regulations**

**- Storage**

Store away from foodstuffs.

**EU regulations:**

RL 67/548/EWG idgF (material regulation)  
RL 99/45/EG idgF (preparation regulation)

**German regulations:**

Technical instruction air: TRGS 900

**Other countries:**

Adhere to national regulations.

## 16 Other information

These data are based on our present knowledge. However, they shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. Amendments to the previous version are to be marked with "\*" to the left of the page. The new datasheet replaces the previous version, which then becomes invalid.

**- Department issuing data specification sheet:**

Technical department

**- Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)  
ICAO: International Civil Aviation Organization





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ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)

- \* Data changed in former version

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- Sources:
- i Auerdata release 1998 and BG-Regel 190 (ZH 1/701) Einsatz von Atemschutzgeräten; Fassung 10.96
  - ii Acute Toxicity Studies, Huntingdon Life Sciences, 1999
  - iii BGIA GESTIS – Stoffdatenbank, Abfrage 2006-01-13 <http://biade.itrust.de/biade/lpext.dll?f=templates&fn=main-hit-h.htm&2.0>
  - iv BGIA GESTIS – Stoffdatenbank, Abfrage 2006-01-13 <http://biade.itrust.de/biade/lpext.dll?f=templates&fn=main-hit-h.htm&2.0>
  - v BGIA GESTIS – Stoffdatenbank, Abfrage 2009-06-30 <http://biade.itrust.de/biade/lpext.dll?f=templates&fn=main-hit-h.htm&2.0>
  - vi BGIA GESTIS – Stoffdatenbank, Abfrage 2009-06-30 <http://biade.itrust.de/biade/lpext.dll?f=templates&fn=main-hit-h.htm&2.0>
  - vii BGIA GESTIS – Stoffdatenbank, Abfrage 2005-12-15 <http://biade.itrust.de/biade/lpext.dll?f=templates&fn=main-h.htm>
  - viii Acute Toxicity Studies, Huntingdon Life Sciences, 1999
  - ix ECOTOX, Ecotoxicology Database USEPA ([www.epa.gov/ecotox](http://www.epa.gov/ecotox)), query 19.03.2003
  - x Hazardous Substance Database, HSDB, National Library of Medicine (<http://toxnet.nlm.nih.gov>), query 19.12.05
  - xi Dermatas et al.; Solubility, Sorption and Soil Respiration Effects of Tungsten and Tungsten Alloys; Environmental Forensics, 5:5-13, 2004