

## Material Safety Data Sheet

acc. to ISO/DIS 11014

Printing date 11/20/2006

Reviewed on 11/17/2006






### 1 Identification of substance

- **Product details**
- **Trade name:** UTP 2 M
- **Application of the substance / the preparation** Hard solder
- **Manufacturer/Supplier:**  
Boehler Thyssen Welding USA Inc.
- PO Box 721678  
HOUSTON, Texas 77272-1678
- phone 281 499 1212  
fax 281 261 7895
- **Information department:** QS department

### 2 Composition/Data on components

- **Chemical characterization**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

7440-50-8	copper	25-50%
7440-66-6	zinc powder -zinc dust (pyrophoric)  F,  N; R 15-17-50/53	25-50%
10043-35-3	boric acid, crude natural, containing notmore than 85 per cent of H3BO3 calculated onthe dry weight  Xn; R 62	10-25%
7440-02-0	nickel  Xn,  Xi; R 40-43	2.5-10%

- **Additional information:**  
Warning: This product contains or produces a chemical known to the state of California to cause cancer.

### 3 Hazards identification

- **Hazard description:**  
General: Different kinds of fume and dust occur during the welding and grinding process. Chromium-VI compounds and nickel oxides might occur, which are classified as carcinogenic. In addition irritant substances such as fluorides and manganese oxides as well as fine dusts (mostly iron oxides) occur. Health Hazards (acute and chronic) Welding electrodes and wires are non-hazardous solids at ambient temperature.  
Actual exposure should be determined by monitoring the fume in the operator's breathing zone. Compounds of Chromium and Nickel in the fume should be considered possible carcinogens per OSHA29. CFR 1910. 1200. No clear association, however, has been established between Cr and Ni in welding fume and the development of cancer. Short term overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat or eyes and may aggravate pre-existing respiratory problems (e.g. asthma, emphysema). Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.  
Long term overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function.

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Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. The primary entry route for welding fumes and gases is by inhalation. Bronchitis and some lung fibrosis have been reported. Repeated exposure to fluorides may cause excessive calcification of the bone and calcification of ligaments of the ribs, pelvis and spinal column. May cause skin rash.

Overexposure to hexavalent chromium and nickel present in welding fume can present the risk of lung cancer, asthma and damage to the nose and skin.

#### Carcinogenicity

**Nickel:** The International Agency for Research on Cancer indicates nickel refining and "certain nickel compounds" were cancer-causing, but could not state with certainty which forms of nickel may be carcinogenic. The National Toxicology Program lists nickel powder, nickel subsulfide, nickel oxide, nickel carbonate, nickel carbonyl and nickelocene as substances "that may reasonably be anticipated to be carcinogens". Because of this, the OSHA Hazard Communication Standard requires that everyone who manufactures or imports these substances or mixtures or alloys containing these substances must warn of a cancer hazard on their MSDS's and labels. This warning is mandated by OSHA even though studies have not demonstrated cancer risks associated with the use of nickel. Intramuscular injection and implantation of nickel powder produced localized tumors in rats and mice. Inhalation studies using animals showed no evidence of carcinogenicity.

**Crystalline silica:** The National Toxicology Program indicates there is sufficient evidence for the carcinogenicity or respirable crystalline silica in experimental animals. Increases in incidence of lung cancers have been found in inhalation studies in rats. An IARC working group reported there is limited evidence for the carcinogenicity of crystalline silica in humans.

**Other precautions:** Electric shock from arc welding equipment can kill. When welding arc or torch flame may be a source of ignition of combustible.



Xn Harmful

· **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.

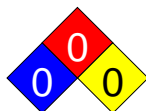
R 40 Limited evidence of a carcinogenic effect.

R 43 May cause sensitization by skin contact.

· **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

· **NFPA ratings (scale 0 - 4)**



Health = 0

Fire = 0

Reactivity = 0

· **HMSI-ratings (scale 0 - 4)**



Health = \*0

Fire = 0

Reactivity = 0

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### 4 First aid measures

- **General information:** No special measures required.
- **After inhalation:** Supply fresh air and to be sure call for a doctor.
- **After skin contact:** Rinse with warm water.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:** Seek medical treatment.

### 5 Fire fighting measures

- **Suitable extinguishing agents:**  
CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** Wear self-contained respiratory protective device.
- **Additional information**  
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.

### 6 Accidental release measures

- **Person-related safety precautions:** Avoid formation of dust.
- **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:** Pick up mechanically.

### 7 Handling and storage

- **Handling:**
- **Information for safe handling:** Ensure good ventilation/exhaustion at the workplace.
- **Information about protection against explosions and fires:** No special measures required.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Do not store together with acids.
- **Further information about storage conditions:** None.

### 8 Exposure controls and personal protection

- **Additional information about design of technical systems:**  
**Ventilation:** Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases from the worker's breathing zone and the general area. Train the welder to keep his head out of the fumes. Keep exposures as low as possible  
**Respiratory Protection:** Use respirable fumes respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below the recommended exposure limit.

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**· Components with limit values that require monitoring at the workplace:**

**7440-50-8 copper**

PEL	0.1*;1** mg/m <sup>3</sup> *fume **dusts & mists
REL	0.1*;1** mg/m <sup>3</sup> *Copper fume, as Cu **Copper dusts & mists, as Cu
TLV	0.2*, 1** mg/m <sup>3</sup> *fume; ** dusts&mists, as Cu

**7440-02-0 nickel**

PEL	1 mg/m <sup>3</sup>
REL	0.015 mg/m <sup>3</sup>
TLV	1.5 l mg/m <sup>3</sup>

· **Additional information:** The lists that were valid during the creation were used as basis.

· **Personal protective equipment:**

· **General protective and hygienic measures:**

- Avoid close or long term contact with the skin.
- Do not eat, drink, smoke or sniff while working.
- Keep away from foodstuffs, beverages and feed.
- Immediately remove all soiled and contaminated clothing.
- Wash hands before breaks and at the end of work.

· **Breathing equipment:**

- In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- Use suitable respiratory protective device in case of insufficient ventilation.

· **Protection of hands:**

- Protective gloves
- Heat protection gloves

· **Material of gloves** Leather gloves

· **Eye protection:**

- Wear helmet or use face shield with filter lens. Provide protective screens and flash goggles, if necessary, to shield others. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go the next lighter shade which gives sufficient view of the weld zone.

· **Body protection:** Protective work clothing

### 9 Physical and chemical properties

· **General Information**

<b>Form:</b>	Solid
<b>Color:</b>	Various colors
<b>Odor:</b>	Odorless

· **Change in condition**

- Melting point/Melting range:** 890 - 920°C (1634 - 1688°F)
- Boiling point/Boiling range:** Undetermined.

· **Flash point:** Not applicable.

· **Auto igniting:** Product is not selfigniting.

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|--|---|
| <b>· Danger of explosion:</b>                    | Product does not present an explosion hazard. |
| <b>· Density at 20°C (68°F):</b>                 | 8.7 g/cm <sup>3</sup>                         |
| <b>· Solubility in / Miscibility with Water:</b> | Insoluble.                                    |

### 10 Stability and reactivity

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

No decomposition if used and stored according to specifications.

**· Dangerous reactions** Reacts with strong acids.

**· Dangerous products of decomposition:**

Toxic metal oxide smoke

Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, and the process, procedures, and electrodes used. Other conditions which also influence the composition and quantity of the fumes and gases to which workers may be exposed include: coatings on the metal being welded (such as paint, plating, galvanising, or phosphate coatings on steels which would produce phosphine gas), the number of welders and the volume of the work area, the quality and amount of ventilation, the position of the welder's head with respect to the fume plume as well as the presence of contaminants in the atmosphere (such as chlorinated hydrocarbon vapours from cleaning and degreasing activities which may be decomposed by the arc into toxic gases such as phosgene).

When the electrode is consumed, the fume and gas decomposition products generated are different in percent and form from the ingredients listed in SECTION II. Fume and gas decomposition products, and not the ingredients in the electrode are important. The concentration of a given fume or gas component may decrease or increase by many times the original concentration in the electrode. Also, new compounds not in the electrodes may form. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in SECTION II, plus those from the base metal and coating, etc..., as noted above. Reasonably expected fume constituents of this product would include: Example for Carbon dioxide shielded flux-cored electrode (AWS 5.20 E70-T-1): Reasonably expected fume constituents of this product would include: primarily oxides of Iron; secondarily complex oxides of Manganese, Silicon, Titanium and Sodium. The present ACGIH TLV for Manganese, 0.2 mg/m<sup>3</sup> will result in a significant reduction from the 5 mg/m<sup>3</sup> general welding fume (NOC) level. Example for Stainless Steel covered electrodes (AWS 5.4): Reasonably expected fume constituents of this product would include: primarily fluorides and complex oxides of Iron and Silicon, secondarily complex oxides of Manganese, titanium, chromium, nickel, sodium and potassium.

The present 1995 OSHA PEL (Permissible Exposure Limit) for hexavalent Chromium (Cr +6) is 0.05 mg/m<sup>3</sup> which will result in a significant reduction from the 5 mg/m<sup>3</sup> general welding fume (NOC) level. The limit of 0.05 mg/m<sup>3</sup> for hexavalent chromium from the decomposition products in these electrodes comes from the limit shown at the bottom of OSHA Table Z-2, which is for 0.1 mg of CrO<sub>3</sub>- which calculates to 0.05 mg of Cr+6/m<sup>3</sup>. It applies to soluble chromates of the types found in covered stainless electrode fumes. Reasonably expected gaseous constituents would include Carbon monoxide and Carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample from inside the welder's helmet if worn or in the worker's breathing zone. See ANSI/AWS F1.1 and ANSI/AWS F1.2-1992

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### 11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

**7440-66-6 zinc powder -zinc dust (pyrophoric)**

Oral	LD50	388 mg/kg (duck) >5000 mg/kg (rat)
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**10043-35-3 boric acid, crude natural, containing not more than 85 per cent of H3BO3 calculated on the dry weight**

Oral	LD50	2600 mg/kg (rat)
Inhalative	inhalation LC50	28 mg/m <sup>3</sup> /4h (rat)

**7440-02-0 nickel**

	Intraperitoneal LD50	250 mg/kg (rat)
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· **Primary irritant effect:**

- **on the skin:** No irritant effect.
- **on the eye:** No irritating effect.

· **Sensitization:**

Sensitizing effect by skin contact is possible with prolonged exposure.  
Sensitization possible through skin contact.

· **Additional toxicological information:**

The product shows the following dangers according to internally approved calculation methods for preparations:  
Irritant

### 12 Ecological information

· **General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

### 13 Disposal considerations

· **Product:**

- **Recommendation:** Contact waste processors for recycling information.

· **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.

### 14 Transport information

· **DOT regulations:**

- **Hazard class:** -

· **Land transport ADR/RID (cross-border):**

- **ADR/RID class:** -

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· **Maritime transport IMDG:**

· **IMDG Class:** -  
 · **Marine pollutant:** No

· **Air transport ICAO-TI and IATA-DGR:**

· **ICAO/IATA Class:** -

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

### 15 Regulations

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredient is listed.

· **Section 313 (Specific toxic chemical listings):**

7440-50-8 copper

7440-66-6 zinc powder -zinc dust (pyrophoric)

7440-02-0 nickel

· **TSCA (Toxic Substances Control Act):**

7440-50-8 copper

7440-66-6 zinc powder -zinc dust (pyrophoric)

10043-35-3 boric acid, crude natural, containing notmore than 85 per cent of H3BO3 calculated onthe dry weight

7440-02-0 nickel

1302-78-9 Bentonit

7440-21-3 silicon

· **Proposition 65**

· **Chemicals known to cause cancer:**

7440-02-0 nickel

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

7440-50-8 copper

D

· **IARC (International Agency for Research on Cancer)**

7440-02-0 nickel

2B

· **NTP (National Toxicology Program)**

7440-02-0 nickel

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· <b>TLV (Threshold Limit Value established by ACGIH)</b>	
7440-02-0 nickel	A5
· <b>MAK (German Maximum Workplace Concentration)</b>	
7440-02-0 nickel	1
· <b>NIOSH-Ca (National Institute for Occupational Safety and Health)</b>	
7440-02-0 nickel	
· <b>OSHA-Ca (Occupational Safety &amp; Health Administration)</b>	
None of the ingredients is listed.	

- **Product related hazard informations:**  
The product is not subject to identification regulations according to directives on hazardous materials.
- **Hazard symbols:**  
Xn Harmful
- **Hazard-determining components of labelling:**  
nickel
- **Risk phrases:**  
40 Limited evidence of a carcinogenic effect.  
43 May cause sensitization by skin contact.
- **Safety phrases:**  
22 Do not breathe dust.  
36 Wear suitable protective clothing.
- **National regulations:**
- **Information about limitation of use:**  
Employment restrictions concerning young persons must be observed.
- **Water hazard class:** Water hazard class 1 (Self-assessment): slightly hazardous for water.

### 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.*

- **Department issuing MSDS:** QS department
- **Contact:**  
Ms. Monica Isenhardt  
phone +1-281-499 1212
- **\* Data compared to the previous version altered.**