



U.S. Department of Labor
Occupational Safety and Health Administration
(Non-Mandatory Form). Format meets ANSI Z400.1-1998, OSHA 1910.1200 and WHMIS requirements.

Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200.

Section 1: Product and Company Identification

| | |
|-------------------------|---|
| Product Name: | 91T1B304533 |
| Product Type: | Gas Shielded Flux Core Electrode |
| AWS Classification: | AWS A5.29 E91T1-B3C |
| Manufacturer: | TECHNIWELD USA |
| Physical Address: | 6205 BOAT ROCK BLVD ATLANTA, GA 30336 |
| Mailing Address: | P.O. Box 44226 ATLANTA, GA 30336 |
| Business Phone: | 404-699-9900 |
| Business Fax: | 404-699-7800 |
| E-mail Address: | info@TECHNIWELDUSA.COM |
| Web Address: | www.TECHNIWELDUSA.COM |
| Emergency Phone: | CHEMTREC (24-Hour) 1-800-424-9300 Outside of the USA & Canada 1-703-527-3887 |
| Date of Preparation: | April 1, 2013 |
| OSHA Regulatory Status: | Non-Regulated |
| WHMIS Classification: | Not a Controlled Product |

Section 2: Hazard Data

The ingredients are components of this product and hardly harmful to users because of the processed a series of progresses.

This section covers the materials and the hazard

2-1. Classification of hazard

Specific target organ toxicity, repeated exposure. Category 2

2-2. Warning signals including precaution.

- Pictograph



- A signal: warning
- Health hazard statements
(H373) May cause damage to organs (state all organs affected, if known) through prolonged or repeated exposure
(State route of exposure if it is conclusively proven that no other routes of exposure cause the hazard).

- Prevention precautionary statements
 - (P260) Do not breathe dust/fume/gas/mist/vapors/spray.
- Response precautionary statements
 - (P314) Get medical advice/attention if you feel unwell.
- Disposal precautionary statements
 - (P501) Dispose of contents and container in accordance with local and national regulations.

2-3. other hazards

No data available

Section 3: Composition and Information on Ingredients

| Ingredient | CAS# | EC No. | Contents (wt %) |
|-------------------------------------|------------|-----------|-----------------|
| Iron | 7439-89-6 | 231-096-4 | Rem. |
| Manganese (Mn) | 7439-96-5 | 231-105-1 | 0.5~3.0 |
| Titanium Dioxide(TiO ₂) | 13463-67-7 | 236-675-5 | 5~10 |
| Silicon(Si) | 7440-21-3 | 231-130-8 | 0.2~1.0 |
| Chromium(Cr) | 7440-47-3 | 231-157-5 | 2.0~3.0 |
| Molybdenum(Mo) | 7439-98-7 | 231-107-2 | 1.0~2.0 |

Section 4: First Aid Measures

In case that expose an excess arc and fume, take a following first aid treatment.

- Move a patient in fresh air and untie a neck and a waist.
- Rest a patient warmly and if having a difficult breath, take a oxygen supplier or artificial respiration
- Take a proper medical treatment in case of a burn and an electric shock.
- Call for a medical aid.

Section 5: Fire Fighting Measures

5-1. Danger or fire and explosion: Product has no ignition and inflammability, but arc, spatter, heating in welding can cause a fire and an explosion.

5-2. To extinguish a fire safely, isolate the metal from the fire and put out the flames. If there are any winds, ensure your back is to the wind, so you do not get hurt by heat and flames being blown towards you.

5-3. Injurious smoke: May generate injurious smoke.

5-4. Count Measure: Before welding remove dangerous materials and ventilate a place of work. Proper equipment (a fire extinguisher) is prepared in case of fire.

Section 6: Accidental Release Measures

6-1. Personal precautions, protective equipment and emergency procedure: Not applicable

6-2. Environmental precautions: Not applicable

6-3. Methods and material for containment and clean up: Not applicable

Section 7: Handling and Storage

7-1. Treatment: Refer to precautionary label on the box – observe a handling law.

7-2. Storage method: Store with waterproof and low moisture.

Section 8: Exposure Controls / Personal Protection

8-1. Data of exposure

| INGREDIENTS | CAS No. | EC No. | Occupation safety and health acts (mg/m3) | OSHA-PEL (mg/m3) | ACGIH-TLV (mg/m3) |
|-------------------|------------|-----------|--|-------------------|--------------------|
| Titanium dioxide | 13463-67-7 | 236-675-5 | 10.0 | 15.0 | 10.0 |
| Manganese(as Mn) | 7439-96-5 | 231-105-1 | 5.0 | 5.0 | 0.2 |
| Iron | 7439-89-6 | 231-096-4 | 5.0 | 15.0 | 10.0 |
| Silicon(as Si) | 7440-21-3 | 231-130-8 | 10.0 | 15.0 | 10.0 |
| Silica(as SiO2) | 60676-86-0 | 262-373-8 | - | 0.1 | 0.025 |
| Quartz | 14808-60-7 | 238-878-4 | - | - | - |
| Aluminum | 7429-90-5 | 231-072-3 | - | 15.0 | 10.0 |
| Aluminum Oxide | 1344-28-1 | 215-691-6 | - | - | - |
| Magnesium | 7439-95-4 | 231-104-6 | 10.0 | 15.0 | 10.0 |
| Magnesium Oxide | 1309-48-4 | 215-171-9 | - | - | - |
| Fluorine | 7782-41-4 | 231-954-8 | 0.5 | 2.5 | 2.5 |
| Boron | 7440-42-8 | 231-151-2 | - | 15.0 | 10.0 |
| Calcium Oxide | 1305-78-8 | 215-138-9 | 2.0 | 5.0 | 2.0 |
| Chromium | 7440-47-3 | 231-157-5 | 0.5 | 0.5 | 0.5 |
| Copper | 7440-50-8 | 215-159-6 | 0.1 | 0.1 | 0.2 |
| Molybdenum | 7439-98-7 | 231-107-2 | 10.0 | 5.0 | 0.5 |
| Nickel | 7440-02-2 | 231-111-4 | 1.0 | 1.0 | 0.1 |
| Vanadium | 7440-62-2 | 231-171-1 | - | 0.1 | 0.05 |
| Tungsten | 7440-33-7 | 231-143-9 | - | 1.0 | 1.0 |
| Zirconium dioxide | 1314-23-4 | 215-227-2 | - | - | - |
| | | | | | |

- ❖ ACGIH : American Conference of Governmental Industrial Hygienist
- ❖ TLV : Threshold Limit Value
- ❖ OSHA : Occupational Safety and Health Administration
- ❖ PEL : Permissible Exposure Limit

8-2. Personal protector in welding

- Protection glasses, protection mask: because of protecting eyes, face from arc ray and spatter, shield light number of filter-lens is over 12.
- Dustproof mask, poison-protection mask: ventilation equipment which have an enough capacity must be installed in work-place and if needed, wear a dustproof mask or poison-protection mask
- Protection gloves: leather good is useful in preventing an electric shock and a burn. Wear a cotton gloves in leather gloves.
- Apron: leather good is useful for protecting from the breast to the femoral region.
- Isolation shoe : prevent an electric shock and a burn, protect a foot from out-impact
- Ventilation : partial ventilation equipment is installed for a standard permission
- Emergency eye washing : employer provide eye washing equipment ,for in case that worker's eye is exposed from alien materials

Section 9: Physical and Chemical Properties

Welding consumable applicable to this sheet as shipped is non-reactive, nonflammable, non-explosive and essentially nonhazardous until welded.

- 9-1. Physical State: Solid
- 9-2. Odor: Odorless
- 9-3. Odor threshold: Not applicable
- 9-4. pH Value: Not applicable
- 9-5. Melting point: Not applicable
- 9-6. Early boiling point: Not applicable
- 9-7. Flash point: Not applicable
- 9-8. Evaporation rate: Not applicable
- 9-9. Flammability: Not applicable
- 9-10. Explosion limit - lower: Not applicable
Explosion limit - upper: Not applicable
- 9-11. Vapor pressure: Not applicable
- 9-12. Solubility in water: Not applicable
- 9-13. Vapor density: Not applicable
- 9-14. Density: 7~8.
- 9-15. Partition coefficient N-octanol / water: Not applicable
- 9-16. Spontaneous combustion temperature: Not applicable
- 9-17. Decomposition temperature: Not applicable
- 9-18. Viscosity: Not applicable
- 9-19. Molecular weight: Not applicable

Section 10: Stability and Reactivity

Stable at normal temperatures and under normal pressure.

Hazardous reactions – this product generates hazardous fumes and gases when used in welding but welding fumes and gases cannot be classified simply because the composition and quantity of both are dependent upon the metal being welded, the process, procedure and electrodes used, coatings on the metal being welded, the numbers of welders and the volume of the worker area, the quality the atmosphere. Generally, welding fumes and gases are generated because the ingredients of the components vaporize and react and oxidize. These welding fumes and gases consist of representative iron oxide, manganese, magnesium oxide, silicon oxide, calcium oxide, titanium oxide, etc.

Section 11: Health Hazard Data

Welding fumes consist of complex materials and represent iron oxide, manganese oxide and fluorine oxide.

The following section is the health hazard data.

11.1 Iron oxide

- Acute poisonous character : relatively non-poison at intake
- A generation of cancer : no data
- Health influence: (exposed eye and skin) acute exposure – occur a physical stimulation.

- Chronic exposure – no data.
- (Ingestion) acute exposure - occur a physical stimulation.
Chronic exposure – Occur an iron-pneumoconiosis in case that a welding fume is piled in the lungs.

11.2 Manganese oxide (manganese)

- Acute poisonous character: it is rare for worker to occur an acute poison.
- A generation of cancer : nothing
- Health influence: (Ingestion) acute exposure – May occur an acute pneumonia in case that a welding fume of manganese steel is breathed in.

Chronic exposure - Occur a nervous disease by reason of chronic poison when welded in a limited place.

- Metal fume fever - metal fume fever which have a symptoms like a cold is occurred when a worker ingest a corpuscle of metal oxide, below 1.5 micro(generally 0.02~0.05 micro)
- Initial symptoms appear after 4-12 hours leading to thirst, sweat, metal like smell and unpleasant mouth odor.
- Other symptoms are dry throat, cough, and discomfort
- Ingestion will lead to fever, cold feet, muscular pain and headache.
- This can also lead to vomiting, excess mental activity and have loose bowel movements.

Every symptom is lessened in less than 24~36h. Chronic exposure – chronic metal fume fever don't occur but symptoms occur repeatedly and disappear within one-two days.

Section 12: Data of Environment Influence

- 12-1.** Toxicity: No data available
- 12-2.** Persistence–degradability: No data available
- 12-3.** Bio accumulative potential: No data available
- 12-4.** Mobility in soil: No data available
- 12-5.** Results of PBT and vPvB assessment: No data available

Section 13: Cautions Of Wastes

Follow the rules of the government and the local government when dump wastes.

Section 14: Data for a Transport

- 14.1** Grade classification: No data available
- 14.2** Cautions of a transfer – Don't give a impact to products not to break. Observe the safety driving law.
- 14.3** Prepare a waterproof and a damp proof of products.

Section 15: Expression of Laws and Regulations

Observing the article 39 (express of hazardous materials) of law of industry safety & health and the article 31 of this same law, express the precautionary label on the product.

Section 16: Other Information

16-1. This MSDS is made by TECHNIWELD USA and please refer to the MSDS of each material and data of welding fume & gas from the Korea Occupational Safety & Health Agency.

16-2. Read and understand the manufacturer's instruction and the precautionary label on the product, and follow the laws.

16-3. Reference data: FUMES and GASES in the welding environment (AWS)

Welding: FUME and GASES
(Australian Government Publishing Service Canberra)
MSDS (KISCO-NET) of each material.

Data cooperation: Korea Institute of Industrial Technology