



MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product Type : HARDFACING WELDING ELECTRODE
Manufacturer/Supplier Name : THAI HANSA WELDING ELECTRODES CO., LTD
Telephone No : +666-323-0605
Address : 386/2 MU 1, SOI BEE-THAI, SHUKHUMVIT ROAD,
BANGPOOMAI, SAMUTPRAKARN 10280, THAILAND
Website : www.geminiwelding.com

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview : Coated metal rods in varying colors. These products are normally not considered hazardous as shipped. Gloves should be worn when handling to prevent contaminating hands with product dust.

Some of these products contain nickel, which is classified as toxic by prolonged inhalation, a skin sensitizer and a suspect carcinogen.

Nickel powder is harmful for the environment. These products contain titanium dioxide which is possibly carcinogenic. These products contain quartz, but normally not in an inhalable fraction. Quartz can cause silicosis and may cause cancer.

Avoid eye contact or inhalation of dust from these products. Skin contact is normally no hazard but should be avoided to prevent possible allergic reactions.

Persons with a pacemaker should not go near welding or cutting operations until they have consulted their doctor and obtained information from the manufacturer of the device.

When these products are used in a welding process, the most important hazards are heat, radiation, electric shock and welding fumes.

Heat : Spatter and melting metal can cause burn injuries and start fires.

Radiation : Arc rays can severely damage eyes or skin.

Electricity : Electric shock can kill.

Fumes : Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS INGREDIENTS	CAS NO.	% WEIGHT	OSHA PEL	ACGIH TLV
IRON+	7439-89-6	40-80	5 R* 10 (Oxide Fume)	3R* 5 (Oxide Fume)(A4)
CALCIUM CARBONATE	1317-65-3	0-10	5 R* 5 (as CaO)	2 (as CaO)
FLUORSPAR	7789-75-5	0-10	2.5 (as F)	2.5 (as F) (A4)
TITANIUM DIOXIDE	13463-67-6	0-17	5 R*	10 (A4)
MOLYBDENUM	7439-98-7	0-6	5 R*	0.5R* (Soluble Compounds)(A3) ♦ 10 I* (Elemental/Metal and Insoluble) 3 R* (Elemental/Metal and Insoluble)
#CHROMIUM	7440-47-3	1-30	1 (Metal) 0.5 (Cr II & Cr III Compounds) 0.1 CL** (Cr VI Compounds)	0.5 (Metal) (A4) 0.5 (Cr III Compounds) (A4) 0.05 (Cr VI Soluble Compounds) (A1)
SILICA++ (AMORPHOUS SILICA FUME)	14808-60-7 69012-64-2	1-10	0.1 R* 0.8	0.1 R* 2 R*
#MANGANESE	7439-96-5	0.5-15	5 CL** (Dust) 1, 3 STEL *** (Fume)	0.2 ♦ ♦ (Dust & Fume)
SILICON	7440-21-3	<8	5 R*	10
TITANIUM+	7440-32-6	0-5	5 R*	3 R*
##ALUMINUM	7429-90-5	0-3	5 R* 5 (Fume)	5 (Fume)
MAGNESIUM CARBONATE	546-93-0	0-5	5 R*	10
#NICKEL	7440-02-0	0-10	1 (Metal) 1 (Soluble Compounds) 1 (Insoluble Compounds)	1.5 (Metal) (A5) 0.1 (Soluble Compounds) (A4) 0.2 (Insoluble Compounds) (A1)
SILICATE BINDERS	-----	<5	Not Established	Not Established

R* - RESPIRABLE FRACTION I* - INHALABLE FRACTION ** - CEILING LIMIT

*** - SHORT TERM EXPOSURE LIMIT

(A 1) – CONFIRMED HUMAN CARCINOGEN PER ACGIH

(A 3) – CONFIRMED ANIMAL CARCINOGEN WITH UNKNOWN RELEVANCE TO HUMANS PER ACGIH

(A 4) – NOT CLASSIFIABLE AS A HUMAN CARCINOGEN PER ACGIH

(A 5) – NOT SUSPECTED AS A HUMAN CARCINOGEN PER ACGIH

+ - AS A NUISANCE PARTICULATE COVERED UNDER “PARTICULATES NOT OTHERWISE REGULATED” BY OSHA OR “PARTICULATES NOT OTHERWISE CLASSIFIED” BY ACGIH.

++ - CRYSTALLINE SILICA IS BOUND WITHIN THE PRODUCT AS IT EXISTS IN THE PACKAGE. HOWEVER, RESEARCH INDICATES SILICA IS PRESENT IN WELDING FUME IN THE AMORPHOUS (NONCRYSTALLINE) FORM.

- REPORTABLE MATERIAL UNDER SECTION 313 OF SARA

- REPORTABLE MATERIAL UNDER SECTION 313 OF SARA AS DUST OR FUME.

♦ - 2002 ACGIH LISTED UNDER NOTICE OF INTENDED CHANGES. A2 – “SUSPECTED HUMAN CARCINOGEN”

♦ ♦ - 2002 ACGIH LISTED UNDER NOTICE OF INTENDED CHANGES. LIMITS OF 0.03 MG/M3 (RESPIRABLE FRACTION) ARE PROPOSED AND SHOULD BE CONSIDERED AS TRIAL LIMITS.

THE EXPOSURE LIMIT FOR WELDING FUME HAS BEEN ESTABLISHED AT 5 MG/M³ WITH OSHA'S PEL AND ACGIH'S TLV. THE INDIVIDUAL COMPLEX COMPOUNDS WITHIN THE FUME MAY HAVE LOWER EXPOSURE LIMITS THAN THE GENERAL WELDING FUME PEL/TLV. AN INDUSTRIAL HYGIENIST, THE OSHA PERMISSIBLE EXPOSURE LIMITS FOR AIR CONTAMINANTS (29 CFR 1910.1000), AND THE ACGIH THRESHOLD LIMIT VALUES SHOULD BE CONSULTED TO DETERMINE THE SPECIFIC FUME CONSTITUENTS PRESENT AND THEIR RESPECTIVE EXPOSURE LIMITS.

SECTION 4. FIRST AID MEASURES

Inhalation : If breathing has stopped, perform artificial respiration and obtain medical assistance immediately! If breathing is difficult, provide fresh air and call physician.

Eye contact : For radiation burns due to arc flash, see physician. To remove dusts or fumes flush with water for at least fifteen minutes. If irritation persists, obtain medical assistance.

Skin contact : For skin burns from arc radiation, promptly flush with cold water. Get medical attention for burns or irritations that persist. To remove dust or particles wash with mild soap and water.

Electric Shock : Disconnect and turn off the power. Use a nonconductive material to pull victim away from contact with live parts or wires. If not breathing, begin artificial respiration, preferably mouth-to-mouth. If no detectable pulse, begin Cardio Pulmonary Resuscitation (CPR). Immediately call a physician.

General : Move to fresh air and call for medical aid.

SECTION 5. FIRE FIGHTING MEASURES

No specific recommendations for welding consumables. Welding arcs and sparks can ignite combustible and flammable materials. Use the extinguishing media recommended for the burning materials and fire situation. Wear self-contained breathing apparatus as fumes or vapors may be harmful.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Solid objects may be picked up and placed into a container. Liquids or pastes should be scooped up and placed into a container. Wear proper protective equipment while handling these materials. Do not discard as refuse.

Personal precautions : refer to Section 8.

Environmental precautions : refer to Section 13.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling : Wear safety glasses and gloves to avoid cuts and abrasion when handling welding consumables and their packaging. Do not eat drink or smoke in areas where these products are being used.

Conditions for Safe Storage, Including Any Incompatibilities: Store in a cool, dry area in the original packaging. Keep products away from heat, flame and moisture.

SECTION 8. EXPOSURE CONTRLOS/PERSONAL PROTECTION

Appropriate Engineering Controls: Provide adequate ventilation and/or local exhaust at the weld station to keep fumes and gases away from the welder. Train welders and welding operators to keep their head out of the fumes. See ANSI Z49.1

“Safety in Welding, Cutting, and Allied Processes” for recommendations of safe work practices.

Personal Protective Equipment:

Eye/Face Protection – Wear safety glasses or goggles with appropriate side shields. Wear a helmet or face shield with an appropriate filter lens. Use protective screens to shield others in the work area.

Skin/Body Protection – Wear hand, head and body protection including welder’s gloves, protective face shield and long sleeved protective clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Solid, non-volatile with varying color.

Melting Point : >1300°C / >2300°F

SECTION 10. STABILITY AND REACTIVITY

General : These products are only intended for normal welding purposes.

Stability : These products are stable under normal conditions.

Reactivity : Contact with chemical substances like acids or strong bases could cause generation of gas. When these products are used in a welding process, hazardous decomposition products would include those from the volatilization, reaction or oxidation of the materials listed in Section 3 and those from the base metal and coating.

The amount of fumes generated from these products varies with welding parameters and dimensions but is generally no more than 1 to 10 g/kg consumable. Fumes from these products may contain compounds of the following chemical elements: Fe, O, Mn, Cr, Ni, Si, Mo, Cu, W, and Nb. The rest is not analyzed, according to available standards

Refer to applicable national exposure limits for fume compounds, including those exposure limits for fume compounds found in Section 8. A significant amount of the chromium in the fumes can be hexavalent chromium, which has a very low exposure limit in some countries. Manganese and nickel also have low exposure limits, in some countries, that may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone. Air contaminants around the welding area can be affected by the welding process and influence the composition and quantity of fumes and gases produced.

SECTION 11. TOXICOLOGICAL INFORMATION

Inhalation of welding fumes and gases can be dangerous to your health. Classification of welding fumes is difficult because of varying base materials, coatings, air contamination and processes. The International Agency for Research on Cancer has classified welding fumes as possibly carcinogenic to humans (Group 2B).

Acute toxicity : Overexposure to welding fumes may result in symptoms like metal fume fever, dizziness, nausea, dryness or irritation of the nose, throat or eyes.

Chronic toxicity : Overexposure to welding fumes may affect pulmonary function. Prolonged inhalation of nickel and chromium compounds above safe exposure limits can cause cancer. Overexposure to manganese and manganese compounds above safe exposure limits can cause irreversible damage to the central nervous system, including the brain, symptoms of which may include slurred speech, lethargy, tremor, muscular weakness, psychological disturbances and spastic gait.

SECTION 12. ECOLOGICAL INFORMATION

Welding consumables and materials could degrade/weather into components originating from the consumables or from the materials used in the welding process. Avoid exposure to conditions that could lead to accumulation in soils or groundwater

SECTION 13. DISPOSAL CONSIDERATIONS

Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal and local regulations. Use recycling procedures if available.

SECTION 14. TRANSPORT INFORMATION

No international regulations or restrictions are applicable.

SECTION 15. REGULATORY INFORMATION

Read and understand the manufacturer's instructions, your employer's safety practices and the health and safety instructions on the label. Observe any federal and local regulations. Take precautions when welding and protect yourself and others.

WARNING : Welding fumes and gases are hazardous to your health and may damage lungs and other organs. Use adequate ventilation.

ELECTRIC SHOCK can kill.

ARC RAYS and **SPARKS** can injure eyes and burn skin.

Wear correct hand, head, eye and body protection.

SECTION 16. OTHER INFORMATION

THAI HANSA WELDING ELECTRODES CO., LTD. requests the users of these products to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of these products a user should:

- notify its employees, agents and contractors of the information on this SDS and any product hazards/safety information.
- furnish this same information to each of its customers for these products.
- request such customers to notify employees and customers for the same product hazards and safety information.

The information herein is given in good faith and based on technical data that ESAB believes to be reliable. Since the conditions of use are outside our control, we assume no liability in connection with any use of this information and no warranty, expressed or implied is given. Contact THAI HANSA WELDING ELECTRODES CO., LTD. for more information.