

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product identifier: Covered electrode
Trade Name: LB-52U
Manufacturer/Supplier: Kobe Steel, Ltd., Welding Business
Address: 100-1, Miyamae Fujisawa, 251-8551 JAPAN
Telephone number: +81-466-20-3217
Fax number: +81-466-20-3289
Emergency telephone number: +81-466-20-3217

2. HAZARDS IDENTIFICATION

Avoid eye contact or inhalation of dust from the product. Skin contact is normally not hazardous but should be avoided to prevent possible allergic reaction. Occupational exposure limits of components are described in section 3. When this product is used in a welding process the most significant hazards are electric shock, fumes, gases, radiation, spatter, slag and heat.

Shock: Electric shock can kill.
Fumes: Overexposure to welding fumes may result in symptoms like dizziness, nausea, dryness or irritation of the nose, throat or eyes. Chronic overexposure to welding fumes may affect pulmonary function. This product contains substances that are suspected of being cancer-causing agents and may affect the nervous system.
Gases: Gases may cause gas poisoning.
Radiation: Arc rays can severely damage eyes or skin.
Spatter, slag and heat: Spatter and slag can damage eyes. Spatter, slag, melting metal, arc rays and hot welds can cause burn injuries and start fires.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No.	EINECS No.	Risk category	Danger symbol	Security category	APPROX wt(%)	ACGIH TLV-TWA (mg/m ³)
Iron	7439-89-6	231-096-4	-	-	-	Balance	5 (Oxide)
Calcium carbonate	471-34-1	207-439-9	-	-	-	5-20	10
Silicon dioxide	7631-86-9	231-545-4	-	-	-	≦8	(N/A)
Calcium fluoride	7789-75-5	232-188-7	-	-	-	≦5	2.5 as F
Titanium dioxide	13463-67-7	236-675-5	-	-	-	≦5	10
Silicon	7440-21-3	231-130-8	-	-	-	≦3	(N/A)
Manganese	7439-96-5	231-105-1	-	-	-	≦3	0.2
Potassium oxide	12136-45-7	235-227-6	-	-	-	≦3	(N/A)
Aluminum oxide	1344-28-1	215-691-6	-	-	-	≦1	(N/A)
Sodium alginate	9005-38-3	-	-	-	-	≦1	(N/A)
Sodium oxide	1313-59-3	215-208-9	-	-	-	≦1	(N/A)
Magnesium	7439-95-4	231-104-6	11 15	F	2 7/8 43	≦1	10 (Oxide)
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

4. FIRST AID MEASURES

General: Move to fresh air and call for medical aid.
Inhalation: If breathing is difficult, provide fresh air.
Skin contact: Cool area with ice or cold water.
Eye contact: Do not rub eyes. Rinse eyes with clean water.

Electric shock: Disconnect and turn off power. If the victim is semi- or unconscious, open the airway. If the victim cannot breath, give artificial respiration. If there is no pulse, massage the chest and apply artificial respiration.

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Refer to section 8
Environmental precautions: Refer to section 12 and 13
Method for cleaning up: Refer to section 13

7. HANDLING AND STORAGE

Prevention of electric shock:

Do not touch live electrical parts such as the welding wire and welding machine terminals. Wear insulated gloves and safety boots.

Prevention of fire and explosion:

Remove flammable and combustible materials and liquids.

Prevention of harm when handling welding consumables:

Handle with care to avoid stings and cuts. Hold the welding wire manually when loosening the wire.

Caution for storage:

Store welding consumables inside a room without humidity. Do not store welding consumables directly on the ground or beside a wall. Keep welding consumables away from chemical substances like acids which could cause chemical reactions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation:

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below the TLVs in the worker's breathing zone and the general area. Use extra ventilation when welding galvanized plate or coated plate.

Respiratory protection:

Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV. Keep head out of the fumes and gases.

Eye protection:

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

Protective clothing:

Wear head, hand, and body protection which help to prevent injury from radiation, sparks and electric shock. At a minimum, this includes welder's gloves and a protective face shield and may include arm protectors, aprons, hats, shoulder protection, as well as dark substantial clothing. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Ear protection:

Wear earplugs or earmuffs when using engine driven arc welding machine or pulsed arc welding machine that generates high-level noise.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Solid, non-volatile
Odor: Odorless
Color: Grayish
Form: Rod

10. STABILITY AND REACTIVITY

General: This product is intended only for normal welding purposes.
Stability: This product is stable under normal conditions.
Reactivity: Contact with chemical substances like acids could cause generation of gas.

Hazardous decomposition products includes those from the volatilization, reaction or oxidation of the materials listed in section 2 and those from the base metal and coating.

Reasonably expected fume constituents of this product would include oxides of metals.

Example of fume analysis: (wt%)

Fe <70 , Mn <15 , F <7.0 , Ni <3.0

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 have low exposure limits, in some countries, that may be easily exceeded.

Reasonably expected gaseous products would include carbon oxides, nitrogen oxides and ozone.

11. TOXICOLOGICAL INFORMATION

Inhalation of welding fumes and gases can be dangerous to your health. The composition and quantity of both are dependent upon the material being worked, the process, procedures, and consumables used.

Acute toxicity:

Overexposure to the gases, fumes and dusts may include irritation of the eyes, lungs, nose and throat. Some toxic gases associated with welding may cause pulmonary edema, asphyxiation, and death. Acute overexposure may include signs and symptoms such as watery eyes, nose and throat irritation, headache, dizziness, difficulty in breathing, frequent coughing, or chest pain. The presence of nickel compounds in fume can cause metallic taste, nausea, tightness of chest, fever, and allergic reaction. Exposure to the fluoride ion may cause hypocalcaemia-calcium deficiency in the blood that can result in muscle cramps and inflammation and necrosis of mucous membranes.

Chronic toxicity:

Overexposure to air contaminants may lead to their accumulation in the lungs, a condition which may be seen as dense areas on chest X-rays. The severity of the change is proportional to the length of the exposure. The changes may be caused by non-work factors such as smoking, etc. Long term exposure to welding and allied processes gasses, dusts and fumes may contribute to pulmonary irritation or pneumoconiosis. Nickel are considered carcinogenic. Long term overexposure to nickel fumes may also cause pulmonary fibrosis and edema. Overexposure to manganese compounds may affect the central nervous system, symptoms of which are languor, sleepiness, muscular weakness, emotional disturbances and spastic gait. The effect of manganese on the nervous system is irreversible. Overexposure to copper fumes may lead to copper poisoning, resulting in hemolytic anemia and liver, kidney and spleen damage. Inhalation of too much iron oxide fume over a long time can cause siderosis, sometimes called "iron pigmentation" of the lung, which can be seen on a chest x-ray but causes little or no disability. Chronic overexposure to iron (>50-100mg Fe per day) can result in pathological deposition of iron in body tissues, symptoms of which are fibrosis of the pancreas, diabetes mellitus, and liver cirrhosis. Overexposure to respirable crystalline silica may result in silicosis, a disabling lung disease; overexposure to respirable crystalline silica is a known cause of carcinogenicity in humans. Welding fumes (not otherwise specified) are possibly carcinogenic to humans. Chronic fluoride absorption can result in osseous fluorosis, increased radiographic density of the bones and mottling of the teeth.

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.

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. Residues from welding consumables and processes could degrade and accumulate in soils and groundwater.

14. TRANSPORT INFORMATION

No international regulations or restrictions are applicable.

15. REGULATORY INFORMATION

Warning text on label:

WARNING: PROTECT yourself and others. Read and understand this information.

FUMES AND GASES can be hazardous to your health.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can KILL.

- Before use, read and understand the manufacturer's instructions, Material Safety Data Sheets (MSDSs), and your employer's safety practices.
- Keep your head out of the fumes.
- Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not touch live electrical parts.

WARNUNG: Schützen Sie sich selbst und andere. Lesen und verstehen Sie diese Information.

Schweißrauch und Gase können gesundheitsschädlich sein.

Lichtbogen können die Augen verletzen und die Haut verbrennen.

Elektrischer Schlag kann töten.

- Bitte lesen und verstehen Sie vor Inbetriebnahme die Betriebsanleitung des Herstellers, das Material Sicherheitsdatenblatt und die Sicherheitsvorschriften Ihres Arbeitgebers.
- Bleiben Sie mit dem Kopf den Schweißrauch fern.
- Sorgen Sie für ausreichende Belüftung und Dunstabzug, um die Schweißrauch und Gase nicht in Ihre Atemzone und die Umgebung gelangen zu lassen.
- Tragen Sie vorschriftsmässigen Augen-, Ohren- und Körperschutz.
- Fassen Sie keine stromführenden Teile an.

16. OTHER INFORMATION

Refer to:

USA: American National Standard (ANSI) Z49.1 "Safety in Welding, Cutting, and Allied Processes", American Welding Society, 550 N. W. LeJeune Road, Miami, Florida, 33126, USA,
Occupational Safety and Health Administration (OSHA) Safety and Health Standards, 29CFR 1910, U.S Gov. Printing Office, Washington, D.C. 20210, USA,

American Conference of Governmental Industrial Hygienists (ACGIH), Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices, 1330 Kemper Meadow Drive, Cincinnati, Ohio 45240-4148, USA.

UK: WMA Publication 236 and 237, "Hazards from Welding fume", "The arc welder at work, some general aspects of health and safety".

Germany: BG-Regel "Schweissen, Schneiden und verwandte Verfahren" (BGR 500, Teil 2 Kapitel 2.26).

R-pharases: R40 - Limited evidence of a carcinogenic effect.

R43 - May cause sensitization by skin contact.

R11 – Highly flammable.

R15 – Contact with water liberates extremely flammable gases.

R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed.

This Material Safety Data Sheet (MSDS) describes the products with respect to safety requirements. This MSDS is prepared in accordance with ISO 11014-1, Safety data sheet for chemical products – Part 1: Content and order of sections. The information given in this MSDS is based on the present level of our knowledge and experience. Kobe Steel, Ltd., Welding Business requests the users of this product to study the MSDS and become aware of product hazards and safety information. The data given is not intended as a confirmation of product properties and does not constitute a legal contractual relationship, nor should it be used as basis for ordering these products.