

SAFE USE GUIDE

Tungsten Electrodes

Ceriated, Lanthanated and Multi-Oxide

Date:	25 SEPT 2019
SUG No.	SUG005
Version:	3.0

IMPORTANT. This Guide contains important safety and health information – **READ Both Sides.** Before using the product, please read and understand the **Warnings and Instructions on the Product Container and the Safety Data Sheet (SDS), previously MSDS, for the product you are using.** See your Safety Director or Supervisor to obtain a copy of the SDS. You may also obtain a copy of the SDS and sign up to receive update alerts at www.lincolnelectric.com/sds or from your Lincoln Electric Distributor.

TUNGSTEN INERT GAS SAFETY



HAZARD	SAFETY PRACTICES
<p><u>Electric shock can kill</u></p>	<ul style="list-style-type: none"> Wear dry gloves free of holes or split seams. Change as necessary to keep gloves dry. Do not touch electrically “hot” parts or welding electrode with bare skin or wet clothing. Insulate yourself from the work piece and ground using dry plywood, rubber mats or other dry insulation. If the area is wet and your body cannot be insulated from work piece with dry insulation, use a semiautomatic, constant-voltage welder or stick welder with voltage reducing device. Keep electrode holder and cable insulation in good condition. Do not use if insulation is damaged/missing.
<p><u>Fumes and gases can be dangerous</u></p> <p>See Health Hazards Page 2</p>	<ul style="list-style-type: none"> Read the warnings and instructions on the product label and Safety Data Sheet (SDS) available in the workplace (ask your supervisor). Provide additional ventilation and exhaust where special ventilation is needed or if using this product in a confined area. Know what the base metal is, and determine if there is any paint, plating, or coating that could expose you to toxic fumes and/or gases. Remove it from the metal surface, if possible. Position your head away from the fume plume to keep the amount of fume you breathe as low as possible.
<p><u>Use adequate ventilation and/or exhaust</u></p>	<ul style="list-style-type: none"> Use adequate ventilation and/or exhaust to keep the air you breathe clear and comfortable. Your work area should have enough ventilation and/or local exhaust to control your exposure to the fumes and gases so the applicable exposure limits are not exceeded. If you have any concern about ventilation or your exposure level, ask your employer to confirm that exposures do not exceed those limits by obtaining and analyzing a representative sample of air in the breathing zone. If you start to feel uncomfortable, dizzy or nauseous, you may be overexposed to fumes and gases, or suffering from oxygen deficiency. Stop using the product and get some fresh air immediately. Notify your supervisor and co-workers so the situation can be corrected and other workers can avoid the hazard. Be sure you are following these safe practices, the product labeling and SDS and improve the ventilation in your area. Do not resume operations until the situation has been corrected. Use a respirator if exposure to fume cannot be controlled or if outside and natural air movement is not enough to keep fume out of your breathing zone.
<p><u>Molten metal and sparks can cause fire or explosion</u></p>	<ul style="list-style-type: none"> Do not use this product on containers which have held combustible materials unless procedures for the safe welding and cutting of containers are carefully followed (see AWS F4.1). Remove flammable materials from work area or shield from hot metal & heat. Keep a fire watch in area during and after using this product. Keep a fire extinguisher in the work area. Wear flame resistant clothing and headgear that is free of frayed edges. Handle all compressed gas cylinders in accordance with sound safety practice: store cylinders upright and secure them using an approved lock-down device. Always use the correct pressure regulator for the specific gas. Separate fuel gas and oxidizers when not in use.
<p><u>Arc rays, sparks & molten metal can burn eyes and skin</u></p>	<ul style="list-style-type: none"> Select a proper filter lens which provides adequate protection for your eyes and is comfortable for you while using this product. Always use a helmet and/or appropriate head, face and eye protection during application. Process may generate UV radiation. Wear flame resistant clothing that provides full coverage for your skin. Use earplugs to keep noise, sparks and molten metal from damaging your ears. Use non-flammable welding/hot work screens to protect others.

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GRINDING

Grinding tungsten electrodes produce dust and flying sparks which may cause injury and start fires. Do not grind where flying sparks can strike flammable or combustible material. Use local exhausted (forced ventilation) at the grinder or wear an approved respirator. Wear proper face, hand, ear and body protection. Keep flammables away from the grinding operation. Properly dispose of grinding dust in an environmentally safe and compliant way.

WELDING FUME

Welding fume produced from this type of welding electrode may contain particles from the consumables, electrodes, base metal and base metal coating. These complex particles contain one or more of the constituents listed below. Gases produced when welding may include carbon monoxide, carbon dioxide, fluorine, nitrogen oxides and ozone, which may be produced from ultraviolet radiation from the arc. An approved respirator should be used unless exposure assessments are below applicable exposure limits.

HEALTH HAZARDS

The International Agency for Research on Cancer (IARC) has determined that welding fumes and ultraviolet radiation from welding are carcinogenic to humans. According to IARC, welding fumes cause cancer of the lung and positive associations have been observed with cancer of the kidney. Also according to IARC, ultraviolet radiation from welding causes ocular melanoma. IARC identifies gouging, brazing, carbon arc or plasma arc cutting, and soldering as processes closely related to welding. The most immediate effects of exposure to welding fumes and gases depend on the amount and length of exposure. They are temporary, and include symptoms of burning eyes and skin, dizziness, nausea, and fever. Long-term exposure can lead to siderosis (iron deposits in the lungs) and may affect breathing. Bronchitis and some lung fibrosis have been reported.

Welding fumes may contain compounds which are reported to have the following health effects of overexposure. Listed below are materials with significant potential health effects that are commonly found in welding fume. This list is not specific to any particular welding consumable or process.

- **Barium** overexposure may cause severe stomach pain, slow pulse rate, irregular heartbeat, convulsions, and muscle spasms.
- **Chromium and its compounds** are on the IARC and NTP lists as posing a cancer risk to humans. Some forms of chromium are known or suspected to cause lung cancer in processes other than welding, and asthma has been reported.
- **Cobalt** may cause respiratory irritation, lung damage, asthma, and chronic bronchitis. Skin contact may cause dermatitis.
- **Fluorides** can cause abdominal pain, diarrhea, muscular weakness and convulsions. In extreme cases it can cause loss of consciousness and death. 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.
- **Manganese** overexposure may affect the brain and central nervous system, resulting in poor coordination, difficulty speaking, and arm or leg tremor. This condition can be irreversible.
- **Nickel** and its compounds are on the IARC and NTP lists as posing respiratory cancer risk, and are skin sensitizers with symptoms ranging from slight itch to severe dermatitis.
- **Silica** overexposure can cause severe lung damage (silicosis or cancer). Crystalline silica is present in submerged arc flux.
- **Titanium dioxide** is listed by IARC as possibly carcinogenic to humans based on animal studies.

Materials used in base metal coatings may include cadmium, lead, zinc and various organic materials which have health effects. Refer to the SDS for the coating being used.

DISPOSAL INFORMATION

Refer to the product's SDS and contact your Supervisor or Environmental Manager to determine your company's approved waste disposal or recycling procedures for welding products and by-products according to Federal, State and Local regulations.

REFERENCES

For additional information on welding safety, please refer to www.lincolnelectric.com/safety which contains links to the following, most of which are available free of charge:

- **Safety Data Sheet (SDS)**
- **Lincoln Interactive Welding Safety DVD**
- **Lincoln Safety Publication E205**
- **OSHA Publication 2206** (29CFR1910)
- **ANSI Z49.1** "Safety in Welding, Cutting and Allied Processes"
- **AWS F4.1** "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping"
- **Compressed Gas Association pamphlets C-6-1968 and C-8-1962** and in the Hazardous Materials Regulations of the Department of Transportation (49 CFR parts 171-179 and 14 CFR part 103)

