**SECTION I - IDENTIFICATION**

**Manufacturer/Supplier:** The Lincoln Electric Company  
22801 St. Clair Avenue  
Cleveland, OH 44117-1199  
(216) 481-8100

**Product Type:** Cored Electrode

**Classification:** AWS E7010-A1

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**SECTION II - HAZARDOUS MATERIAL (1)**

**Ingredients:**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
<th>Wt.%</th>
<th>TLV mg/m³</th>
<th>PEL mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>&lt; 5</td>
<td>10*</td>
<td>15*</td>
</tr>
<tr>
<td>Cellulose and other carbohydrates</td>
<td>65996-61-4</td>
<td>&lt; 5</td>
<td>10*</td>
<td>15*</td>
</tr>
<tr>
<td>Silicates and other binders</td>
<td>1344-09-8</td>
<td>&lt; 5</td>
<td>10*</td>
<td>15*</td>
</tr>
<tr>
<td>Titanium dioxides</td>
<td>13463-67-7</td>
<td>&lt; 5</td>
<td>10</td>
<td>15</td>
</tr>
<tr>
<td>Mineral silicates</td>
<td>1332-58-7</td>
<td>&lt; 5</td>
<td>&lt; 0.5</td>
<td>&lt; 0.5</td>
</tr>
<tr>
<td>Manganese and/or manganese alloys and compounds (as Mn)</td>
<td>7439-96-5</td>
<td>1</td>
<td>0.02</td>
<td>5 (c)</td>
</tr>
<tr>
<td>Iron oxides</td>
<td>65996-74-9</td>
<td>1</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>Molybdenum alloys (as Mo)</td>
<td>7439-98-7</td>
<td>0.5</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Quartz</td>
<td>14808-60-7</td>
<td>&lt; 0.5</td>
<td>#0.025**</td>
<td>#0.1**</td>
</tr>
<tr>
<td>Carbon steel core wire</td>
<td>7439-89-6</td>
<td>80</td>
<td>10*</td>
<td>15*</td>
</tr>
</tbody>
</table>

**Supplemental Information:**

(*) Not listed. The OSHA PEL for nuisance particles is 15 milligrams per cubic meter. The ACGIH guideline for total particulate is 10 milligrams per cubic meter. TLV value for iron oxide is 10 milligrams per cubic meter. PEL value for iron oxide is 10 milligrams per cubic meter. TLV value for iron oxides is 5 milligrams per cubic meter.

(**) As respirable dust.

(****) Subject to the reporting requirements of Sections 311, 312, and 313 of the Emergency Planning and Community Right-to-Know Act of 1986 and of 40CFR 370 and 372.

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**SECTION III - HAZARDOUS DATA**

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section VI. Product is inert, no special handling or spill procedures required. Not regulated by DOT.

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(Continued on side two)
SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m³. ACGIH-1999 Preface states that the TLV-TWA should be used as guides in the control of health hazards and should not be used as fine lines between safe and dangerous concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Government Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may create one or more of the following health hazards:
Fumes and Gases can be dangerous to your health. Common entry is by inhalation. Other possible routes are skin contact and ingestion.

- Short-term (acute) overexposure to welding fumes may result in discomfort such as metal fume fever, dizziness, nausea, or dryness or irritation of nose, throat, or eyes. May aggravate pre-existing respiratory problems (e.g., asthma, emphysema).

- Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron deposits in lung) and may affect pulmonary function. Manganese overexposure can affect the central nervous system, resulting in impaired speech and movement. Bronchitis and some lung fibrosis have been reported. Titanium dioxide is listed on the IARC (International Agency for Research on Cancer) as a Group 2B carcinogen (possibly carcinogenic to humans based on animal studies). Respiratory exposure to the crystalline silica present in this welding electrode is not anticipated during normal use. Respiratory overexposure to airborne crystalline silica is known to cause silicosis, a form of disabling pulmonary fibrosis which can be progressive and may lead to death. Crystalline silica is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. WARNING: This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code Section 25249.5 et seq.)

Arc Rays can injure eyes and burn skin. Skin cancer has been reported.

Emergency and First Aid Procedures: Call for medical aid. If welding must be performed in damp locations or with wet clothing, on metal structures or when in cramped positions such as sitting, kneeling or lying, or if there is a high risk of unavoidable or accidental contact with workpiece, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

SECTION V - REACTIVITY DATA

Hazardous Decomposition Products: Welding fumes and gases cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedure 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, or galvanizing), the number of welders and the volume of the worker 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 vapors from cleaning and degreasing activities.)

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. 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: Primarily iron oxide; secondarily complex oxides of manganese, molybdenum, silicon, sodium and titanium.

Maximum fume exposure guideline for this product (based on manganese content) is 0.5 milligrams per cubic meter.

Gaseous reaction products may include carbon monoxide and carbon dioxide. Oxygen and nitrogen oxides may be formed by the radiation from the arc.

Determine the composition and quantity of fumes and gases to which workers are exposed by taking an air sample from inside the welder’s helmet if worn or in the worker’s breathing zone. Improve ventilation if exposures are not below limits. See ANSI/AWS F1.1, F1.2, F1.3 and F1.5, available from the American Welding Society, 8669 Doral Blvd. Doral, FL 33166.

SECTION VI AND VII

CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE


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.

Respiratory Protection: Use respirable fume respirator or air supplied respirator when welding in confined space or general work area when local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use face shield with filter lens shade number 12 or darker. Shield others by providing screens and flash goggles.

Protective Clothing: Wear hand, head, and body protection which help to prevent injury from radiation, sparks and electrical shock. See Z49.1.

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 permit electrically live parts or electrodes to contact skin . . . or clothing or gloves if they are wet. Insulate from work and ground.

Disposal Information: Discard any product, residue, disposable container, or liner as ordinary waste in an environmentally acceptable manner according to Federal, State and Local Regulations unless otherwise noted. No applicable ecological information available.