### SECTION I: IDENTIFICATION

**Manufacturer/Supplier:** The Lincoln Electric Company  
2251 St. Clair Avenue  
Cleveland, OH 44117-1199  
(216) 481-6100

**Product Type:** Covered Electrode  
**Classification:** Arc Welding

### SECTION II: HAZARDOUS MATERIALS

**IMPORTANT!**  
This section covers the materials from which this product is manufactured. The fumes and gases produced during welding with the normal use of this product are covered by Section V; see it for industrial hygiene information.

CAS Number shown is representative for the ingredients listed. All ingredients listed may not be present in all sizes.

1. The term "hazardous" in "Hazardous Materials" should be interpreted as a term required and defined in the Hazards Communication Standard and does not necessarily imply the existence of any hazard.

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No.</th>
<th>Wt. %</th>
<th>TLV&lt;sub&gt;3&lt;/sub&gt; mg/m&lt;sup&gt;3&lt;/sup&gt;</th>
<th>PEL&lt;sub&gt;3&lt;/sub&gt; mg/m&lt;sup&gt;3&lt;/sup&gt;</th>
<th>Supplemental Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose and other carbonates</td>
<td>85996-61-4</td>
<td>&lt; 5</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>* Not listed. Nuisance value maximum is 10 mg/m&lt;sup&gt;3&lt;/sup&gt;. PEL value for iron oxide is 10 mg/m&lt;sup&gt;3&lt;/sup&gt;. TLV value for iron oxide is 5 mg/m&lt;sup&gt;3&lt;/sup&gt;.</td>
</tr>
<tr>
<td>Silicates and other minerals</td>
<td>1344-09-8</td>
<td>&lt; 5</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>7439-89-6</td>
<td>&lt; 5</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Titanium dioxide (as Ti)**</td>
<td>13463-67-7</td>
<td>&lt; 5</td>
<td>10</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Manganese and/or manganese alloys and compounds (as Mn)**</td>
<td>7439-96-5</td>
<td>0.5</td>
<td>1.0(&lt;sup&gt;c&lt;/sup&gt;)</td>
<td>1.0(&lt;sup&gt;c&lt;/sup&gt;)</td>
<td>*** 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.</td>
</tr>
<tr>
<td>Iron oxides (as Fe)</td>
<td>85996-74-9</td>
<td>0.5</td>
<td>5</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Metallic carbonates</td>
<td>563-71-3</td>
<td>0.5</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Alkali carbonates</td>
<td>584-08-7</td>
<td>&lt; 0.5</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Graphite</td>
<td>7782-42-5</td>
<td>&lt; 0.5</td>
<td>2.5</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Carbon steel core wire</td>
<td>7439-89-6</td>
<td>80</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>10&lt;sup&gt;*&lt;/sup&gt;</td>
<td>(c) Values are for manganese fume. STEL (Short Term Exposure Limit) is 3.0 milligrams per cubic meter.</td>
</tr>
</tbody>
</table>

### SECTION III: FIRE AND EXPLOSION HAZARD DATA.

Non Flammable; Welding arc and sparks can ignite combustibles and flammable products. See 249.1 referenced in Section VI.

Supersedes 4.2.3

(CONTINUED ON SIDE TWO)
SECTION IV. HEALTH HAZARD DATA

Threshold Limit Values: The ACGIH recommends general limit for Welding Fume NOC (Not Otherwise Classified) is 5 mg/m³.

ACGIH 1987-88.pdf recommends that the TLV-TWA values should be used as guides in the control of health hazards and should not be used as a complete guide for safe and healthy concentrations. See Section V for specific fume constituents which may modify this TLV. Threshold Limit Values are figures published by the American Conference of Governmental Industrial Hygienists. Units are milligrams per cubic meter of air.

Effects of Overexposure: Electric arc welding may cause 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.
- Long-term chronic overexposure to welding fumes can cause 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.

- Arc Rays can injure eyes and burn skin.
- Electric Shock can kill. If welding must be performed in damp locations or with wet clothing, on metal structures or when in contact with water, cramping, such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with workplace, use the following equipment: Semiautomatic DC Welder, DC Manual (Stick) Welder, or AC Welder with Reduced Voltage Control.

Emergency and First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by the American Red Cross. If breathing is difficult give oxygen. If not breathing employ CPR (Cardiopulmonary Resuscitation) techniques. IN CASE OF ELECTRICAL SHOCK, turn off power and follow recommended treatment. In all cases call a physician.

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 decomposition 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 work area, the quality and amount of ventilation, the position of the welder's head with regard 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 electric arc 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, potassium, silicon, sodium, and titanium.

Maximum fume exposure guideline and PEL for this product is 5.0 milligrams per cubic meter.

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

Determine the composition and quantity of the fumes and gases 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, F1.4, and F1.5 available from the American Welding Society, 500 N.W. LeJeune Road, Miami, FL 33126.

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. Train the welder to keep his head out of the fumes.

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 guards.

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, hoods, shoulder protection, as well as dark substantial clothing. Insulate the welder not to permit electrically live parts or electronics 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 unless otherwise noted.