Date:	**7/1/2010**	**MSDS No.:**	**US-M460-C**
Trade Name:	**Blue Max Manual Electrodes**		
Sizes:	**All**		
Supersedes:	**11/12/2008**		

M A T E R I A L S A F E T Y D A T A S H E E T

For Welding Consumables and Related Products

Conforms to Hazard Communication Standard 29CFR 1910.1200 Rev. October 1988

SECTION I - IDENTIFICATION

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

Product Type: **Covered Electrode**

Classification: ***Blue Max*** **308/308L AC-DC 309/309L AC-DC 316/316L AC-DC 2100**

SECTION II - HAZARDOUS MATERIAL (1)

I M P O R T A N T !

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. All materials are listed on the TSCA inventory.

Ingredients:	CAS No.	Wt.%	TLV mg/m^3	PEL mg/m^3
Titanium dioxides	**13463-67-7**	**15**	**10**	**15**
Mineral silicates	**1332-58-7**	**10**	**5****	**5****
Chromium and chromium alloys or compounds (as Cr)*****	**7440-47-3**	**< 5**	**0.5(b)**	**1.0(b)**
Limestone and/or calcium carbonate	**1317-65-3**	**< 5**	**10***	**15**
Silicates and other binders	**1344-09-8**	**< 5**	**10***	**15***
Iron	**7439-89-6**	**< 5**	**10***	**15***
Iron oxides	**65996-74-9**	**< 5**	**5**	**10**
Quartz	**14808-60-7**	**< 5**	**#0.05****	**#0.1****
Manganese and/or manganese alloys and compounds (as Mn)*****	**7439-96-5**	**1**	**0.2**	**5 (c)**
Fluorides (as F)	**7789-75-5**	**1**	**2.5**	**2.5**
Nickel (metal)***** **(2100 and 316 types only)**	**7440-02-0**	**< 0.5**	**1.5**	**1**
Cellulose and other carbohydrates	**65996-61-4**	**< 0.5**	**10***	**15***
Molybdenum alloys (as Mo) **(316 type only)**	**7439-98-7**	**< 0.5**	**10**	**10**
Lithium compounds (as Li)	**554-13-2**	**< 0.5**	**10***	**15***
Stainless steel core wire	**7439-89-6**	**65**	**10***	**15***
Nominal core wire composition:				
Chromium*****	**7440-47-3**	**20-30**	**0.5(b)**	**1.0(b)**
Nickel*****	**7440-02-0**	**10-13**	**1.5**	**1**
Molybdenum **(316 type only)**	**7439-98-7**	**2.5**	**10**	**10**
Manganese*****	**7439-96-5**	**2.0**	**0.2**	**5 (c)**
Iron	**7439-89-6**	**bal.**	**10***	**10***

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. 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.**

(b) **The OSHA PEL for chromium (VI) is 5 micrograms (0.005 milligrams) per cubic meter. The TLV for water soluble chromium (VI) is 0.05 milligrams per cubic meter and the TLV for insoluble chromium (VI) is 0.01 milligrams per cubic meter.**

(c) **Value is for manganese fume. Present PEL is 5 milligrams per cubic meter (ceiling value). Values proposed by OSHA in 1989 were 1.0 milligrams per cubic meter TWA and 3.0 milligrams per cubic meter STEL (Short Term Exposure Limit).**

(#) **Crystalline silica (quartz) is on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a carcinogenic risk to humans.**

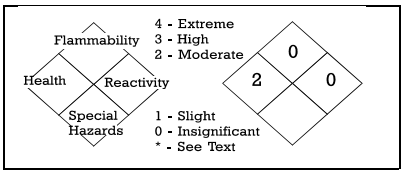
SECTION III - HAZARD DATA

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.

(CONTINUED ON SIDE TWO)

Product: Blue Max Manual Electrodes

Date: 7/1/2010



SECTION IV - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for Welding Fume NOS - (Not Otherwise Specified) is 5 mg/m^3. 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). Exposure to extremely high levels of fluorides can cause abdominal pain, diarrhea, muscular weakness, and convulsions. In extreme cases it can cause loss of consciousness and death.

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. Chromates may cause ulceration and perforation of the nasal septum. Liver damage and allergic reactions, including skin rash, have been reported. Chromates contain the hexavalent form of chromium. Hexavalent chromium and its compounds are on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. 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. 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. Nickel and its compounds are on the IARC (International Agency for Research on Cancer) and NTP (National Toxicology Program) lists as posing a cancer risk to humans. Nickel compounds are skin sensitizers with symptoms usually occurring after repeated exposure - ranging from a slight itch to severe dermatitis. 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.*
Electric Shock can kill. 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.

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 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 fluorides and complex oxides of potassium, iron and silicon; secondarily complex oxides of aluminum, chromium, manganese, nickel, sodium and titanium.

Maximum fume exposure guideline for this product (based on Cr (VI) content) is 0.08 milligrams per cubic meter.

Keep exposure as low as possible. **Indoors, use local exhaust; outdoors, a respirator may be required.**

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 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, 550 N.W. LeJeune Road, Miami, FL 33126.

SECTION VI AND VII
CONTROL MEASURES AND PRECAUTIONS FOR SAFE HANDLING AND USE

Read and understand the manufacturer's instruction and the precautionary label on the product. Request Lincoln Safety Publication E205. See American National Standard Z49.1, "Safety In Welding, Cutting and Allied Processes" published by the American Welding Society, 550 N.W. LeJeune Road, Miami, FL, 33126 (both available for free download at http://www.lincolnelectric.com/community/safety/) and OSHA Publication 2206 (29CFR1910), U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954 for more details on many of the following:

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. *Keep exposure as low as possible.*

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.