



13 Executive Drive, Suite 19
Fairview Heights, Illinois 62208
Telephone: (618) 624-8783
Toll Free: (800) 272-7633
Fax: (618) 624-8777

MATERIAL SAFETY DATA SHEET

MAY BE USED TO COMPLY WITH OSHA'S HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200 AND SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) OF 1986 PUBLIC LAW 99-499. STANDARD SHOULD BE CONSULTED FOR SPECIFIC REQUIREMENTS

SECTION I - IDENTIFICATION

MANUFACTURER'S NAME: AMERICAN WELDING SYSTEMS INC.
ADDRESS: 13 EXECUTIVE DRIVE, SUITE 19
FAIRVIEW HEIGHTS, IL 62208
IN CASE OF EMERGENCY: 1(800) 272-7633
PRODUCT NAME: Quadcast 988
PRODUCT CLASSIFICATION: Covered Electrode for Shielded Metal Arc Welding (SMAW).

SECTION II - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

IMPORTANT: This section covers the materials of which the products are manufactured. The fumes and gases produced during normal use of this product are covered in Section V. The term "Hazardous" in "Hazardous Ingredients" should not be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR 1910.1200). The chemicals or compounds subject to reporting under Title III, in Section 313, of the Superfund Amendments and Reauthorization Act (SARA) are marked with the symbol #.

WARNING: This product contains or produces a chemical known to the State of California to cause birth defects (or other reproductive harm) and cancer. (California Health & Safety Code 25249.5 et seq.)

INGREDIENTS	CAS NUMBER	EXPOSURE LIMIT (MG/M3)		BY WEIGHT
		OSHA PEL	ACGIH-TLV	PERCENT OF INGREDIENTS
Nickel #	7440-02-0	1	1	60-100
Iron	7439-89-6	10 (as Fe)	5 (as Fe)	1-5
Calcium Carbonate	1317-65-3	5	10	5-10
Barium Carbonate #	513-77-9	0.5	0.5	5-10
Graphite	7782-42-5	15 mppcf*	2	1-5
Mica	12001-26-2	20 mppcf*	3	1-5
Sodium Silicate	1344-09-8	N/A	5	1-5
Potassium Silicate	1312-76-1	N/A	5	1-5
Calcium Fluoride	7789-75-5	2.5 (as F)	2.5 (as F)	1-5
Iron Oxide	1317-61-9	10 (as Fe)	5 (as Fe)	1-5
Silicon Dioxide	14808-60-7	0.1	0.1	0.1-1

*mppcf= millions of particles per cubic foot of air

SECTION III - PHYSICAL DATA

Not applicable

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Non-Flammable: Welding arc and sparks can ignite combustibles. Refer to American National Standard Z49.1 for fire prevention during welding. These products as shipped are non-hazardous, non-flammable, non-explosive, and non-reactive. Rating under National Fire Protection 704: Health, 1; Flammability, 0; Reactivity, 0.

SECTION V - REACTIVITY DATA

Welding fumes cannot be classified simply. The composition and quantity of both are dependent upon the metal being welded, the process, procedures, and electrode 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 brazed (such as paint, plating or galvanization), number of welds and volume of work area, quality and amount of ventilation, position of welders' 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 are different in percent and form from the ingredients listed in Section II. Fume and gas decomposition products, not the ingredients in the electrode, are important. Decomposition products include those originating from the volatilization, reaction, or oxidation of the materials shown in Section II plus those from the base metal, coating,



13 Executive Drive, Suite 19
 Fairview Heights, Illinois 62208
 Telephone: (618) 624-8783
 Toll Free: (800) 272-7633
 Fax: (618) 624-8777

etc. as noted above. These components are virtually always present as complex compounds and not as metals (Characterization of Arc Welding Fume: American Welding Society). Reasonably expected fume constituents would include complex oxides of iron, silicon, sodium and potassium. Fluorides, nickel, and barium oxides may also be present. The table below lists some reasonably expected fumes that may be generated.

SUBSTANCE	CAS NO.	EXPOSURE LIMIT (mg/m ³)	
		OSHA PEL	ACGIH TLV
Iron Oxide	1309-37-1	10	5
Nickel Oxide #	1313-99-1	1	1
Hydrogen Fluoride	7664-39-3	2.5 (as F)	2.5 (as F)
Nitric Oxide	10102-43-9	25 ppm	25 ppm
Nickel (soluble) #	7440-02-0	0.1 (as Ni)	0.1 (as Ni)

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be the radiation from the arc. Monitor fume levels. One recommended way to determine the composition and quantity of fumes and gases to which workers are exposed is to take an air sample inside the welder's helmet, if worn, or in the worker's breathing zone. ANSI/AWS F1.1 available from the American Welding Society, P.O. Box 351040, Miami, FL 33135.

SECTION VI - HEALTH HAZARD DATA

Threshold Limit Value: The ACGIH recommended general limit for welding fumes is 5mg/M3. The ACGIH 1984-85 preface states: "The TLV-TWA should be used as guides in the control of health hazards and should not be used as firm lines between safe and dangerous concentrations." See Section V for specific fume constituents which may modify this TLV.

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. PRIMARY ROUTES OF ENTRY are the respiratory system, eyes, and/or skin. PREEXISTING respiratory or allergic conditions may be aggravated in some individuals. SHORT-TERM (ACUTE) OVEREXPOSURE to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat, or eyes. IRON, IRON OXIDE – Remove from overexposure and apply artificial respiration if needed. FLUORIDES – Fluoride compounds produced may cause eye and skin burns, pulmonary edema bronchitis. NICKEL, NICKEL OXIDE- Metallic taste, nausea, tightness in chest, fever, and allergic reactions. LONG-TERM (CHRONIC) OVEREXPOSURE may lead to siderosis (iron deposits in lungs) and is believed by some investigators to affect pulmonary functions. PRIMARY ROUTE OF ENTRY is the respiratory system. IRON, IRON OXIDE – Long term overexposure to iron fumes can cause deposits of iron in the lungs (siderosis). Lungs will clear in time when exposure to iron and its compounds cease. FLUORIDES – Overexposure to fluorides can cause serious bone erosion. NICKEL, NICKEL OXIDE – Long term overexposure to nickel products may cause lung fibrosis or pneumoconiosis. Nickel is listed as a human carcinogen on IARC and NTP lists and is required by OSHA to be considered carcinogenic. SILICON DIOXIDE- Silicon dioxide is listed as a probable carcinogenic to humans. WELDING FUMES – Welding fumes (not otherwise classified) are considered to be carcinogenic defined with no further categorization by NIOSH. ARC RAYS can injure eyes. ELECTRIC SHOCK can kill. See Section VII.

Emergency & First Aid Procedures: Call for medical aid. Employ first aid techniques recommended by The American Red Cross.
INHALATION: Remove to fresh air. If breathing is difficult, administer oxygen. If not breathing, begin artificial respiration. If no detectable pulse, begin external heart massage
SKIN: Wash affected area with soap and water.
EYES: Flush with a large amount of fresh water for at least 15 minutes.
INGESTION: Seek medical attention.

WARNING: This product contains or produces a chemical known to the State of California to cause birth defects (or other reproductive harm) and cancer. (California Health & Safety Code 25249.5 et seq.)

Carcinogenicity When Present	NTP	NIOSH	IARC MONOGRAPHS	OSHA regulated
	Ni	Welding Fumes (n.o.c.)	Ni	



13 Executive Drive, Suite 19
Fairview Heights, Illinois 62208
Telephone: (618) 624-8783
Toll Free: (800) 272-7633
Fax: (618) 624-8777

**SECTION VII PRECAUTION FOR SAFE HANDLING
AND USE/APPLICABLE CONTROL MEASURES**

Read and understand the manufacturer's instructions and the precautionary label on this product. See American National Standard Z-49.1, Safety in Welding and Cutting, published by the American Welding Society, P.O. Box 351040, Miami, FL 33135, and OSHA Publication 2206 (29 CFR 1910), U.S. Government Printing Office, Washington, D.C. 20402, for more details on the following:

Ventilation: Use enough ventilation, local exhaust at the arc, or both to keep the fumes and gases below the TLV's in the workers 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 spaces or where local exhaust or ventilation does not keep exposure below TLV.

Eye Protection: Wear helmet or use a face shield with a filter lens. As a rule of thumb, start with a shade darker to see the weld zone, then go to the next lighter shade which gives sufficient view of the weld zone. Provide screens and flash goggles to shield others.

Protective Clothing: Wear head, hand, and body protection which helps to prevent injury from radiation, sparks, and electrical shock (see ANSI Z-49.1). At a minimum, this includes welders' 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.

Waste: Dispose of any grinding dust or waste residue in accordance with EPA or local regulations.

Storage: Keep material sealed and dry before use. Store at ambient temperature.

The information in this MSDS was obtained from sources we believe are reliable. However, this information is provided without any representation or warranty, expressed or implied, regarding accuracy or correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability or loss, damage or expense arising from it or in any way connected with the handling, storage, use, or disposal of the product.