MATERIAL SAFETY DATA SHEET

Conforms to OSHA's Hazard Communication Standard CFR 1910.1200

Form No. 104 Rev. 0

TRI-MARK INC.

CAUTION: READ AND UNDERSTAND BEFORE USE

Distributor Name and Address

Identity Gas-Shielded Flux Cored Welding Electrode per AWS A5.29 and ASME SFA 5.29

Tri-Mark TM-81N1, Class E80T1-Ni1
Tri-Mark TM-91N2, Class E90T1-Ni2

Section I

Manufacturer's Name **Tri-Mark Inc.**	Emergency Telephone Number **In Ohio** (513) 773-2010; **Elsewhere** (800) 543-8934
Address **8585 Industry Park Drive**	Telephone Number for Information **In Ohio** (513) 773-2010; **Elsewhere** (800) 543-8934
Piqua, Ohio 45356	Date Prepared **November 1, 1985**

Section II - Hazardous Ingredients

This section covers the materials from which this product is manufactured. The fumes and gases produced during welding and cutting with the normal use of this product are covered by Section V. The term "hazardous" should be interpreted as a term required and defined in OSHA 29 CFR 1910.1200 and does not necessarily imply the existence of any hazard.

Hazardous Components		Wt.%	TLV mg/m³	Additional Information
Titanium dioxides	Less than	10	10	Nuisance particulate
Manganese and/or manganese alloys	Less than	5	C5	C denotes ceiling limit
Silicon alloys	Less than	5	10	Nuisance particulate
Nickel	Less than	3	1	
Quartz	Less than	5	4.9	Total dust

Section III - Physical Data - Not Applicable

Section IV - Fire and Explosion Hazard Data

Nonflammable. Welding arc and sparks can ignite combustibles and flammables.

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, procedures, 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 work 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:

Fumes

Primarily oxides of iron, fluorides, and complex oxides of the following:

Titanium	Sodium
Manganese	Potassium
Silicon	Nickel

Gases

Carbon Monoxide
Carbon Dioxide
Ozone and Oxides of Nitrogen
Argon, if mixed gas shielding is used

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, or in the worker's breathing zone. See ANSI/AWS F1.1, available from the American Welding Society, P.O. Box 351040, Miami, Florida 33135.

Section VI - Health Hazard Data

Threshold Limit Value

The ACGIH recommended limit for Welding Fume NOC (Not Otherwise Classified) is 5 mg/m^3. ACGIH intends that the TLV-TWA limits should be used as guidelines 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.

Effects of Overexposure

Welding may create one or more of the following health hazards:
FUMES AND GASES can be dangerous to your health.
Short-term (acute) overexposure to welding fumes may result in discomfort such as dizziness, nausea, or dryness or irritation of nose, throat or eyes. Long-term (chronic) overexposure to welding fumes can lead to siderosis (iron products in lungs) and is believed by some investigators to affect pulmonary function.
ARC RAYS and infrared heat rays from flames and hot metal can injure eyes and burn skin.
ELECTRIC SHOCK can kill.

Emergency First Aid

Call for medical aid. Employ first aid techniques recommended by the American Red Cross.

Carcinogenicity

Fume Content	NTP	IARC Monographs	OSHA Regulated
Nickel and nickel compounds	Positive	Positive	0

Section VII - Spill or Leak Procedures - Not Applicable

Section VIII - Precautions for Safe Handling and Use

Read and understand the manufacturer's instructions and the precautionary label on the product. See American National Standard Z49.1, Safety in Welding and Cutting published by the American Welding Society, P.O. Box 351040, Miami, Florida 33135 and OSHA Publication 2206 (29CFR1910), US Government Printing Office, Washington, D.C. 20402 for more detail on many of the following.

Ventilation

Use enough ventilation, local exhaust at the arc, or both, to keep the fumes and gases below TLV's in the the worker's breathing zone and the general area. Train the welder to keep his head out of the fume plume.

Respiratory Protection

Use respirable fume respirator or air supplied respirator when welding in confined space or where local exhaust or ventilation does not keep exposure below TLV.

Eye Protection

Wear helmet or use face shield with correct shade of filter lens. As a rule of thumb, start with a shade that is too dark to see the weld zone. Then go to the next lighter shade which gives sufficient view of the weld zone. Provide protective screens and flash goggles to shield others.

Protective Clothing

Wear head, hand, and body protection which help to prevent injury from radiation, sparks, and electrical shock. See ANSI Z49.1. As a minimum this includes welder's gloves, protective face shield, and dark substantial clothing, and may include arm protectors, aprons, hats, and shoulder protection. Train the welder not to touch live electrical parts and to insulate himself from work and ground.

Waste Disposal Method

Prevent waste from contaminating surrouding environment. Discard any product, residue, disposable container or liner in an environmentally acceptable manner, in full compliance with federal, state and local regulations.

NOTICE

Tri-Mark Inc. requests the users of this product to study this Material Safety Data Sheet (MSDS) and become aware of product hazards and safety information. To promote safe use of this product, a user or distributor should (1) notify its employees, agents and contractors of the information on this MSDS and any product hazards and safety information, (2) furnish this same information to each of its customers for the product, and (3) request such customers to notify their employees and customers for the product of the same product hazards and safety information.

Tri-Mark Inc. believes that the information contained herein is current as of the date of this Material Safety Data Sheet. Since the use of this information and these opinions and the conditions of use of the product are not within the control of Tri-Mark Inc., it is the user's responsibility to determine the conditions of safe use of the product.