


## MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet (MSDS) complies with the requirements of OSHA's Hazard Communication Standard.

RG45, RG60 WELDING ROD				
		Emergency Phone Number: 866-734-3438		
Date: April 30, 2006		Product Information Number: 888-838-0615		
SECTION 1 – PRODUCT IDENTIFICATION				
Product Name/Class	AWS A5.2, RG45, RG 60 Welding Rod			
Product Number	004017			
Manufacturer	Radnor Welding Products 259 N. Radnor-Chester Road Suite 100 Radnor, PA 19087-5283			
SECTION 2 – HAZARDOUS INGREDIENTS				
Ingredient	CAS Number	% By Weight	ACGIH TLV	SARA Sec 313
Carbon	1333-86-4	.08 - .15 MAX	3.5 MG/M <sup>3</sup> Carbon	N/A
Manganese	7439-96-5	.5 – 1.40	C 5MG/M <sup>3</sup> Mn & Mn	Yes
Silicon	7440-21-3	.09 – 0.35	10 MG/M <sup>3</sup> Total	N/A
Copper	7440-50-8	.30	.2 MG/M <sup>3</sup>	Yes
Iron	7439-89-6	Remainder	5 MG/M <sup>3</sup> Fe203 AS	N/A
Molybdenum	7439-98-7	.20	5 MG/M <sup>3</sup>	N/A
SECTION 3 – PHYSICAL CHARACTERISTICS				
Boiling Point: N/A	Specific Gravity (H <sub>2</sub> O = 1): N/A		Solubility in Water: N/A	
Vapor Pressure (mm Hg): N/A	Melting Point: N/A		%Volatile: N/A	
Vapor Density (Air = 1): N/A	Evaporation Rate (Butyl Acetate=1): N/A		Appearance and Odor: Copper coated or bare solid steel wire or rods.	
SECTION 4 – FIRE and EXPLOSION HAZARD DATA				
Flash Point (Method Used): N/A	Flammable Limits:		LEL: N/A UEL: N/A	
Extinguishing Media: N/A				
Special Fire Fighting Procedures: Non-flammable. Welding arc and sparks can ignite combustible & flammable products. See ANSI Z49.1, "Safety in Welding and Cutting" for fire prevention and protection information.				
Unusual Fire and Explosion Hazards: N/A				
SECTION 5 – REACTIVITY DATA				
Stability	Unstable <input type="checkbox"/>	Conditions to Avoid: N/A		
	Stable <input checked="" type="checkbox"/>			
Incompatibility (Materials to Avoid): N/A				
Hazardous Polymerization	May Occur <input type="checkbox"/>	Conditions to Avoid: N/A		
	May Not Occur <input checked="" type="checkbox"/>			
Hazardous Decomposition or Byproducts: Welding fumes and gases cannot be classified simply. Composition and quantity of both are dependent upon metal being welded process, procedures, and electrodes used. When the electrode is consumed, the fume and gas decomposition products generated are different in % and form from ingredients listed in Section 2. Decomposition products of normal operation include those originating from the volatilization, reaction, or oxidation of the materials shown in Section 2, plus those from base metal and coating, as noted above. Reasonably expected fume constituents of this product would include: primarily oxides of iron. Secondary – complex oxides of silicon manganese, copper, and molybdenum. Gaseous reaction products may include carbon monoxide and carbon dioxide, ozone & nitrogen oxides may form by radiation from the arc.				
SECTION 6 – HEALTH HAZARD DATA				
Routes of Entry: <input checked="" type="checkbox"/> Inhalation <input type="checkbox"/> Skin <input type="checkbox"/> Ingestion				

Carcinogenicity: No ingredients listed are considered as possible carcinogens under OSHA (29 CFR 1910.1200), however, the composition of welding or brazing fumes may contain carcinogens, depending on several factors that are unknown and unknowable to the product manufacturer (see Section 5). Always assume that welding or brazing fumes may contain toxic and/or carcinogenic materials, and follow sound Work/Hygiene practices as recommended by ANSI Z49.1.

Signs and Symptoms of Exposure: Brazing operations 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. Long-term (chronic) overexposure to brazing 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.

Medical Conditions Generally Aggravated by Exposure: May aggravate pre-existing respiratory problems (e.g. asthma, emphysema).

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.

HMIS Rating	HMIS Scale	NFPA Rating	NFPA Scale
Health = 2	4 = Severe Hazard	Health = 1	4 = Severe Hazard
Flammability = 0	3 = Serious Hazard	Flammability = 0	3 = Serious Hazard
Reactivity = 0	2 = Moderate Hazard	Reactivity = 0	2 = Moderate Hazard
Other = 0	1 = Slight Hazard	Other = N/A	1 = Slight Hazard
	0 = Minimal Hazard		0 = Minimal Hazard

**SECTION 7 – PRECAUTIONS for SAFE HANDLING and USE**

Steps to Be Taken in Case Material Is Released or Spilled: N/A

Waste Disposal Method: Discard any product, residue, disposable container or liner in any environmentally acceptable manner, in full compliance with federal, state, and local regulations.

Precautions to Be Taken In Handling and Storing: N/A

Other Precautions: N/A

**SECTION 8 – CONTROL MEASURES**

Respiratory Protection (*Specify Type*): Should be used in accordance with 29 CFR 1910.34. If exposure is above the PEL or TLV – NIOSH approved respirator for fume and dust. The ACGIH recommended general limit for Welding Fume NOC – (Not otherwise Classified) is 5 mg/m<sup>3</sup>. ACGIH-1987-88 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 5 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.

Ventilation: Local mechanical exhaust recommended during all welding or brazing operations.

Protective Gloves: Required during welding or handling.

Eye Protection: Always wear eye protection during welding or brazing operations, helmet and/or face shield with filter lens recommended.

Other Protective Clothing or Equipment: Welding may produce fumes & gases hazardous to health, avoid breathing these fumes and/or gases. Protective clothing required against burns. See latest NIOSH Requirements and National Standard Z49.1.

Work/Hygiene Practices: Wash hands thoroughly after use, and before eating, drinking, smoking, applying cosmetics or contact lenses. Wet material should never be charged into a molten bath. Maintain exposure below the PEL/TLV. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures which exceed PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information. ANSI Z49.1, The American Welding Society, P.O. Box 351040, Miami, FL 33135, OSHA (29CFR 1910) U.S. Department of Labor, Washington, D.C. 20210.

**OTHER INFORMATION REQUIRED BY STATE OR FEDERAL LAW**

California Proposition 65 Information: Warning: This product contains a chemical known to the State of California to cause cancer.

New Jersey Right-To-Know Information: 5 most predominant ingredients/hazardous and non-hazardous)  
1. Iron; 2. Manganese; 3. Copper; 4. Molybdenum; 5. Silicon.

SARA Title III Notification Information: All chemical compounds marked with an asterisk (\*) are toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Super Fund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Disclaimer of Expressed and Implied Warranties: The information in this document is believed to be correct as of the date issued. However, no warranty of merchantability, fitness for any particular purpose, or any other warranty is expressed or is to be implied regarding the accuracy or completeness of this information, the results to be obtained from the use of this information or the product, the safety of this product, or the hazards related to its use.