



NATIONAL-STANDARD COMPANY

MATERIAL SAFETY DATA SHEET

Date: January 2003

CARBON STEEL WELDING PRODUCTS

50461

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Section 1 - Product Identification

This MSDS covers all carbon steel welding products manufactured by National-Standard.

Trade name and nominal composition are listed in Section 2-A and include both copper-coated and CopperFree® products.

Section 2 - Hazardous Ingredients*

IMPORTANT

This section covers the materials contained in the product as shipped. The fumes and gases produced during welding are covered in Section 6.

Ingredient	CAS No.	PEL ⁽¹⁾	TLV ⁽²⁾	Ingredient	CAS No.	PEL ⁽¹⁾	TLV ⁽²⁾
Manganese (Mn)	7439-96-5	C5.0 ⁽³⁾	0.2	Silicon (Si)	7440-21-3	15.0	10.0
Copper (Cu)	7440-50-8	0.1	0.2	Iron (Fe)	7439-89-6	10.0	10.0

NOTES: *As defined by OSHA (29CFR 1910.1200) or certain state regulations.

⁽¹⁾ Permissible Exposure Limit - (mg/m³) - OSHA (29CFR1910).

⁽²⁾ Threshold Limit Value - (mg/m³) - American Conference of Governmental Industrial Hygienists (current as of MSDS revision date).

⁽³⁾ Ceiling Value - Assessed as a 15-minute time weighted average exposure which shall not be exceeded at any time during the working day.

Section 2-A - Trade Name and Nominal Composition

Wt. % - 1% or Greater

Product Name	Si	Mn	Fe	Product Name	Si	Mn	Fe
ER70S-3		1.1	98.9	NS-103		1.1	98.9
ER70S-4	<1.0	1.25	98.85	NS-104		1.2	98.8
ER70S-6	1.0	1.7	97.3	NS-105		1.1	98.9
NS-101		1.1	98.9	NS-112	< 0.5	1.0	98.5
NS-102		1.8	98.2	NS-115	1.0	1.7	97.3
				NS-116		1.6	97.4

Section 3 - Physical Data

Welding products are solid metals shaped as wire of various diameters, which may be gray or copper colored.

Density: 489.6 lbs./ft.³

Melting Point: 2,700

Section 4 - Fire and Explosion Hazard Data

(Nonflammable) Welding arc and sparks can ignite combustibles. Refer to American National Standard Z49.1, Safety in Welding and Cutting, published by the American Welding Society, P.O. Box 351040, Miami, FL 33135, for fire prevention and protection information during the use of welding and allied procedures.

National Fire Protection Association (NFPA) Rating: Health - 0 Flammability - 0 Reactivity - 0

Section 5 - Health Hazard Information

EXPOSURE LIMITS: Section 2 lists specific hazardous ingredients and exposure limits. Section 6 lists exposure limits for hazardous reaction products that might be formed by welding. **IMPORTANT:** Determine actual exposure by industrial hygiene monitoring.

POSSIBLE SIGNS AND SYMPTOMS OF EXPOSURE TO DUST, WELDING FUME AND GASES

SHORT-TERM EXPOSURE: Metallic taste; nausea; tightness of chest; fever; irritation of eyes, nose, throat and skin; loss of consciousness/death due to welding gases or lack of oxygen.

LONG-TERM EXPOSURE: Adverse effects may result from long-term exposure to welding fume, gases, or dusts. These effects may include skin sensitization, neurological damage, and respiratory disease such as bronchial asthma, lung fibrosis or pneumoconiosis.

AGGRAVATION of pre-existing respiratory or allergic conditions may occur in some workers.

EMERGENCY AND FIRST AID: Remove from exposure and obtain prompt medical attention. If victim is unconscious, administer oxygen. If not breathing, resuscitate immediately.

(Continued on Reverse Side)

Section 6 – Reactivity Information

HAZARDOUS REACTION PRODUCTS: Fumes and gases from welding cannot be classified simply. The composition and quantity of both depend on the metal being welded, the process, procedures, and electrodes used. The constituents of the fume are generally different from the ingredients listed in Section 2 and may include oxides of the metals, chromates, fluorides, and complex metallics. The gases may include carbon monoxide, ozone, and oxides of nitrogen. Chlorinated solvents may be decomposed by the arc into toxic gases such as phosgene. The following exposure limits apply to those fumes and gases which may be found in the welding environment:

<u>Substance</u>	<u>PEL</u>	<u>TLV</u>	<u>Substance</u>	<u>PEL</u>	<u>TLV</u>
Carbon Monoxide (CO)	55 (50 ppm)	29 (25 ppm)	Nitrogen Dioxides (NO ₂)	C5.0	5.6
Fluorides (as F)	2.5	2.5	Ozone (O ₃)	0.1	C0.2
Iron Oxide Fume (as Fe)	10.0	5.0	Phosgene ³ (COCl ₂)	0.4	0.4
Manganese Fume (Mn)	C5.0	1.0			

(PEL/TLV Values are mg/m³. See Section 2)

Section 7 – Spill or Leak Procedure

Not Applicable

Section 8 and 9 - Special Protection Information and Precautions

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, FL 33135 and OSHA Publication 2206 (29CFR1910, U.S. Government Printing Office, Washington, DC 20402, for more detail on any 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 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 where local exhaust or ventilation does not keep exposure below TLV.

EYE PROTECTION

Wear helmet or use face shield with filter lens, Shade No. 10 or darker. Provide protective screens or flash goggles if necessary to shield others.

PROTECTIVE CLOTHING

Wear hand, head and body protection which help to prevent injury from radiation, sparks and electrical shock (see ANSI-Z49.1). At a minimum, this includes welder's gloves and a protective face shield, and may include arm protectors, aprons, hats, and 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.

Approved By: Fred VanDyke

Date: January 2003

This data is believed to be accurate and was obtained from recognized technical sources, but cannot be warranted as to its accuracy or sufficiency.