



American Wire Research Inc.

<b>Date:</b>	<b>2016/01/01</b>	<b>SDS No.:</b>	<b>M0054 AWR-SDS-SS- SMAW-1</b>
<b>Product Type:</b>	<b>Stainless Steel Welding Electrodes for Shielded Metal Arc Welding</b>		
<b>Supersedes:</b>			

## SAFETY DATA SHEETS

Conforms to Hazard Communication Standard, 29 CFR 1910.1200 Appendix D

### SECTION 1: IDENTIFICATION

#### Identification of the substance or preparation

Product Type: Stainless Steel Welding Electrodes for Shielded Metal Arc Welding

This SDS covers all stainless steel welding electrodes products manufactured or supplied by American Wire Research at the following location:

#### Company/undertaking identification

Manufacturer/Supplier: American Wire Research Inc.

Address: 1005 Airbrake Ave, Wilmerding, PA 15148

Tel: +1-412-349-8431 Fax: +1-412-774-5005

#### Product name and nominal composition

Product Name	Classification	C	Si	Mn	P	S	Cr	Ni	Mo
ASE-307	AWS A5.4 E307-16	0.090	0.50	4.25	0.010	0.010	19.74	9.85	1.00
ASE-308	AWS A5.4 E308(H)-16	0.050	0.59	1.30	0.015	0.010	19.38	9.85	--
ASE-308L	AWS A5.4 E308L-16	0.028	0.60	1.30	0.014	0.008	19.28	9.75	--
ASE-309	AWS A5.4 E309-16	0.070	0.34	1.60	0.013	0.011	24.12	13.50	--
ASE-309L	AWS A5.4 E309L-16	0.030	0.37	1.52	0.015	0.008	23.52	13.86	--
ASE-309LMo	AWS A5.4 E309LMo-16	0.030	0.40	1.80	0.013	0.009	23.72	12.87	2.52
ASE-310	AWS A5.4 E310-16	0.110	0.40	1.90	0.010	0.010	27.30	21.07	--
ASE-310Mo	AWS A5.4 E310Mo-16	0.100	0.46	1.68	0.015	0.010	26.84	21.06	2.42
ASE-312	AWS A5.4 E312-16	0.420	0.68	1.64	0.013	0.008	26.70	20.46	--
ASE-316	AWS A5.4 E316-16	0.050	0.35	1.30	0.015	0.010	19.55	13.23	2.52
ASE-316L	AWS A5.4 E316L-16	0.035	0.50	1.20	0.016	0.010	19.52	13.23	2.52
ASE-317	AWS A5.4 E317-16	0.060	0.33	1.52	0.015	0.010	19.42	12.85	3.48
ASE-317L	AWS A5.4 E317L-16	0.034	0.36	1.49	0.015	0.010	19.61	13.85	3.52
ASE-318	AWS A5.4 E318-16	0.060	0.35	1.66	0.016	0.010	19.23	13.10	2.40
ASE-347	AWS A5.4 E347-16	0.060	0.35	1.30	0.012	0.009	19.50	9.45	0.60
ASE-410	AWS A5.4 E410-16	0.080	0.35	0.65	0.018	0.012	13.01	--	--
ASE-410NiMo	AWS A5.4 E410NiMo-16	0.040	0.31	0.58	0.020	0.003	12.29	4.55	0.60
ASE-630	AWS A5.4 E630-16	0.030	0.44	0.56	0.018	0.020	16.58	4.78	0.20
ASE-2209	AWS A5.4 E2209-16	0.030	0.46	0.80	0.018	0.020	22.71	8.82	3.02
ASE-2553	AWS A5.4 E2553-16	0.050	0.90	0.80	0.015	0.020	24.71	7.92	3.31
ASE-2594	AWS A5.4 E2594-16	0.030	0.65	1.30	0.015	0.005	25.0	9.1	3.8

Notes: All materials listed in Wt. %

### SECTION 2: HAZARDS IDENTIFICATION

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.

**Emergency overview:** These products consist of solid wire, which is odorless and may be copper coated. There are no immediate health hazards associated with the wire form of this product. These products are not reactive. If involved in a fire, these products may generate irritating iron fumes and a variety of metal oxides. Emergency responders must wear personal protective equipment suitable for the situation to which they are responding.

**Warning:** Protect yourself and others. Read and understand this information. When this product is used for its intended purpose, fumes and gases produced as a byproduct can be hazardous to your health. Aggravation of pre-existing respiratory or allergic conditions may occur in some workers. Arc Rays can injure eyes and burn skin. Electric shock can kill.

**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. Chromium and nickel, and their compounds, are on the International Agency for

Research on Cancer (IARC) and the National Toxicology Program (NTP) lists as posing a carcinogenic risk to humans.

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 10; see for industrial hygiene information. CAS Number shown is representative for the ingredients listed.

### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:	CAS No.	Wt.%
Manganese and/or manganese alloys and compounds (as Mn)	7439-96-5	1.0 – 3.0
Iron	7439-89-6	30.0 – 50.0
Chromium	7440-47-3	15.0 – 25.0
Silicon and/or silicon alloys and compounds (as Si)	7440-21-3	0.1 – 1.0
Nickel	7440-02-0	6.0 – 20.0
Molybdeum	7439-98-7	0.0 – 4.0
Columbium	7440-03-1	0.0 – 3.0
Cryolite	15096-52-3	0.0 – 5.0
Feldspar	68476-25-5	0 – 3.0

### SECTION 4: FIRST-AID MEASURES

Turn off power and remove from exposure and obtain prompt medical attention. If victim is unconscious, administer oxygen. If not breathing, employ CPR (Cardiopulmonary Resuscitation) techniques immediately. If flu-like symptoms (cough, muscle pain, fever, chills, insomnia, or mental confusion) develop after use, obtain medical help immediately.

### SECTION 5: FIRE-FIGHTING MEASURES

This material is not flammable. However, welding arc and sparks can ignite combustibles.

National Fire Protection Association (NFPA) Rating: Health -2 Flammability -0 Reactivity -0

Note: The NFPA Health rating is based on the fumes generated during normal use.

Welding arc and sparks can ignite combustibles and flammable products. See Z49.1 referenced in Section 8

### SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill of Leak Procedure: These products are solid metal wire, with no spill or leak hazards.

### SECTION 7: HANDLING AND STORAGE

Precautions: None

### SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Read and understand the manufacturer's instruction and the precautionary label on the product. 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 ([www.aws.org](http://www.aws.org)); and OSHA Safety and Health Standards, available from the U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. ([www.osha.gov](http://www.osha.gov)). 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. (\*) No specific recommendation for submerged arc.

**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, 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.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Welding wire is a solid metal, shaped as wire of various diameters.

The following information is for the product:

Appearance and color: These products consist of solid wire, which is odorless and may be copper coated.

How to detect this substance (warning properties): The appearance is a distinctive characteristic of these products.

The following information is for elemental iron:

Odor threshold: Not applicable.

pH: Not applicable.

Melting point: 1535°C (2795°F).

Boiling point: 3000°C (5432°F).

Evaporation rate (nBuAc = 1): Not applicable.

Vapor pressure, mmHg @ 20°C: Not applicable.

Relative vapor density (air = 1): Not applicable.

Specific gravity (water = 1): 7.86 .

Solubility in water: Insoluble.

Coefficient of oil/water distribution (partition coefficient): Not applicable.

## SECTION 10: STABILITY AND REACTIVITY

**Stability Condition to Avoid:** None

**Materials to avoid:** Avoid contact with mineral acids and oxidizing agents which may generate hydrogen gas

**Hazardous Polymerization:** Will Not Occur

**Hazardous decomposition products:** Welders are exposed to a range of fumes and gases. Fume particles contain a wide variety of oxides and salts of metals and other compounds, which are produced mainly from electrodes, filler wire and flux materials. Fumes from the welding of stainless steel and other alloys contain nickel compounds and chromium [VI] and [III]. Ozone is formed during most electric arc welding, and exposures can be high in comparison to the exposure limit, particularly during metal inert gas welding of aluminum. Oxides of nitrogen are found during manual metal arc welding and particularly during gas welding. Welders who weld painted mild steel can also be exposed to a range of organic compounds produced by pyrolysis.

Ingredients:	CAS No.	ACGIH TLV <sup>(1)</sup> (mg/m <sup>3</sup> )	OSHA PEL <sup>(2)</sup> (mg/m <sup>3</sup> )
Iron	7439-89-6	10	5
Chromium	7440-47-3	0.05	0.05
Nickel	7440-02-0	1	1
Manganese and/or manganese alloys and compounds (as Mn)	7439-96-5	1	5
Silicon and/or silicon alloys and compounds (as Si)	7440-21-3	3	5
Molybdeum	7439-98-7	10	15
Columbium	7440-03-1	5	5
Titanium Dioxide	13462-67-1	10	15
Potassium Titanate	12030-97-6	10	Not Registered
Calcium Carbonate	1317-65-3	10	5
Calcium Fluoride	14542-23-5	2.5	2.5
Cryolite	15096-52-3	2.5	2.5
Feldspar	68476-25-5	2	Not Registered
Chromium Oxide	1308-38-9	0.05	0.05
Potassium Silicate	1312-76-1	5	Not Registered
Sodium Silicate	1344-09-8	5	Not Registered
Potassium Hydroxide	1310-58-3	2	Not Registered

See section 16 for SDS note (1) and (2)

## SECTION 11: TOXICOLOGICAL INFORMATION

There is limited evidence in humans for the carcinogenicity of welding fumes and gases. IARC identifies Welding Fumes as a possible carcinogenic to humans (Group 2B). Nickel (Ni) and Cobalt (Co) are listed as Group 2B possible human carcinogen. Hexavalent Chromium (Cr VI) is a listed as a Class 1 human carcinogen by IARC.

- Canadian WHMIS Class D, Division 2B (Toxic).

## SECTION 12: ECOLOGICAL INFORMATION (NON-MANDATORY)

Ecological Information: Not Applicable

### **SECTION 13: DISPOSAL CONSIDERATIONS (NON-MANDATORY)**

**Waste Disposal Methods:** Prevent waste from contaminating surrounding environment. Discard any product, residue, disposable container, or liner in an environmentally acceptable manor, in full compliance with federal state and local regulations.

### **SECTION 14: TRANSPORT INFORMATION (NON-MANDATORY)**

**Proper Shipping Name:** Not regulated by DOT, IMO, IATA or RID/ADR

### **SECTION 15: REGULATORY INFORMATION (NON-MANDATORY)**

SARA Title III: Not Applicable. However, large users may need to calculate and add their welding fume emissions to their inventory of the toxic emissions, using the material percentages listed in Section 1.

TSCA: All material contained within this product are on the TCSA Inventory List.

California Proposition 65 Warning: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the state of California to cause cancer (California Health & Safety Code § 25249.6).

#### **LABELING (Precautionary Statements):**

**WARNING:** PROTECT yourself and others. Read and understand this information.

FUMES AND GASES can be hazardous to your health.

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can KILL.

- Before use, read and understand the manufacturer's instructions, Safety Data Sheets (SDS), and your employer's safety practices.
- Keep your head out of the fumes.
- Use enough ventilation, exhaust at the arc, or both, to keep fumes and gases from your breathing zone and the general area.
- Wear correct eye, ear, and body protection.
- Do not touch live electrical parts

### **SECTION 16: OTHER INFORMATION**

#### **SDS NOTES:**

- (1) Threshold Limit Value (TLV) -8-hour TWA as defined by American Conference of Governmental Industrial Hygienists (ACGIH).
- (2) Permissible Exposure Limit (PEL) -8-hour TWA exposure as defined by OSHA (29CFR1910)