

Material Safety Data Sheet

Latest Revision: Jan 2011
Welding Specialities (I) Pvt Ltd

Section 1 – Identification

Manufacturer's Name: Welding Specialities (India) Pvt Ltd.,
Address: D 50 MIDC Ambad, Nasik MAH. India.
Telephone No: 91-253-6697832

Cast Iron Electrodes/Trade Name	Specification	Product Type
Fortecast-CN, Fortecast-FN, Fortecast-N	AWS A5.34	Nickel alloy electrodes

Section 2 – Hazardous Ingredients

This section covers the materials from which the product is manufactured. The fumes and gases produced during welding with normal use of this product are covered in Section 5. The term 'Hazardous Ingredients' should be interpreted as a term required and defined in OSHA Hazard Communication Standard (29 CFR 1910.1200).

The following chemicals are subject to reporting under Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986:

Compounds of chromium, manganese and nickel. Refer to this section for the presence and concentration of these chemicals for a particular product.

Ingredient	Wt%	CAS No.	OSHA PEL (mg/m3)	ACGIH TLV (mg/m3)
Nickel	55-93	7440-02-0	1	1.5 (Metal)
Chromium	0-4	7440-47-3	1	0.5
Columbium	0-1	7440-03-1	5 (Respirable Fraction)	10
Iron	1-43	7439-89-6	5 (Respirable Fraction)	10
Manganese	0-7	7439-96-5	5 (Ceiling Limit)	0.2
Molybdenum	0-3	7439-98-7	5 (Soluble Compounds)	0.5 (Soluble Compounds)
Silicon	<1	7440-21-3	5 (Respirable Fraction)	10
Tungsten	0-2	7440-33-7	5 (Respirable Fraction)	5
Titanium Dioxide	0-3	13463-67-7	5 (Respirable Fraction)	10
Zirconium Compounds	< 2	7440-67-7	5 (Fume)	5
Fluorides	< 1	7789-75-5	2.5 (as F)	2.5 (as F)

Section 3 – Physical/Chemical Characteristics

Tubular sheath filled with metal and mineral powders.

Section 4 – Fire and Explosion Hazard Data

Non flammable: Welding arc and sparks can ignite combustibles. See Z49.1 referenced in Section 7.

Section 5 – 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 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 the base metal and coating, etc, as noted above. It is understood, however, that the elements and/or oxides to be mentioned are virtually always present as complex oxides and not as metals (See Characterization of Arc Welding Fume, from the American Welding Society). The elements or oxides listed below correspond to the ACGIH categories found in "Threshold Limit Values for Chemical Substances and Physical Agents" published by ACGIH. Reasonably expected constituents of the fume would include: complex oxides of the elements listed in Section 2.

Ingredient	CAS No.	OSHA PEL (mg/m ³)	ACGIH TLV (mg/m ³)
Chromium Oxide (as Cr II, Cr III)		0.5 (as Cr II, Cr III)	0.5 (as Cr II, CrIII)
Chromium (insoluble, as Cr VI)		0.005	0.01, A1
Columbium Compounds (as Cb)	7440-03-1	5 (Respirable)	10
Iron Oxide	1309-37-1	10 (as Fe)	5 (as Fe)
Manganese Compounds (as Mn)	7439-96-5	5 (Ceiling Limit, as Fume)	0.2
Molybdenum Compounds	7439-98-7	5 (Respirable Fraction)	0.5 (Respirable Fraction)
Nickel Compounds (Soluble)		1 (as Ni)	0.1 (as Ni)
Nickel Compounds (Insoluble)		1 (as Ni)	0.2 (as Ni), A1
Silica	60676-67-7	0.1	0.025 (Respirable), A1
Tungsten Compounds	7440-33-7	5 (Respirable Fraction)	1 (soluble)
Titanium Dioxide	13463-67-7	5 (Respirable Fraction)	10
Zirconium Compounds	7440-67-7	5 (fume)	5
Fluorides	7789-75-5	2.5 (as F)	2.5 (as F)

A1 – Confirmed Human Carcinogen

Gaseous reaction products may include carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by radiation from the arc. 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. See ANSI/AWS F1.1, available from the American Welding Society, PO Box 351040, Miami, FL 33135. Also available from AWS is F1.3, "Evaluating Contaminants in the Welding Environment – A Sampling Strategy Guide", which gives additional advice on sampling. At a minimum materials listed in this section should be analyzed.

Section 6 – Health Hazard Data

Effects of overexposure – Electric arc welding may create one or more of the following health hazards:

ARC RAYS can injure eyes and burn skin.

ELECTRIC SHOCK can kill. See Section 7.

FUMES AND GASES can be dangerous to your health.

PRIMARY ROUTES OF ENTRY are the respiratory system, eyes and/or skin.

Short-term (acute) overexposure effects

Welding Fumes- May result in discomfort such as dizziness, nausea or dryness or irritation of the nose, throat or eyes.

Chromium- Inhalation of fume with chromium VI compounds can cause irritation of the respiratory system, lung damage and asthmalike symptoms. Swallowing chromium VI salts can cause severe injury or death. Dust on the skin can form ulcers. Eyes may be burned by chromium VI compounds. Allergic reactions are likely in some people from chromium compounds.

Fluorides- Fluoride compounds evolved may cause skin and eye burns, pulmonary edema and bronchitis.

Manganese- Metal fume fever characterized by chills, fever, upset stomach, vomiting, irritation of throat and aching of body.

Nickel, Nickel Compounds- Metallic taste, nausea, tightness in chest, fever, allergic reactions.

Long term (chronic) overexposure effects

Welding Fume- Excess levels may cause bronchial asthma, lung fibrosis, pneumoconiosis, or 'siderosis'.

Chromium- Ulceration and perforation of the nasal septum. Respiratory irritation may occur with symptoms resembling asthma. Studies have shown that chromate production workers exposed to chromium VI compound have an excess of lung cancers. Chromium VI compounds are more readily absorbed through the skin than chromium III compounds. Good practice requires the reduction of employee exposure to chromium III and VI compounds.

Fluorides- Serious bone erosion (Osteoporosis) and mottling of teeth.

Iron, Iron Oxide- Siderosis or deposits of iron in lungs which is believed to affect pulmonary function. Lungs will clear in time when exposure to iron fumes and its compounds ceases. Iron and magnetite (Fe₃O₄) are not regarded as fibrogenic materials.

Manganese- Central nervous system effects referred to as 'manganism'. Symptoms include muscular weakness and tremors. Behavioral changes and changes in handwriting may also appear. Employees overexposed to manganese should receive quarterly medical examinations for early detection of manganism.

Nickel, Nickel Compounds- Lung fibrosis or pneumoconiosis. Studies of nickel refinery workers indicated a higher incidence of lung and nasal cancers.

Silica- Overexposure to respirable crystalline silica may result in silicosis. Respirable crystalline silica is a known human carcinogen.

Carcinogenicity

Hexavalent chromium compounds are listed as known human carcinogens by IARC and NTP. Nickel compounds are listed as known human carcinogens by IARC. Nickel and certain nickel compounds are reasonably anticipated to be human carcinogens by NTP. Crystalline silica is listed as a known human carcinogen by IARC and NTP.

California Proposition 65

These products contain or produce chemicals known to the State of California to cause reproductive toxicity and cancer. (California Health and Safety Code, Section 25249.5 et seq.)

Emergency and First Aid Procedures

Call for medical aid. Employ first aid techniques recommended by the American Red Cross. Eyes and Skin: If irritation or flash burns develop after exposure, consult a physician.

Section 7 –Precautions for Safe Handling and Use/ Applicable Control Measures

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 (29 CFR 1910), U.S. 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 worker's breathing zone and the general area. Train the welder to keep his head out of the fumes.

Respiratory Protection- Use NIOSH approved or equivalent 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. As a rule of thumb begin with Shade Number 14. Adjust if needed by selecting the next lighter and/or darker shade number. Provide protective screens and flash goggles, if necessary, to protect 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, shoulder protection, as well as dark, non-synthetic clothing. Train the welder not to touch live electrical parts and to insulate himself from the work and ground.

Procedure for Cleanup of Spills or Leaks- Not applicable.

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

Special Precautions- IMPORTANT- Maintain exposure below the PEL/TLV. Use industrial hygiene monitoring to ensure that your use of this material does not create exposures that exceed the PEL/TLV. Always use exhaust ventilation. Refer to the following sources for important additional information:

ANSI Z49.1 from the American Welding Society, P.O. Box 351040, Miami, FL 33135

OSHA 29 CFR 1910 from the U.S. Dept. of Labor, Washington, D.C. 20210

Welding Specialities believes this data to be accurate and to reflect qualified expert opinion regarding current research. However, Welding Specialities cannot make any expressed or implied warranty as to this information.