



MATERIAL SAFETY DATA SHEET

CADWELD[®] Aluminum Welding Material

Inclusive of material types : A22 MSDS: 234
Applicable prefixes : ACB, ACC
Revision : P
Issue Date : March 1, 2007
In accordance with : guidelines 91/155/EEG – NEN ISO 11014-1, 29 CFR 1910.1200, 29 CFR 1926.59, Controlled Products Regulations

1 Identification of the Product and Company

Identification of the Product

CADWELD[®] Aluminum Welding Material

Identification of the Company

ERICO International Corporation
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Solon, Ohio 44139
(440) 248-0100

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The Netherlands
31(0)13-5835100

Telephone

24-hour response line: Chem Tel 1-800-255-3924
National Toxicity Information Centre 31 (0)30-2748888 (Attending Physician Only)

2 Composition / Data on Components

Description

CADWELD Aluminum Material is an exothermic mixture that reacts to produce molten metal and a ceramic phase by-product. The reaction temperatures can exceed 4000°F (2200°C) producing molten metal in excess of 2500°F (1370°C). These products are intended for use with CADWELD accessories only in making permanent connections.

Components

Chemical Component	Chemical Symbol	CAS Number	EINECS Number	EU Risk Phrases
Tin Oxide	SnO ₂	18282-10-5	242-159-0	R22 R36 R38
Copper Oxide	Cu ₂ O / CuO	1317-39-1	215-270-7	R22
Calcium Fluoride	CaF ₂	7789-75-5	232-188-7	Not Applicable
Aluminum	Al	7429-90-5	231-072-3	R 10 R 15

CADWELD[®] Aluminum Welding Material**3 Hazard Identification****Hazard Description**

Improper use of the product or inadequate preparation of the conductors, molds or surroundings can result in aggressive reactions. Instruction prints should be followed at all times. If information is missing contact ERICO or visit our web site at www.erico.com to obtain proper procedures.

Self-propagating high temperature reaction will occur if heated above ignition temperature

Immediate Hazards

Burns from contact with reaction, reaction products, or from hot equipment are possible.

Exposure To Reaction By-Products

Reaction byproducts were tested for total dust, respirable dust, metals, acids, fluorides, and various elements identified in typical welding fume analysis. All sampling and analysis followed methodologies dictated by the National Institute of Occupational Safety and Health (NIOSH) and by the Occupational Safety and Health Administration (OSHA).

Data collected was evaluated and compared to limits set by the American Conference of Governmental Industrial Hygienists (ACGIH) and OSHA. **No** threshold limits are attainable with use of this product as intended.

Classification System

The material has been tested by independent facilities in accordance with D.O.T. / U.N. CFR 49 and I.A.T.A. Dangerous Goods Regulations to determine the applicable ratings of this material. The results of testing classify CADWELD Aluminum Welding Material as a 4.1 flammable solid.

4 First Aid Measures**General Information**

The product produces materials at elevated temperatures. Proper protection should be utilized to avoid contact with hot materials. Standard treatment for burns in the event of contact with reaction by products or hot equipment

Inhalation

For excessive inhalation of dust, fume, remove from exposure, provide fresh air, and consult a physician.

Skin Contact

Standard treatment for burns in the event of contact with reaction byproducts or hot equipment.

Eye Contact

Exposure to powdered metals should be treated by flushing eyes with large amounts of water from the nasal area outward. Consult a physician if irritation persists.

Eye contact with reaction byproducts requires immediate medical attention.

CADWELD[®] Aluminum Welding Material**5 Fire Fighting Measures****Suitable Extinguishing Agents**

Dry sand and/or flooding with large amounts of water after reaction is complete. Water application should be at a reasonable distance. Use of hand water buckets or hand storage pumps is not recommended. Molten metal contact with water can cause small pockets of superheated steam.

Suitable extinguishing agents should be used to protect surrounding areas.

Additional Information

CADWELD Aluminum Welding Material is an exothermic mixture, which reacts to produce hot molten metals with temperatures in excess of 2500°F (1370°C) and small amounts of metal fume and smoke. Ignition temperatures are in excess of 1650°F (900°C). The material is not sensitive to vibrations, shock, or impact and is not subject to any form of spontaneous ignition.

The ignition of the packaging materials may, in rare cases, lead to ignition. Direct application of water is **not** recommended. This product makes use of fine grade aluminums that have the potential to have adverse chemical reactions if exposed to large volumes of water. These reactions can result in evolution of hydrogen gas that can significantly increase fire intensity and potential "explosion" hazards resulting in increased damage to structure and equipment.

Ignition of extremely large quantities of exothermic materials may result in large volumes of dense smoke.

6 Accidental Release Measures**Person-Related Safety Precautions**

RESPIRATORY PROTECTION: Normal use precludes use of special protection as material is generally used out of doors, in small quantities and is of short duration.

VENTILATION: Local Exhaust - May be necessary if used in confined space. Special - Use of NIOSH approved respirator for dusts and metal fumes in lieu of local exhaust.

PROTECTIVE GLOVES: Recommended for handling hot equipment.

EYE PROTECTION: Safety glasses recommended and caution to user to avoid direct eye contact with "flash" of light from reaction.

Measures for Environmental Protection

Precautions should be taken to prevent hot material and reaction byproducts from contact with combustible materials in surrounding areas.

Measures for Cleaning/Collecting

All unused, spilled materials may be swept up for disposal, in accordance with local regulations and guidelines.

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7 Handling and Storage

Handling

CADWELD Aluminum Welding Material is designed for use in CADWELD equipment only. Use of improper or damaged equipment can lead to exposure to molten metal and reaction byproducts, resulting in personal injury.

All product instructions should be followed to help ensure proper welding and safety. For additional information, see American National Standard, Safety In Welding And Cutting, and Z49.1.

Storage

CADWELD Aluminum Welding Material should be stored in a clean, dry and secure location. Storage should include provisions to minimize rough handling, excessive vibration and physical abuse. All outer packages must be stored in accordance with label markings.

If proper storage is maintained, CADWELD Materials do not exhibit any storage or shelf life.

If evidence is present of damaged or contaminated products, these units should not be used.

8 Exposure Control / Personal Protection

Chemical Component	OSHA PEL	ACGIH TLV	Weight Percent	TSCA Inv.
Tin Oxide	2.0 mg/m ³	2.0 mg/m ³	Not > 45%	Yes
Copper Oxide	Fume 0.2 mg/m ³ Dust 1.0 mg/m ³	Fume 0.2 mg/m ³ Dust 1.0 mg/m ³	Not > 45% Fume or Dust	Yes
Calcium Fluoride	2.5 mg/m ³ as Fluoride	2.5 mg/m ³ as Fluoride	Not > 5%	Yes
Aluminum	Fume 5.0 mg/m ³ Dust 10.0 mg/m ³	Fume 5.0 mg/m ³ Dust 10.0 mg/m ³	Not > 45% Fume or Dust	Yes

9 Physical and Chemical Properties (CADWELD Exothermic Material)

Form: Powder

Color: Silvery-white

Odor: Odorless

BOILING POINT: N/A

VAPOR PRESSURE: N/A

VAPOR DENSITY: N/A

SOLUBILITY IN WATER: Insoluble

SPECIFIC GRAVITY (H₂O=1): 5.0

MELTING POINT: @ 482°F (250°C)

EVAPORATION RATE (BUTYL ACETATE=1): N/A

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FLASH POINT (METHOD USED): Self ignites above 1650°F (Indirect Heating) (900°C).

FLAMMABLE LIMITS: LEL - N/A UEL - N/A

10 Stability and Reactivity**Thermal Decomposition / Conditions to be Avoided**

Temperatures above ignition point. Indirect heating to temperatures above 1650°F (900°C).

Dangerous Reactions

Aggressive reactions are possible if excess moisture is present in the mold or on the conductors to be welded. Care should be taken to ensure proper preparation in accordance with instruction prints.

Dangerous Decomposition Products

None

STABILITY: Stable

CONDITIONS TO AVOID: Temperatures above ignition point.

INCOMPATIBILITY (MATERIALS TO AVOID): Typical of problems associated with molten metals.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: None

HAZARDOUS POLYMERIZATION: Will not occur.

11 Toxicological Information

The primary route of entry is inhalation or ingestion.

Burns from contact with reaction, reaction byproducts, or from hot equipment are possible. Dust and fumes are an irritant to eyes and upper respiratory tract. Inhalation of high concentrations of freshly formed oxide fumes and dusts in the respirable particle size range can cause influenza-like illness termed metal fume fever. Copper oxide dust may by repeated or prolonged inhalation occasionally cause ulceration and perforation of the nasal septum. Long term exposure to copper containing dusts may cause allergic dermatitis.

12 Ecological Information

CADWELD Aluminum Welding Materials contain fluorides, copper and copper compounds.

13 Disposal Considerations

Disposal must be done in accordance with applicable local, state or federal laws. If data is unavailable, contact ERICO for appropriate disposal recommendations.

14 Transport Information**General Information**

CADWELD[®] Aluminum Welding Material

The product material has been tested by independent facilities in accordance with D.O.T. / U.N. CFR 49 and I.A.T.A. Dangerous Goods Regulations to determine the applicable ratings of this material. Based on the results of this testing, the CADWELD Aluminum Welding Material is classified as a 4.1 flammable solid.

MARINE POLLUTANT: Not Applicable

UN / ID NUMBER: UN3089

PACKAGING GROUP: Class 4

PROPER SHIPPING NAME: CADWELD Aluminum Welding Material

15 Regulations**US FEDERAL REGULATIONS**

This product contains compounds which are subject to reporting requirements of Section 313 of Title III of SARA and 40 CFR 372.

Components of the material are also included on the TSCA inventory list and are identified in section 8 above.

INTERNATIONAL REGULATIONS:

Reference above information. If additional information is required, please contact ERICO.

16 Other Information

The information supplied in this document is provided with the best of our knowledge and in good faith. If the information required does not appear on this MSDS, please contact the factory at the numbers identified in Section 1 for assistance.