SECTION 1: IDENTIFICATION

1.1. Product identifier

Product identifier name: nVent ERICO Cadweld One Shot

Other means of identification: Inclusive of material types-

Starting Material

Welding Material - F20 (includes prefixes ACB, ACC and SCC), F80 (includes prefixes SB, PB, ACB, ACC and SCC), F33 (includes prefix CA), XF19 (includes prefix XF), F76

1.2. Recommended use of the chemical and restrictions on use

Application: Exothermic welding material

Restrictions: None specified

1.3. Details of the supplier of the safety data sheet

Manufacturer:
nVent
ERICO International Corporation
34600 Solon Road
Solon, Ohio 44139
Tel: (440) 248-0100

Further information can be obtained from: jacob.williams@nvent.com

1.4. Emergency telephone number

Emergency telephone: ChemTel

1-800-255-3924 USA and Canada

+01-813-248-0585 International

SECTION 2: Hazards Identification

2.1. Classification of the chemical

The inner packaging contains two distinct, separate layers of chemicals. The smaller layer is Starting Material used as an ignition component for the larger layer of Welding Material. Both chemicals are hazardous per OSHA.

OSHA:

Starting Material -
Flammable Solid Category 1
Eye Damage Category 1
Combustible Dust

Welding Material -
Eye Damage Category 1
Acute Toxicity – Oral Category 4
Acute Toxicity – Inhalation Category 4
Combustible Dust

Label elements (combined for Starting Material and Welding Material)

Pictograms: 

Signal word: Danger

Hazard statements:

Flammable solid
Causes serious eye damage
Harmful if swallowed
Harmful if inhaled
May form combustible dust concentrations in air

Precautionary statements:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Ground and bond container and receiving equipment.
Use explosion-proof electrical, ventilating, lighting, and other equipment.
Avoid breathing dust or fume.
Wash hands and skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves, protective clothing, eye protection and face protection.
If swallowed: Call a poison center or doctor if you feel unwell.
If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center, doctor, or seek medical attention if molten product contacts eyes or if eye irritation persists after exposure to dust.
Rinse mouth.
In case of fire: Use dry sand or large amounts of water to extinguish.
Dispose of contents and container in accordance with local, state, national, and international regulations.

2.2. Other hazards

Other: Improper use of the product or inadequate preparation of the conductors, molds or surroundings can result in aggressive reactions. Self-propagating high temperature reaction will occur if heated above ignition temperature. Generates molten metal in excess of 2498ºF (Starting Material), slag and dense, dusty smoke. The molten product can cause serious burns. Inhalation of powder or fumes may cause metal fume fever. Exposure to reaction by-products: See section 8.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Mixtures

Only classified substances above threshold limits are shown.

Starting Material (smaller layer)

%	CAS-No.	Chemical Name
30-40	7429-90-5	Aluminum powder (stabilized)
1-25	1317-38-0	Cupric oxide
1-25	1317-39-1	Cuprous oxide

Welding Material (larger layer)

%	CAS-No.	Chemical Name
25-75	1317-39-1	Cuprous oxide
1-20	1317-38-0	Cupric oxide
1-15	7440-50-8	Copper
1-15	7429-90-5	Aluminum powder (stabilized)

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Molten product will cause skin burns and if in contact with eyes while in a molten state may cause serious damage.

Inhalation: Inhalation of welding fumes/dust inhalation: Move into fresh air and keep at rest. In case of persistent throat irritation or coughing: Seek medical attention and bring these instructions.

Skin contact: Remove contaminated clothes and rinse skin thoroughly with water. If material is hot, treat for thermal burns and get immediate medical attention.

Eye contact: Dust in the eyes: Do not rub eye. Immediately flush with plenty of water for up to 15 minutes. Remove any contact lenses and open eyelids widely. If irritation persists: Seek medical attention and bring these instructions.

Ingestion: Immediately rinse mouth and drink plenty of water. Keep person under observation. If person becomes uncomfortable seek hospital and bring these instructions.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects: Chronic inhalation of powder or fumes without proper ventilation or protection may cause symptoms similar to metal fume fever. See section 11 for more detailed information on health effects and symptoms.

4.3. Indication of any immediate medical attention and special treatment needed

Medical attention/treatments: Burns (in contact with molten metal, slag or hot equipment): Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media: Extinguish with dry sand and/or flood with large amounts of water.

Extinguishing media which are not suitable: Hand water buckets or hand storage pumps. Molten metal contact with water can cause small pockets of superheated steam.

Use fire-extinguishing media appropriate for surrounding materials.

5.2. Special hazards arising from the substance or mixture

Specific hazards: During fire, gases hazardous to health may be formed.
Ignition temperature: >849° F (Starting Material); >1742°F (Welding Material)

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

5.3. Advice for firefighters

Protective equipment for firefighters: Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions: Avoid inhalation of dust. Do not breathe fumes. Avoid contact with skin and eyes. Follow precautions for safe handling described in this safety data sheet.

Remove sources of ignition. Ventilate well.

6.2. Environmental precautions

Environmental precautions: Precaution should be taken to prevent hot material and reaction byproducts from contact with combustible materials in surrounding areas. Avoid spreading dust or contaminated materials. Avoid discharge to the aquatic environment. Contact local authorities in case of spillage to drain/aquatic environment.

6.3. Methods and material for containment and cleaning up

Spill cleanup methods: Remove sources of ignition. Sweep up spilled substance and remove to safe place.
For large spills use natural fiber brush or broom with a conductive, non-sparking pan.

6.4. Reference to other sections

Reference: For personal protection, see section 8. For waste disposal, see section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Safe handling advice: Avoid inhalation of dust. Do not breathe fumes. Avoid contact with skin and eyes. Observe good chemical hygiene practices. nVent ERICO Cadweld Starting, Welding and Filler Materials are designed for use in nVent ERICO Cadweld equipment only. Use of improper or damaged equipment can lead to exposure to molten metal and reaction byproducts.

Technical measures: Do not smoke or use open fire or other sources of ignition. Work practice should minimize risk of contact. All product instructions should be followed to ensure proper welding and safety.

Technical precautions: Confined space: Local exhaust is recommended.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures for safe storage: nVent ERICO Cadweld Starting, Welding and Filler Materials 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.

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

If proper storage is maintained, nVent ERICO Cadweld Materials do not exhibit any storage or shelf life.

7.3. Specific end use(s)

Specific use(s): Welding material with ignition component included

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

A detailed fume analysis was conducted on nVent ERICO Cadweld Starting and Welding Materials. 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 U.S. Occupational Safety and Health Administration (OSHA). A certified Industrial Hygienist did the sample collection and independent labs conducted all analytical work.

Data collected was evaluated and compared to limits set by the American Conference of Governmental Industrial Hygienists (ACGIH) and OSHA.

Starting Material: No threshold limits are attainable with use of this product as intended.

Occupational exposure limits:

CAS-No.:	Chemical name:	As:	Exposure limits:	Type:	Notes:	References:
7429-90-5	Aluminum, metal, respirable fraction	Al	5 mg/m3	TWA	-	OSHA
7429-90-5	Aluminum, metal, total dust	Al	15 mg/m3	TWA	-	OSHA
7429-90-5	Aluminum metal, respirable fraction	-	1 mg/m3	TWA	A4	ACGIH
7440-50-8	Copper, dusts and mists	Cu	1 mg/m3	TWA	-	OSHA
7440-50-8	Copper dusts and mists	Cu	1 mg/m3	TWA	-	ACGIH
7440-50-8	Copper, fume	-	0.2 mg/m3	TWA	-	ACGIH
7440-50-8	Copper, fume	Cu	0.1 mg/m3	TWA	-	OSHA
1309-37-1	Iron oxide fume	-	10 mg/m3	TWA	-	OSHA
-	Iron oxide (Fe2O3), respirable fraction	-	5 mg/m3	TWA	A4	ACGIH

Notes: A4: Not classifiable as a Human Carcinogen

Welding Material: As a worst-case scenario, calculations were completed based on a sealed 800 cubic foot room with no ventilation. These calculations indicate that the copper fume PEL would be the limiting factor. Under normal outdoor use or in ventilated areas threshold limits are beyond any expected exposure limits.

Occupational exposure limits:

CAS-No.:	Chemical name:	As:	Exposure limits:	Type:	Notes:	References:
7429-90-5	Aluminum metal, respirable fraction	Al	5 mg/m3	TWA	-	OSHA
7429-90-5	Aluminum metal, total dust	Al	15 mg/m3	TWA	-	OSHA
7429-90-5	Aluminum metal, respirable fraction	-	1 mg/m3	TWA	A4	ACGIH
7440-21-3	Silicon, respirable fraction	-	5 mg/m3	TWA	-	OSHA
7440-21-3	Silicon, total dust	-	15 mg/m3	TWA	-	OSHA
7440-50-8	Copper, dusts and mists	Cu	1 mg/m3	TWA	-	OSHA
7440-50-8	Copper, dusts and mists	Cu	1 mg/m3	TWA	-	ACGIH
7440-50-8	Copper, fume	Cu	0.1 mg/m3	TWA	-	OSHA
7440-50-8	Copper, fume	-	0.2 mg/m3	TWA	-	ACGIH
	Fluoride	F	2.5 mg/m3	TWA		OSHA
	Fluoride	F	2.5 mg/m3	TWA	A4; BEI	ACGIH

Notes: A4 – Not classifiable as a Human Carcinogen; BEI – Biological Exposure Indices

8.2. Exposure controls

Engineering measures: Provide adequate ventilation. Observe Occupational Exposure Limits and minimize the risk of inhalation of dust and fumes.

Personal protection: Personal protection equipment should be chosen according to the relevant standards and in discussion with the supplier of the personal protective equipment.

Respiratory equipment: Normal use precludes use of special protection as material is generally used out of doors, in small quantities and is of short duration. In case of inadequate ventilation and work of long duration or on large surface areas in confined rooms, wear suitable respiratory equipment for dusts and metal fumes.

Hand protection: Heat insulated protective gloves. Recommended for handling hot equipment.

Eye protection: Wear safety glasses. Avoid looking directly at the light generated by the reaction, unless specialized welding eye protection is used.

Skin protection: Use protective clothing, which covers arms and legs.

Hygiene measures: Wash hands after handling. Change contaminated clothing.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

	Starting Material (smaller layer)	Welding Material (larger layer)
Form:	Powder	Granular
Color:	Gray-black	Gray-black
Odor:	Odorless	Odorless
pH:	Not available	Not available
Melting point/freezing point:	1112°F	1999°F
Boiling point:	Not relevant	Not relevant
Flash point:	Not relevant	Not relevant
Evaporation rate:	Not relevant	Not relevant
Flammability:	Flammable	Not flammable
Upper/lower flammability or explosive limits:	Not known	Not known
Vapor pressure:	Not relevant	Not relevant
Vapor density:	Not relevant	Not relevant
Relative density/specific gravity (water=1):	4.0	5.5
Solubility:	Insoluble in water	Insoluble in water
Partition coefficient (n-octanol/water):	Not available	Not available
Auto-ignition temperature:	>849°F	>1742°F
Decomposition temperature:	Not available	Not available
Viscosity:	Not relevant	Not relevant
Oxidizing properties:	Not available	Not available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reactivity: See hazardous reactions.

10.2. Chemical stability

Stability: Stable. Not sensitive to vibrations, shock or impact and is not subject to spontaneous ignition.

10.3. Possibility of hazardous reactions

Hazardous reactions: Aggressive reactions are possible if excess moisture, grease, or other combustible substances are present in the mold, on the connector, or on the conductors to be welded. Care should be taken to ensure proper preparation in accordance with instruction prints.

10.4. Conditions to avoid

Conditions/materials to avoid: Temperatures above ignition point. >849°F (Starting Material)

10.5. Incompatible materials

Incompatible materials: Typical of problems associated with molten metals.

10.6. Hazardous decomposition products

Hazardous decomposition products: None under normal conditions. Polymerization will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity (oral):	Harmful if swallowed, based on Cuprous oxide component.
Acute toxicity (dermal):	Based on available data, the classification criteria are not met.
Acute toxicity (inhalation):	Harmful if inhaled, based on Cuprous oxide component.
Skin corrosion/irritation:	Based on available data, the classification criteria are not met.
Eye damage/irritation:	Causes serious eye damage from Cuprous oxide component.
Respiratory sensitization:	Based on available data, the classification criteria are not met.
Skin sensitization:	Based on available data, the classification criteria are not met.
Germ cell mutagenicity:	Based on available data, the classification criteria are not met.
Carcinogenicity:	Based on available data, the classification criteria are not met. Components are not listed as carcinogens by the NTP, IARC, or OSHA at 29 CFR 1910 Subpart Z.
Reproductive toxicity:	Based on available data, the classification criteria are not met.
STOT - Single exposure:	Based on available data, the classification criteria are not met.
STOT - Repeated exposure:	Based on available data, the classification criteria are not met.
Aspiration hazard:	Based on available data, the classification criteria are not met.
Inhalation:	Heating above the melting point releases metallic oxides which may cause metal fume fever by inhalation. The symptoms are shivering, fever, malaise and muscular pain.
Skin contact:	Dust may have an irritating effect on moist skin. Prolonged and/or repeated contact: May cause eczema-like skin disorders (dermatitis). The molten product can cause serious burns.

Eye contact:	Particles/fumes in the eyes may cause discomfort/irritation.
Ingestion:	Ingestion may cause nausea, headache, dizziness and intoxication.
Specific effects:	Frequent inhalation of dust over a long period of time increases the risk of developing lung diseases. Copper oxides 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.
Toxicological data:	LD_{50} (oral, rat): 1340 mg/kg (Cuprous oxide) No LC_{50} data available. Cuprous oxide is noted as Acute Toxicity – Inhalation Category 4 for Welding Material per ECHA harmonized classification scheme.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecotoxicity: Very toxic to aquatic organisms with long-term adverse effects in the aquatic environment.
M-factor (acute)
Cuprous oxide: 100
Cupric oxide: 100

12.2. Persistence and degradability

Degradability: The product solely consists of inorganic compounds which are not biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential: No data available on bioaccumulation.

12.4. Mobility in soil

Mobility: The product is not volatile but may be spread by dust-raising handling.

12.5. Results of PBT and vPvB assessment

PBT/vPvB: This product does not contain any PBT or vPvB substances.

12.6. Other adverse effects

Other adverse effects: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Dispose of waste and residues in accordance with applicable authority requirements.

SECTION 14: TRANSPORT INFORMATION

The product is a hazardous material/dangerous good per US and international transportation regulations. As prepared by nVent, with minimal quantities present per inner and outer packaging, excepted/small quantity and marine pollutant exceptions apply for ground, air, and vessel transport.

14.1. DOT Classification for Domestic (U.S. Only) Ground, Air, and Vessel

Identification number: UN3089

Proper shipping name: METAL POWDER, FLAMMABLE, N.O.S.

Class: 4.1

Packing group: II

Environmentally hazardous to the aquatic environment/marine pollutant: No

Notes: Starting Material limited to 30 g per inner package with outer package gross weight limit of 29 kg for small quantities exception or limited to 30 g per inner package and 500 g per outer package for excepted quantities. Welding Material is not a hazardous material per DOT.

14.2. ICAO/IATA Classification for Domestic/International Air Required by Most Airlines

Identification number: UN3089

Proper shipping name: METAL POWDER, FLAMMABLE, N.O.S.

Class: 4.1

Packing group: II

Environmentally hazardous to the aquatic environment/marine pollutant: Exception applies due to 4.1 classification

Notes: Starting Material limited to 30 g per inner package and 500 g per outer package for excepted quantities. Welding Material limited to 5 kg per inner package for exception for marine pollutants.

SECTION 15: REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation for the substance or mixture

National regulations: Local, state, and national regulations may apply.

TSCA: The ingredients in this product are on the TSCA Inventory.

SARA Title III: Section 302 Extremely Hazardous Substance: Not reportable

Section 304: Not reportable

Section 311/312 Hazard Categories: Immediate (acute), Fire

Section 313: Aluminum (fume or dust), copper and copper compounds are subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right to Know Act of 1986 (EPCRA or SARA Title III) and 40 CFR 372.

CERCLA RQ: Copper = 5,000 pounds (particles of 100 micrometers or less)

Copper compounds are CERCLA hazardous substances but no RQ is assigned,

15.2. Chemical safety assessment

CSA status: No information available.

SECTION 16: OTHER INFORMATION

The user must be instructed in the proper work procedure and be familiar with the contents of this SDS.

Abbreviations and acronyms:

ACGIH	American Conference of Industrial Hygienists
CAS No.	Chemical Abstracts Service registry number
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DOT HMR	Department of Transportation Hazardous Materials Regulations
ECHA	European Chemicals Agency
IARC	International Agency for Research on Cancer
IATA DGR	International Air Transport Association Dangerous Goods Regulations
ICAO	International Civil Aviation Organization
LC_{50}/LD_{50}	Lethal concentration/dose to 50% of exposed laboratory animals
NIOSH	US National Institute of Occupational Safety and Health
n.o.s.	Not otherwise specified
NTP	National Toxicology Program
OSHA	US Occupational Safety Health Administration
PBT	Persistent, bioaccumulative and toxic
PEL	Permissible exposure limit
RQ	Reportable quantity
SARA	Superfund Amendments and Reauthorization Act
SDS	Safety data sheet
STOT	Specific target organ toxicity
Tel	Telephone number
TSCA	Toxic Substances Control Act
TWA	Time weighted average
UN	United Nations
US/USA	United States
vPvB	Very persistent and very bioaccumulative

Additional information: Hazard classification and other information based on 29 CFR 1910.1200 for OSHA, and on 49 CFR Part 173 and 2020 IATA Dangerous Goods Regulations for DOT/IATA transportation.

The information on this data sheet represents our current data and is reliable provided that the product is used under the prescribed conditions and in accordance with the application specified on the packaging and/or in the technical guidance literature. Any other use of the product which involves using the product in combination with any other product or any other process is the responsibility of the user.