

SAFETY DATA SHEET

Starter



SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Thermit® Welding Powder Starter
SYNONYMS: Initiator, Portion Starter, Portion Initiator, Starter

MANUFACTURER: **ORGO-THERMIT, Inc.**
DIVISION: **A Member of the Goldschmidt-Thermit-Group**
ADDRESS: 3500 Colonial Drive North; Manchester, NJ 08759

EMERGENCY PHONE: (800) 424-9300 (CHEMTREC USA Assistance)
(613) 424-6666 (CANUTEC Canada Assistance)

OTHER CALLS: (732) 657-5781
FAX: (732) 657-5899

CHEMICAL NAME: Exothermic reaction mixture
CHEMICAL FAMILY: Metals
CHEMICAL FORMULA: $3 \text{CuO} + 2 \text{Al} \Rightarrow 3 \text{Cu} + \text{Al}_2\text{O}_3 + \text{heat}$

PRODUCT USE: Initiate the Alumino-thermic reaction used for rail track welding.
PREPARED BY: Orgo-Thermit, Inc.

SECTION 1 NOTES:

A coarse granular mixture of Copper Oxide, Aluminum-Copper Alloy, Tin, Calcium Silicide, and Calcium Fluoride housed in an Aluminum tube, with a copper wire lead.

SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

WARNING! May be harmful if inhaled. May irritate the eyes, skin, and respiratory tract. Molten material may cause thermal burns. Reaction temperatures can exceed 4000°F / 2200°C, producing molten metal in excess of 2500°F / 1370°C.

MATERIAL DESCRIPTION:

Mixture of silver and gray granules with no odor.
CAUTION! Combustible Solid

SECTION 2 NOTES:

This material is not considered hazardous by the OSHA Hazard Communications Standard, if properly used.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENT	CAS NO.	% WT
Cupric Oxide	1317-38-0	Not > 80%
Cuprous Oxide	1317-39-1	Not > 80%
Calcium Silicide	12775-68-7	Not > 5%
Calcium Fluoride	7789-75-5	Not > 5%
Tin	7440-31-5	Not > 10%
Aluminum-Copper Alloy:		
Copper	7440-50-8	< 60%
Aluminum	7429-90-5	< 60%

Exact weight percentages are considered trade secrets, and thus, are not disclosed.

SECTION 4: FIRST AID MEASURES

POTENTIAL HEALTH EFFECTS

EYE CONTACT:

Dust or particulates may cause irritation including pain, tearing, and redness. Scratching of the cornea can occur if eye is rubbed. Fumes may be irritating. Contact with the heated material will cause thermal burns. Some components are considered serious eye irritants.

SKIN CONTACT:

Dust or particulates may cause irritation due to abrasion. Some components in this product are capable of causing an allergic reaction, possibly resulting in itching and skin eruptions. Diseases of the skin, such as eczema, may be aggravated by exposure. Contact with heated material will cause thermal burns.

INGESTION:

Some components are considered hazardous if ingested. Swallowing excessive amounts of dust may cause irritation, nausea, and diarrhea.

INHALATION:

Some components are toxic to lungs and mucous membranes. Dust may cause irritation of the nose, throat, and lungs. Excessive inhalation of metallic fumes and dust may result in metal fume fever, an influenza-like illness. It is characterized by a sweet or metallic taste in the mouth, accompanied by dryness and irritation of the throat. Other symptoms include coughing, shortness of breath, pulmonary edema, general malaise, weakness, fatigue, muscle and joint pain, blurred vision, fever and chills. Typically symptoms will last 12 - 48 hours. Disorders of the respiratory system including asthma, bronchitis, and emphysema may be aggravated by exposure.

FIRST AID TREATMENT

EYE CONTACT:

In case of overexposure to dust or fumes, immediately flush eye with plenty of water for at least 15 minutes; occasionally lifting the eyelids. Remove contact lenses if present and continue rinsing. Get medical attention if irritation persists. Thermal burns should be treated as medical emergencies.

SKIN CONTACT:

In case of overexposure to dust or particulates, wash with soap and plenty of water. Get medical attention if irritation develops or persists. If thermal burn occurs, seek immediate medical attention.

INGESTION:

This product should not be ingested. One component, copper, is hazardous if ingested. Do NOT induce vomiting. Treat symptomatically and supportively. Get medical attention.

INHALATION:

In case of overexposure to dust or fumes, move to fresh air. Get immediate medical attention if any symptoms listed above (Potential Health Effects) develop.

NOTES TO PHYSICIANS OR FIRST AID PROVIDERS:

Inhalation of metal fume or metal oxides may produce an acute febrile state, with cough, chills, weakness, and general malaise. Nausea, vomiting, muscle cramps, and remarkable leukocytosis can develop. Treatment is symptomatic, and condition is self limited in 24 – 48 hours. Chronic exposure to dusts may result in pneumoconiosis of mixed type. Individuals with Wilson's disease are more susceptible to chronic copper poisoning.

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SECTION 5: FIRE-FIGHTING MEASURES

FLAMMABLE LIMITS: Not available.

FLASH POINT: >1750°F / 954°C.

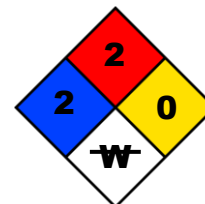
AUTOIGNITION TEMPERATURE: Not available.

NFPA HAZARD CLASSIFICATION

HEALTH: 2 **FLAMMABILITY:** 2 **REACTIVITY:** 0

OTHER: Use No Water.

Note: NFPA classifications are 0 - 4, with 4 as the most severe.



HMIS HAZARD CLASSIFICATION

HEALTH: 2 **FLAMMABILITY:** 2 **REACTIVITY:** 0

PROTECTION: Safety glasses, gloves, dust respirator recommended.

Note: HMIS classifications are 0 - 4, with 4 as the most severe.

HMIS	
HEALTH	2
FLAMMABILITY	2
REACTIVITY	0
PPE	E

EXTINGUISHING MEDIA:

Do NOT use water, carbon dioxide, or foam. Metal dust fires need to be smothered with sand or inert dry powder. Use a dry chemical or dry silica sand to extinguish fire. Contact professional fire fighters. If impossible to extinguish, withdrawal from area, protect surroundings, and allow fire to burn itself out.

SPECIAL FIRE FIGHTING PROCEDURES:

Fire fighters should wear full fire fighting turn-out gear and respiratory protection (self contained breathing apparatus). Combustible solid. Material is not sensitive to mechanical impact or static discharge.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

After ignition, the chemical reaction cannot be halted. May burn rapidly with flare burning effect. Molten metal is produced – stay clear when reaction takes place. Reaction can reach over 4000°F / 2200°C.

HAZARDOUS DECOMPOSITION PRODUCTS:

When heated to decomposition, acid fumes are emitted. Do NOT use water or foam, as generation of explosive hydrogen may result. Chemical reaction with carbon dioxide may produce flammable and explosive methane.

SECTION 6: ACCIDENTAL RELEASE MEASURES

ACCIDENTAL RELEASE MEASURES:

Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Sweep up spill and place in sealed bag or container for disposal. Wash spill area after pick up is complete.

SECTION 6 NOTES:

Use proper personal protective equipment as indicated in Section 8.

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SECTION 7: HANDLING AND STORAGE

HANDLING:

Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Minimize dust generation and accumulation. Avoid inhalation and ingestion.

STORAGE:

Store in a cool, dry, well ventilated and locked storeroom away from incompatible materials. Keep away from oxidizing agents, acids, and alkalis.

OTHER PRECAUTIONS:

DO NOT USE material that got wet for rail welding. Using products that have been wet could result in a violent reaction.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

INGREDIENT	ACGIH TLV	OSHA PEL	NIOSH
Cupric Oxide	N/A	0.1 mg / m ³	0.1 mg / m ³
Tin	0.1 mg / m ³	2 mg / m ³	2 mg / m ³
Aluminum-Copper Alloy:			
Copper	0.2 mg / m ³	1 mg / m ³	1 mg / m ³
Aluminum	1 mg / m ³	15 mg / m ³ (total) 5 mg / m ³ (resp)	10 mg / m ³ (total) 5 mg / m ³ (resp)

ENGINEERING CONTROLS:

When using Thermit[®] Welding Powder with starters, preventive fire protection measures should be employed to protect surrounding areas from catching fire. Depending on proximity and wind conditions, sparks could catch nearby items on fire. It is recommended to keep a chemical fire extinguisher and water supply nearby.

VENTILATION :

Use local exhaust ventilation, or other engineering controls, to keep airborne levels below the recommended exposure limits.

RESPIRATORY PROTECTION:

Use a NIOSH/MSHA approved respirator with a dust cartridge if exposure limits are exceeded, or if irritation or other symptoms are experienced.

EYE PROTECTION:

Safety glasses should be used when using this product. When igniting Thermit[®] Welding Powder, shade 5 welding eye protection is recommended until the welding process is completed.

SKIN PROTECTION:

Wear appropriate protective clothing, shoes, and gloves to prevent skin exposure. When igniting Thermit[®] Welding Powder, protect skin from high temperatures. Welding gloves, jackets, pants, bibs, or aprons are used during the welding process.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT:

Face shields and hard hats are used to protect users from sparks during the welding and grinding processes.

SECTION 8 NOTES:

Information concerning hazardous exposure limits has been compiled from sources considered to be reliable and is accurate and reputable to the best of our knowledge and belief but is not guaranteed to be so.

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SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Granular mixture, gray, black, or red in color in an Aluminum tube.
ODOR:	Odorless
PHYSICAL STATE:	Solid
pH AS SUPPLIED:	Not Applicable
BOILING POINT:	Not Applicable
MELTING POINT:	> 2249°F / 1232°C
FREEZING POINT:	Not Applicable
VAPOR PRESSURE (mmHg):	Not Applicable
VAPOR DENSITY (AIR = 1):	Not Applicable
SPECIFIC GRAVITY (H₂O = 1):	5.5 – 6.5 g/mL @ 20°C
EVAPORATION RATE:	Not Applicable
SOLUBILITY IN WATER:	Insoluble
WEIGHT PERCENT SOLIDS:	100% Solids
PERCENT VOLATILE:	Not Available
MOLECULAR WEIGHT:	Not Available
VISCOSITY:	Not Applicable

SECTION 10: STABILITY AND REACTIVITY

STABILITY: **STABLE** **UNSTABLE**

CONDITIONS TO AVOID (STABILITY): Could spontaneously ignite when exposed to moisture and temperatures > 1750°F / 954°C.

INCOMPATIBILITY (MATERIAL TO AVOID): Reacts with oxidizers, alkalis, and acids.

HAZARDOUS DECOMPOSITION OR BY-PRODUCTS: Can produce hydrogen when exposed to caustic solutions or acid.

HAZARDOUS POLYMERIZATION: Will not occur.

CONDITIONS TO AVOID (POLYMERIZATION): Not applicable.

SECTION 10 NOTES:
Avoid heat and moisture.

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SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE SYMPTOMS / SIGNS OF EXPOSURE

EYES: Redness, tearing, itching, burning, conjunctivitis.
SKIN: Redness, itching.
INGESTION: Irritation and burning sensation of mouth and throat, nausea, vomiting, and abdominal pain.
INHALATION: Irritation of mucous membranes, coughing, wheezing, shortness of breath, metallic taste.

CHRONIC EFFECTS: None expected.

SENSITIZATION: None expected.

TOXICITY TO ANIMALS: None expected.

SECTION 11 NOTES:

Material has not been found to be a carcinogen nor produce genetic, reproductive, or developmental effects.

SECTION 12: ECOLOGICAL INFORMATION

ECOTOXICITY (AQUATIC AND TERRESTIAL): Ecological impact has not been determined.

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

Check with all applicable local, regional, and national laws and regulations. Local regulations may be more stringent than regional or national regulation.

RCRA HAZARD CLASS:

None listed.

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SECTION 14: TRANSPORT INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION

PROPER SHIPPING NAME: STARTER FOR REACTION INITIATOR
HAZARD CLASS: NOT APPLICABLE
ID NUMBER: 186870
PACKING GROUP: NOT APPLICABLE
LABEL STATEMENT: ITEM#186870 CLASS 60

WATER TRANSPORTATION

PROPER SHIPPING NAME: STARTER FOR REACTION INITIATOR
HAZARD CLASS: NOT APPLICABLE
ID NUMBER: 186870
PACKING GROUP: NOT APPLICABLE
LABEL STATEMENTS: ITEM#186870 CLASS 60

AIR TRANSPORTATION

PROPER SHIPPING NAME: STARTER FOR REACTION INITIATOR
HAZARD CLASS: NOT APPLICABLE
ID NUMBER: 186870
PACKING GROUP: NOT APPLICABLE
LABEL STATEMENTS: ITEM#186870 CLASS 60

CANADA TDG: Not regulated.

SECTION 15: REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

EPCRA Section 302 – Extremely Hazardous Substances:

None listed.

CERCLA - Hazardous Substances:

CAS # 7440-50-8, Copper is in the list (5,000 pounds).

EPCRA Section 313 – Toxic Chemicals:

CAS # 7429-90-5, Aluminum, is on the list as a fume or dust.

CAA 112(r) - Regulated Chemicals for Accidental Release Prevention:

None listed.

EPA TSCA Section 8(b) – Chemical Inventory:

CAS # 1317-39-1, Cuprous Oxide, is on the list.

CAS # 7789-75-5, Calcium Fluoride, is on the list.

CAS # 7440-31-5, Tin, is on the list.

CAS # 7440-50-8, Copper, is on the list.

CAS # 7429-90-5, Aluminum, is on the list.

STATE REGULATIONS:

New Jersey Right to Know Hazardous Substance List:

CAS # 7440-31-5, Tin, is on the list.

CAS # 7440-50-8, Copper, is on the list.

CAS # 7429-90-5, Aluminum, is on the list.

California Proposition 65 List of Chemicals:

None listed.

INTERNATIONAL REGULATIONS:

The product has been classified in accordance with the hazard criteria of the Controlled Products Regulations. The Safety Data Sheet contains all the information required by the Controlled Products Regulations.

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SECTION 16: OTHER INFORMATION

PREPARATION INFORMATION: Last revised September 19, 2013.

DISCLAIMER:

Orgo-Thermit Inc. believes that the information herein is factual but is not intended to be all inclusive. The information relates only to the specific material designated and does not relate to its use in combination with other materials or its use as to any particular process. Because safety standards and regulations are subject to change and because Orgo-Thermit has no continuing control over such changes; those handling, storing, or using the material should satisfy themselves that they have current information regarding the particular way the material is handled, stored, used, or disposed of, and that the same is done in accordance with federal, state, and local law. Orgo-Thermit Inc. makes no warranty, expressed or implied, including (without limitation) warranties with respect to the completeness or continuing accuracy of the information contained herein, or with respect to fitness for any particular use.