THERMIT PORTIONS

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
THERMIT PORTIONS

SYNONYMS

"thermite welding powder"

PRODUCT USE
Thermit process fusion welding of railway lines.

SUPPLIER

Company: Thermit Australia Pty Ltd
Address:
170 Somersby Falls Road
Somersby
NSW, 2250
AUS
Telephone: +61 2 4340 4988
Emergency Tel: +61 2 4340 4988 BH
Emergency Tel: +61 2 9639 2486 AH
Fax: +61 2 4340 4004

Company: Thermit Australia Pty Ltd
Address:
PO Box 76
Kariong
NSW, 2250
AUS

Section 2 - HAZARDS IDENTIFICATION

STATEMENT OF HAZARDOUS NATURE
HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

POISONS SCHEDULE
None

RISK

SAFETY
Do not breathe dust.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
ferric oxide	1309-37-1	>60
aluminium powder uncoated	7429-90-5	10-30
other metallic elements		<1

Section 4 - FIRST AID MEASURES

SWALLOWED
For advice, contact a Poisons Information Centre or a doctor.
· If swallowed do NOT induce vomiting.

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· If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
· Observe the patient carefully.
· Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious
· Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink.
· Seek medical advice.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with running water.
· Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· Flush skin and hair with running water (and soap if available).
· Seek medical attention in event of irritation.

INHALED

· If dust is inhaled, remove from contaminated area.
· Encourage patient to blow nose to ensure clear passage of breathing.
· If irritation or discomfort persists seek medical attention.
· If fumes or combustion products are inhaled remove from contaminated area.
· Lay patient down. Keep warm and rested.
· Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
· Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
· Transport to hospital, or doctor.

NOTES TO PHYSICIAN

Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

DRY SAND only for containment.
Conventional media will have no extinguishing effect
once exothermic reaction has started.
DO NOT use halogenated fire extinguishing agents. DO NOT use water.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.
Clear area of personnel and move upwind.
· May be violently or explosively reactive.
· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water courses.
If safe to do so, remove containers from path of fire.

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FIRE/EXPLOSION HAZARD
Thermite powders burn fiercely once ignited.
An ignition temperature of >660degC is necessary to start the reaction.
Molten metal and slag is produced at approx. 2200 degC
Contact with water may liberate highly flammable/ explosive hydrogen gas.

FIRE INCOMPATIBILITY
· Avoid contamination with water, alkalies and detergent solutions.
· Material reacts with water and generates gas, pressurises containers with even drum rupture resulting.
· DO NOT reseal container if contamination is suspected.
· Open all containers with care.
· Avoid contamination with strong oxidising agents as violent reaction may occur, with spontaneous decomposition or explosion.

HAZCHEM: None

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
Clean up all spills immediately.
Refer to major spills.

MAJOR SPILLS
Clean up all spills immediately.
Clear area of personnel and move upwind.
· May be violently or explosively reactive.
· Wear full body protective clothing with breathing apparatus.
· Prevent, by any means available, spillage from entering drains and water course.
· Consider evacuation (or protect in place).
Remove all ignition sources. No smoking or naked lights within area.
Use dry clean up procedures and avoid generating dust.
Place collected material/ powder in closed, DRY, vented, metal containers.

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
· Limit all unnecessary personal contact.
· Wear protective clothing when risk of exposure occurs.
· Use in a well-ventilated area.
· When handling DO NOT eat, drink or smoke.
· Always wash hands with soap and water after handling.
· Avoid physical damage to containers.
· Use good occupational work practice.
· Observe manufacturer's storing and handling recommendations.

SUITABLE CONTAINER
Packaging as recommended by manufacturer.
Plastic bag
NOTE: Bags should be stacked, blocked, interlocked, and limited in height so that they

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are stable and secure against sliding or collapse.
Steel drum with plastic liner.
· Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

Segregate from strong acids.

STORAGE REQUIREMENTS

· Keep dry.
· Store under cover.
· Protect containers against physical damage.
· Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	TWA mg/m³
Australia Exposure Standards	ferric oxide (Iron oxide fume (Fe2O3) (as Fe))	5
Australia Exposure Standards	ferric oxide (Inspirable dust (not otherwise classified))	10
Australia Exposure Standards	aluminium powder uncoated (Aluminium (welding fumes) (as Al))	5
Australia Exposure Standards	aluminium powder uncoated (Aluminium (metal dust))	10

MATERIAL DATA

None assigned. Refer to individual constituents.

INGREDIENT DATA

FERRIC OXIDE:

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:
· cause inflammation

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· cause increased susceptibility to other irritants and infectious agents
· lead to permanent injury or dysfunction
· permit greater absorption of hazardous substances and
· acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

The recommended TLV is thought to reduce the likelihood of respiratory irritation and skin irritation from exposure to aerosols and mists of soluble iron salts.

Inhalation of iron oxide dust or fume may produce a benign pneumoconiosis (siderosis). The TLV-TWA is recommended to minimise the potential for development of X-ray changes in the lung on long-term exposure. These changes are not considered to be associated with any physical impairment of lung function, although more sophisticated physiological testing, including measurement of the lung's mechanical properties and expiratory lung flow is required to reach firm and final conclusions.

ALUMINIUM POWDER UNCOATED:
Not available

PERSONAL PROTECTION

EYE
· Welding mask, goggles, hand shield.
· Safety glasses with side shields.
For most open welding/brazing operations, goggles, even with appropriate filters, will not afford sufficient facial protection for operators. Where possible use welding helmets or handshields corresponding to AS 1336 and AS 1338 which provide the maximum possible facial protection from flying particles and fragments. [WRIA-WTIA Technical Note 7].

HANDS/FEET
Welding Gloves
Safety footwear.

OTHER
Aprons, sleeves, shoulder covers, leggings or spats of pliable flame resistant leather or other suitable materials may also be required in positions where these areas of the body will encounter hot metal.
Ensure there is ready access to a safety shower.
Ensure ready access to a burns first aid kit.

RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

ENGINEERING CONTROLS
Use in a well ventilated area, preferably outdoors.
Otherwise local exhaust ventilation may be necessary for crucible charging and firing of thermite.
If inhalation risk exists, wear SAA approved dust respirator.

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Metal fume repirators may be necessary for the welding operation.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Grey grainy solid powder, insoluble in water. No odour.
Packaged in "portions" or crucible charge masses corresponding to weld size and substrate areas to be fused.
Thermit Portions have been tested (by Ortec International, Ontario, Canada) and are certified as NOT meeting the criteria for transportation as Flammable Solids
Spontaneously Combustible Substances
Dangerous When Wet Substances
Oxidizing Agents.

PHYSICAL PROPERTIES
Solid.
Does not mix with water.
Sinks in water.

Molecular Weight: Not applicable
Melting Range (℃): 660
Solubility in water (g/L): Immiscible
pH (1% solution): Not applicable.
Volatile Component (%vol): Nil
Relative Vapour Density (air=1): Not applicable.
Lower Explosive Limit (%): Not available.
Autoignition Temp (℃): 1200
State: Divided solid

Boiling Range (℃): Not available
Specific Gravity (water=1): 2.0
pH (as supplied): Not applicable
Vapour Pressure (kPa): Negligible
Evaporation Rate: Not applicable
Flash Point (℃): Not applicable
Upper Explosive Limit (%): Not available.
Decomposition Temp (℃): Not available.
Viscosity: Not Applicable

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY
Product is considered stable and hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
Not normally a hazard due to the physical form of product. The material is a physical irritant to the gastro-intestinal tract.

EYE
The solid/dust is moderately abrasive to the eyes.
Fumes from welding/brazing operations may be irritating to the eyes.

SKIN
Non irritant through intact skin.
Not readily absorbed through the skin.

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Skin contact does not normally present a hazard, though it is always possible that occasionally individuals may be found who react to substances usually regarded as inert.

INHALED
The material may be. discomforting to the upper respiratory tract.

CHRONIC HEALTH EFFECTS
Principal routes of exposure are usually by skin contact and inhalation of generated dust.
Welding fume with high levels of ferrous materials may lead to particle deposition in the lungs (siderosis) after long exposure. This clears up when exposure stops. Chronic exposure to iron dusts may lead to eye disorders.
As with any chemical product, contact with unprotected bare skin; inhalation of vapour, mist or dust in work place atmosphere; or ingestion in any form, should be avoided by observing good occupational work practice.

TOXICITY AND IRRITATION
Not available. Refer to individual constituents.

FERRIC OXIDE:
Not available.

ALUMINIUM POWDER UNCOATED:
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
	No data found; suggests powdered aluminium is a low hazard material

by normal routes of exposure.

MATERIAL	CARCINOGEN	REPROTOXIN	SENSITISER	SKIN
ferric oxide	IARC:3			

CARCINOGEN
IARC: International Agency for Research on Cancer (IARC) Carcinogens: ferric oxide
Category: The substance is classified by IARC as Group 3: NOT classifiable as to its carcinogenicity to humans. Evidence of carcinogenicity may be inadequate or limited in animal testing.

Section 12 - ECOLOGICAL INFORMATION

No data for Thermit Portions.
Refer to data for ingredients, which follows:

FERRIC OXIDE:
DO NOT discharge into sewer or waterways.

ALUMINIUM POWDER UNCOATED:
No data

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- Recycle containers if possible, or dispose of in an authorised landfill.

continued...

DO NOT discharge into sewer or waterways.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS:UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

POISONS SCHEDULE: None

REGULATIONS
Thermit Portions (CAS: None):
No regulations applicable

ferric oxide (CAS: 1309-37-1) is found on the following regulatory lists;
Australia Exposure Standards
Australia Hazardous Substances
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 2
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 4
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 5
Australia Standard for the Uniform Scheduling of Drugs and Poisons (SUSDP) - Schedule 6
International Agency for Research on Cancer (IARC) Carcinogens
International Council of Chemical Associations (ICCA) - High Production Volume List
OECD Representative List of High Production Volume (HPV) Chemicals

aluminium powder uncoated (CAS: 7429-90-5) is found on the following regulatory lists;
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (IRRIG - inorganic chemicals)
Australia - Australian Capital Territory - Environment Protection Regulation: Ambient environmental standards (STOCK - inorganic chemicals)
Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (Aquatic habitat)
Australia - Australian Capital Territory - Environment Protection Regulation: Pollutants entering waterways taken to cause environmental harm (IRRIG)
Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Agricultural uses (Stock)
Australia - Australian Capital Territory Environment Protection Regulation Pollutants entering waterways - Domestic water quality
Australia Exposure Standards
Australia Hazardous Substances
Australia High Volume Industrial Chemical List (HVICL)
Australia Inventory of Chemical Substances (AICS)
International Air Transport Association (IATA) Dangerous Goods Regulations
OECD Representative List of High Production Volume (HPV) Chemicals
WHO Guidelines for Drinking-water Quality - Chemicals for which guideline values have not been established

Section 16 - OTHER INFORMATION

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at:
www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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from CHEMWATCH. TEL (+61 3) 9572 4700.

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