

## 1. Product and company identification

### Product identifier

Trade name: 617M2 - Aluminium Powder

### Relevant identified uses of the substance or mixture and uses advised against

General use: Aluminium powder, stabilized for orthopedic procedures.  
Reserved for industrial and professional use.

### Details of the supplier of the safety data sheet

Company name: Otto Bock Health Care

Street/POB-No.: 3820 W. Great Lakes Drive

Postal Code, city: Salt Lake City, UT 84120  
USA

WWW: [www.ottobockus.com](http://www.ottobockus.com)

Telephone: +1 (801) 956-2400

Telefax: +1 (801) 956-2401

Department responsible for information:

Quality Department,  
Telephone: +1 (801) 954-2304 (7 AM – 3 PM, Mountain Time),  
Email: [USRegulatory@ottobock.com](mailto:USRegulatory@ottobock.com)

Additional information: Corporate headquarters:  
Ottobock SE & Co. KGaA  
Max-Näder-Straße 15  
Duderstadt  
Germany

### Emergency phone number

**CHEMTREC, Telephone: +1 (800) 424-9300**

**Transport:**

**CONSULTANK Lutz Harder GmbH (Contract QUALI003)**

**Telephone: +49 (0)178-4337434 (from USA: 01149 178 4337434)**

## 2. Hazards identification

### Emergency overview

Appearance: Physical state at 68 °F and 101.3 kPa: solid

Form: Powder

Color: gray/silver

Odor: odorless

Classification: Flammable Solid - Category 1. Water-reactive - Category 2.

Hazard symbols:



Signal word: **Danger**

Hazard statements: Flammable solid.

In contact with water releases flammable gases.

### Precautionary statements:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Ground/bond container and receiving equipment.  
Use explosion-proof electrical/ventilating/lighting equipment.  
Wear protective gloves/protective clothing.  
IF ON SKIN: Brush off loose particles from skin. Immerse in cool water.  
In case of fire: Use special extinguishing powder for metals or Sand to extinguish.

### Regulatory status

This material is considered hazardous by the U.S. OSHA Hazard Communication Standard (29 CFR 1910.1200).

### Hazards not otherwise classified

Explosive dust-air mixtures may form.  
Reacts with alkalis, strong acids, oxidizing agents with formation of hydrogen. Generation of heat. Danger of explosion!  
Reacts violently with halogens and halogenic hydrocarbons.  
Reacts with water or steam liberating hydrogen and heat.  
see section 11: Toxicological information

## 3. Composition / Information on ingredients

Chemical characterization: Aluminium powder

CAS-Number: 7429-90-5

RTECS-Number: BD0330000

## 4. First aid measures

In case of inhalation: After inhalation of dust: Provide fresh air.  
If you feel unwell, seek medical advice.  
Following skin contact: After contact with skin, wash with soap and plenty of water. Change contaminated clothing.  
After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.  
After swallowing: In the event of persistent symptoms seek medical treatment.

### Most important symptoms/effects, acute and delayed

May cause irritations.  
Dust contact with the eyes can lead to mechanical irritation.

### Information to physician

Treat symptomatically.

## 5. Fire fighting measures

Flash point/flash point range:

Not applicable

Auto-ignition temperature: No data available

Suitable extinguishing media:

Special extinguishing powder for metals, Class D extinguishing powder.  
Cover spilled material with dry sand or cement.

Extinguishing media which must not be used for safety reasons:

Water, carbon dioxide, foam. fire extinguishing agent Fire class A, B, C.

### Specific hazards arising from the chemical

Flammable solid. In contact with water releases flammable gases.

A finely distributed product can produce hydrogen with the application of moisture and water. Danger of explosion!

Danger of dust explosion. Danger of spontaneous combustion.

Can be released in case of fire: Toxic metal oxide smoke.

Protective equipment and precautions for firefighters:

Wear self-contained breathing apparatus.

## 6. Accidental release measures

Personal precautions:

Remove all sources of ignition.

Provide adequate ventilation. Avoid generation of dust.

Avoid contact with the substance. Strictly avoid inhalation of dusts.

Keep unprotected people away. Wear protective equipment.

Environmental precautions:

Do not empty into drains. Danger of explosion!

In case of release, notify competent authorities.

Methods for clean-up:

Never use water. Collect dry and place in appropriate containers for disposal. Subsequent cleaning.

Avoid generation of dust. Use only spark proof tools.

Don't use vacuum cleaner or power sweeper to avoid the fire.

Additional information:

Attention: Contact with water liberates extremely flammable gases.

## 7. Handling and storage

### Handling

Advices on safe handling:

Provide adequate ventilation, and local exhaust as needed.

Avoid generation of dust. Do not breathe dust.

Avoid contact with skin and eyes.

Wear appropriate protective equipment. Wash hands before breaks and after work.

Always close containers tightly after the removal of product.

Precautions against fire and explosion:

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

Take precautionary measures against static discharges.

Use explosion-proof equipment and non-sparking tools/utensils.

Use explosion-proof electrical/ventilating/lighting equipment.

A finely distributed product can produce hydrogen with the application of moisture and water.

### Storage

Requirements for storerooms and containers:

Keep container tightly closed and dry. Keep only in the original container.

Keep in a cool, well-ventilated place. Protect from moisture.

Only trained personnel may be allowed to enter storage area.

Hints on joint storage:

Do not store together with: acids, alkalis, oxidizing agents, combustible material, halogens, halogenated hydrocarbons.

## 8. Exposure controls / personal protection

### Exposure guidelines

Occupational exposure limit values:

Type	Limit value
USA: ACGIH: TWA	1 mg/m <sup>3</sup>
USA: NIOSH: Ceiling	5 mg/m <sup>3</sup> (inhalable fraction)
USA: NIOSH: TWA	10 mg/m <sup>3</sup> (inhalable fraction)
USA: NIOSH: TWA	5 mg/m <sup>3</sup> (inhalable fraction)
USA: OSHA: TWA	15 mg/m <sup>3</sup> (inhalable fraction)
USA: OSHA: TWA	5 mg/m <sup>3</sup> (respirable fraction)

### Engineering controls

Provide adequate ventilation, and local exhaust as needed.

See also information in chapter 7, section storage.

### Personal protection equipment (PPE)

Eye/face protection: tightly sealed goggles according to OSHA Standard - 29 CFR: 1910.133 or ANSI Z87.1-2010.

Skin protection: Wear fire/flamm resistant/retardant clothing. (EN 345)  
protective gloves according to OSHA Standard - 29 CFR: 1910.138.  
Glove material: Nitrile rubber-Layer thickness 0,11 mm - Breakthrough time >480 min  
Observe glove manufacturer's instructions concerning penetrability and breakthrough time.

Respiratory protection: Recommendation: With the formation of dust, use a dust mask.  
Respiratory protection must be worn whenever the TLV (WEL) levels have been exceeded. Particulates filter P1 according to OSHA Standard - 29 CFR: 1910.134 or ANSI Z88.2.

General hygiene considerations:

Keep away from sources of ignition - No smoking.  
Do not breathe dust. Take off immediately all contaminated clothing.  
Wash hands before breaks and after work.

### Environmental exposure controls

Refer to 6.: Section "Environmental precautions".

## 9. Physical and chemical properties

### Information on basic physical and chemical properties

Appearance: Physical state at 68 °F and 101.3 kPa: solid  
Form: Powder  
Color: gray/silver

Odor: odorless

Odor threshold: No data available

pH: Not applicable

Melting point/freezing point: 1220 °F

Initial boiling point and boiling range: 4472.6 °F

Flash point/flash point range:	Not applicable
Evaporation rate:	No data available
Flammability:	< 10 minutes (according to Regulation (EU) No 1272/2008, annex VI)
Explosion limits:	No data available
Vapor pressure:	No data available
Vapor density:	No data available
Density:	at 68 °F: 2.70 g/cm <sup>3</sup>
Water solubility:	Contact with water liberates extremely flammable gases.
Partition coefficient: n-octanol/water:	No data available
Auto-ignition temperature:	No data available
Thermal decomposition:	> 1220 °F
Explosive properties:	The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion. Lower explosion limit: 30 g/m <sup>3</sup>
Ignition temperature:	approx. 752 °F
Bulk density:	at 68 °F: Danger of dust explosion. 0.15 - 0.35 kg/m <sup>3</sup>
Additional information:	Atomic mass: 26,98 g/mol

## 10. Stability and reactivity

Reactivity:	Flammable solid.
Chemical stability:	Aluminium powder, stabilized. Stable under recommended storage conditions.
Possibility of hazardous reactions:	In contact with water releases flammable gases. A finely distributed product can produce hydrogen with the application of moisture and water. Danger of dust explosion.
Conditions to avoid:	Protect from: UV-radiation/sunlight Protect from moisture contamination. Avoid generation of dust. Keep away from heat sources, sparks and open flames.
Incompatible materials:	Reacts with alkalis, strong acids, oxidizing agents with formation of hydrogen. Generation of heat. Danger of explosion! Reacts violently with halogens and halogenic hydrocarbons. Reacts with water or steam liberating hydrogen and heat. Keep away from: alcohols, alkali salts, ammonium compounds, nitrates, sulfates, sulfides.
Hazardous decomposition products:	Can be released in case of fire: Toxic metal oxide smoke.
Thermal decomposition:	> 1220 °F

## 11. Toxicological information

### Toxicological tests

Toxicological effects:

- Acute toxicity (oral): Lack of data.
- Acute toxicity (dermal): Lack of data.
- Acute toxicity (inhalative): Lack of data.
- Skin corrosion/irritation: Lack of data.
- Serious eye damage/irritation: Lack of data.
- Sensitisation to the respiratory tract: Lack of data.
- Skin sensitisation: Lack of data.
- Germ cell mutagenicity/Genotoxicity: Lack of data.
- Carcinogenicity: Lack of data.
- Reproductive toxicity: Lack of data.
- Effects on or via lactation: Lack of data.
- Specific target organ toxicity (single exposure): Lack of data.
- Specific target organ toxicity (repeated exposure): Lack of data.
- Aspiration hazard: Lack of data.

### Symptoms

May cause irritations.  
Dust contact with the eyes can lead to mechanical irritation.

## 12. Ecological information

### Ecotoxicity

Further details: No data available

### Mobility in soil

No data available

### Persistence and degradability

Further details: Product is not biodegradable.

### Additional ecological information

General information: Do not empty into drains.

## 13. Disposal considerations

### Product

Recommendation: Contact the product manufacturer prior to disposal.  
If recycling is not possible, dispose of according to local waste laws and regulations (information requirements of authorities).

### Package

Recommendation: ASN 150104 metallic packaging, or  
ASN 150102 Plastic packaging  
Dispose of waste according to applicable legislation.  
Non-contaminated packages may be recycled.

## 14. Transport information

### UN number

ADR/RID, IMDG, IATA-DGR:  
UN 1309

### UN proper shipping name

ADR/RID, IMDG, IATA-DGR:  
UN 1309, ALUMINIUM POWDER, COATED

### Transport hazard class(es)

ADR/RID: Class 4.1, Code: F3  
IMDG: Class 4.1, Subrisk -  
IATA-DGR: Class 4.1



### Packing group

ADR/RID, IMDG, IATA-DGR:  
II

### Environmental hazards

Marine pollutant: no

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No data available

### USA: Department of Transportation (DOT)

Identification number: UN1309  
Proper shipping name: UN 1309, ALUMINIUM POWDER, COATED  
Hazard class or Division: 4.1  
Packing Group: II  
Labels: 4.1  
Special Provisions: IB8, IP2, IP21, T3, TP33, W100  
Packaging – Exceptions: 151  
Packaging – Non-bulk: 212  
Packaging – Bulk: 240  
Quantity limitations – Passenger aircraft / rail: 15 kg  
Quantity limitations – Cargo only: 50 kg  
Vessel stowage – Location: A  
Vessel stowage – Other: 13, 39, 52, 53, 74, 101, 147, 148



### Sea transport (IMDG)

UN number:	UN 1309
Proper shipping name::	UN 1309, ALUMINIUM POWDER, COATED
Class or division, Subsidiary risk:	Class 4.1, Subrisk -
Packing Group:	II
EmS:	F-G, S-G
Special Provisions:	-
Limited quantities:	1 kg
Excepted quantities:	E2
Package - Instructions:	P002
Package - Provisions:	PP38 PP100
IBC - Instructions:	IBC08
IBC - Provisions:	B4, B21
Tank instructions - IMO:	-
Tank instructions - UN:	T3
Tank instructions - Provisions:	TP33
Stowage and handling:	Category A. H1
Segregation:	SG17 SG25 SG26 SG32 SG35 SG36 SG52
Properties and observations:	If uncoated, it possesses the property of evolving hydrogen gas when in contact with water, especially seawater; if treated with oil or wax, it does not at ordinary temperatures. Reacts readily with acids and caustic alkalis, evolving hydrogen, a flammable gas. Reacts readily with iron oxide, producing a thermite effect. May form explosive mixtures with oxidizing substances. In the event of breakage of receptacles, the scattered powder is readily ignited by sparks or open fire and may give rise to an explosive atmosphere.
Marine pollutant:	no
Segregation group:	15

### Air transport (IATA)

UN/ID number:	UN 1309
Proper shipping name::	UN 1309, ALUMINIUM POWDER, COATED
Class or division, Subsidiary risk:	Class 4.1
Packing Group:	II
Hazard label:	Flamm. solid
Excepted Quantity Code:	E2
Passenger and Cargo Aircraft: Ltd.Qty.:	Pack.Instr. Y441 - Max. Net Qty/Pkg. 5 kg
Passenger and Cargo Aircraft:	Pack.Instr. 445 - Max. Net Qty/Pkg. 15 kg
Cargo Aircraft only:	Pack.Instr. 448 - Max. Net Qty/Pkg. 50 kg
Special Provisions:	A3 A803
Emergency Response Guide-Code (ERG):	3L

## 15. Regulatory information

### National regulations - U.S. Federal Regulations

TSCA Inventory: listed  
NIOSH Recommendations:  
Occupational Health Guideline: 0022

### National regulations - U.S. State Regulations

No data available



## National regulations - Great Britain

Hazchem-Code: 4Y

## 16. Other information

Text for labeling:

Hazard rating systems:



Contains 100 % Aluminium powder, phlegmatized.

NFPA Hazard Rating:

Health: 0 (Minimal)

Fire: 3 (Serious)

Reactivity: 1 (Slight)

Precautions: W (Material shows unusual reactivity with water)

HMIS Version III Rating:

Health: 0 (Minimal)

Flammability: 3 (Serious)

Physical Hazard: 1 (Slight)

Personal Protection: X = Consult your supervisor

HEALTH	0
FLAMMABILITY	3
PHYSICAL HAZARD	1
	X

Abbreviations and acronyms:

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways  
 ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road  
 AS/NZS: Australian Standards/New Zealand Standards  
 CAS: Chemical Abstracts Service  
 CFR: Code of Federal Regulations  
 CLP: Classification, Labelling and Packaging  
 DMEL: Derived minimal effect level  
 DNEL: Derived no-effect level  
 EC: European Community  
 EmS: Emergency Response Procedures for Ships Carrying Dangerous Goods  
 EN: European Standard  
 EQ: Excepted quantities  
 EU: European Union  
 Flammable Solid: Flammable solid  
 IATA: International Air Transport Association  
 IATA-DGR: International Air Transport Association – Dangerous Goods Regulations  
 IBC Code: International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk  
 IMDG Code: International Maritime Dangerous Goods Code  
 IMO: International Maritime Organization  
 MARPOL: Maritime Pollution: The International Convention for the Prevention of Pollution from Ships  
 OEL: Occupational Exposure Limit Value  
 OSHA: Occupational Safety and Health Administration  
 PBT: Persistent, bioaccumulative and toxic  
 PNEC: Predicted no-effect concentration  
 REACH: Registration, Evaluation, Authorisation and Restriction of Chemicals  
 RID: Regulations Concerning the International Carriage of Dangerous Goods by Rail  
 TLV: Threshold Limit Value  
 TRGS: Technical Rules for Hazardous Substances  
 UN: United Nations  
 UV: Ultraviolet  
 vPvB: Very persistent and very bioaccumulative  
 Water-reactive: Water-reactive  
 WEL: Workplace Exposure Limit

Reason of change: Changes in section 8: Occupational exposure limit values

Date of first version: 11/22/2013

## Department issuing data sheet

Contact person: see section 1: Department responsible for information

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.