

Trade name: EOS Titanium Ti64 / Ti64ELI**Product no.:** 9011-0014 / 0017**Current version :** 5.1.2, issued: 25.08.2023**Replaced version:** 5.1.1, issued: 29.08.2022**Region:** GB**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name

EOS Titanium Ti64 / Ti64ELI

UFI: R400-H1RN-R00Q-E04K

1.2 Relevant identified uses of the substance or mixture and uses advised against**Relevant identified uses of the substance or mixture**

Ti6Al4V prealloyed powder for DMLS processes in EOS M systems

Uses advised against

No data available.

1.3 Details of the supplier of the safety data sheet**Address**

Electro Optical Systems Finland Oy

Lemminkäisenkatu 36

20520 Turku

FINLAND

Telephone no. +358 (0) 20 765 9144 / 9147

Fax no. +358 (0) 20 765 9141

Information provided by / telephone

+49 (0) 89 / 893 36 – 0

Advice on Safety Data Sheet

MSDSInfo@eos.info

1.4 Emergency telephone number

+49 (0) 89 / 893 36 - 0 (8 am - 5 pm)

+49 (0) 89 / 893 36 - 151 (Mo - Thu: 9 am - 12 pm & 1 - 6 pm; Fr: 1 - 4 pm) (CET)

SECTION 2: Hazards identification**2.1 Classification of the substance or mixture****Classification in accordance with Regulation (EC) No 1272/2008 (CLP)**

Flam. Sol. 1; H228

Classification information

This product is assessed and classified using the methods and criteria below referred to in Article 9 of Regulation (EC) n° 1272/2008:

Physical hazards: determined through assessment data based on the methods or standards referred to in part 2 of Annex I to CLP

Health hazards and environmental hazards: determined through toxicological and ecotoxicological assessment data based on the methods or standards referred to in Part 3, 4 and 5 of Annex I to CLP.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008 (CLP Regulation)****Hazard pictograms**

GHS02

Signal word

Danger

Hazard statement(s)

H228 Flammable solid.

Precautionary statement(s)

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P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 Ground and bond container and receiving equipment.
P241 Use explosion-proof electrical/ventilating/lighting/ equipment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use dry sand or metal fire powder to extinguish. Never use water.

2.3 Other hazards

No data available.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable. The product is not a substance.

3.2 Mixtures

Chemical characterization

titanium alloy powder

Hazardous ingredients

No	Substance name		Additional information	
	CAS / EC / Index / REACH no	Classification (EC) 1272/2008 (CLP)	Concentration	%
1	aluminium powder (stabilised)			
	7429-90-5 231-072-3 013-002-00-1 01-2119529243-45	Flam. Sol. 1; H228 Water-react. 2; H261	>= 5.00 - < 10.00	wt%

Full Text for all H-phrases and EUH-phrases: pls. see section 16

No	Note	Specific concentration limits	M-factor (acute)	M-factor (chronic)
1	T	-	-	-

Full text for the notes: pls. see section 16 "Notes relating to the identification, classification and labelling of substances ((EC) No 1272/2008, Annex VI)".

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Remove contaminated clothing and shoes immediately, and launder thoroughly before reusing.

After inhalation

Remove affected person from the immediate area. Ensure supply of fresh air. In the event of symptoms take medical treatment.

After skin contact

When in contact with the skin, clean with soap and water.

After eye contact

Separate eyelids, wash the eyes thoroughly with water (15 min.). Get medical attention if pain still persists.

After ingestion

Rinse the mouth thoroughly with water. Drink plenty of water. Do not induce vomiting. Call a doctor. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

No data available.

4.3 Indication of any immediate medical attention and special treatment needed

No data available.

SECTION 5: Firefighting measures

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5.1 Extinguishing media

Suitable extinguishing media

special powder against burning metal

Unsuitable extinguishing media

Water; Carbon dioxide; ABC powder; Foam

5.2 Special hazards arising from the substance or mixture

In the event of fire, the following can be released: Carbon dioxide (CO₂); Carbon monoxide (CO)

5.3 Advice for firefighters

Use self-contained breathing apparatus. Wear protective clothing. Run-off water from fire fighting must not be discharged into drains or enter surface water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Refer to protective measures listed in sections 7 and 8. Ensure adequate ventilation. Avoid dust formation. Keep away from ignition sources.

For emergency responders

No data available. Personal protective equipment (PPE) - see Section 8.

6.2 Environmental precautions

Do not discharge into the drains/surface waters/groundwater. Do not discharge into the subsoil/soil.

6.3 Methods and material for containment and cleaning up

Take up mechanically. Send in suitable containers for recovery or disposal. Clean thoroughly.

6.4 Reference to other sections

No data available.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling

Observe the usual precautions for handling chemicals. Provide good ventilation at the work area (local exhaust ventilation, if necessary). Avoid dust formation.

General protective and hygiene measures

Do not eat, drink or smoke during work time. Keep away from foodstuffs and beverages. Wash hands before breaks and after work. Do not inhale dust. Remove soiled or soaked clothing immediately. Avoid contact with eyes and skin.

Advice on protection against fire and explosion

Dust can form an explosive mixture with air. Take precautionary measures against static charges. Keep away from sources of ignition - refrain from smoking.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Keep container tightly closed and dry in a cool, well-ventilated place. Protect against mechanical damage. Protect from atmospheric moisture and water.

Requirements for storage rooms and vessels

Containers which are opened must be carefully closed and kept upright to prevent leakage. Always keep in containers of same material as the original.

Incompatible products

Do not store together with: oxidizing agents; Acids; Halogens; oxidizing substances

7.3 Specific end use(s)

No data available.

SECTION 8: Exposure controls/personal protection

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8.1 Control parameters

Occupational exposure limit values

No	Substance name	CAS no.	EC no.
1	aluminium powder (stabilised)	7429-90-5	231-072-3
List of approved workplace exposure limits (WELs) / EH40			
Aluminium metal			
total inhalable dust			
	WEL long-term (8-hr TWA reference period)	10	mg/m ³
List of approved workplace exposure limits (WELs) / EH40			
Aluminium metal			
respirable dust			
	WEL long-term (8-hr TWA reference period)	4	mg/m ³

DNEL, DMEL and PNEC values

DNEL values (worker)

No	Substance name	CAS / EC no	
	Route of exposure	Exposure time	Effect
	Value		
1	aluminium powder (stabilised)		
	7429-90-5 231-072-3		
	inhalative	Long term (chronic)	systemic
			3.72 mg/m ³
	inhalative	Long term (chronic)	local
			3.72 mg/m ³

DNEL value (consumer)

No	Substance name	CAS / EC no	
	Route of exposure	Exposure time	Effect
	Value		
1	titanium		
	7440-32-6 231-142-3		
	oral	Long term (chronic)	systemic
			350 mg/kg/day
2	aluminium powder (stabilised)		
	7429-90-5 231-072-3		
	oral	Long term (chronic)	systemic
			7.9 mg/kg/day

PNEC values

No	Substance name	CAS / EC no	
	ecological compartment	Type	Value
1	titanium		
	7440-32-6 231-142-3		
	water	fresh water	0.076 mg/L
	water	marine water	0.6 mg/L
	water	fresh water sediment	600 mg/kg dry weight
	water	marine water sediment	60 mg/kg dry weight
	water	Aqua intermittent	0.37 mg/L
	soil	-	60 mg/kg dry weight
	sewage treatment plant	-	60 mg/L
2	aluminium powder (stabilised)		
	7429-90-5 231-072-3		
	water	fresh water	74.9 µg/L
	sewage treatment plant	-	20 mg/L

8.2 Exposure controls

Appropriate engineering controls

No data available.

Personal protective equipment

Respiratory protection

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If workplace exposure limits are exceeded, a respiration protection approved for this particular job must be worn. In case of dust formation, take appropriate measures for breathing protection in the event that workplace threshold values are not specified. Respirator with particulate filter (filter cat. P 3)

Eye / face protection

Safety glasses with side protection shield (EN 166)

Hand protection

In case of intensive contact, wear protective gloves (EN 374). Before use, the protective gloves should be tested in any case for its specific work-station suitability (i.e. mechanical resistance, product compatibility and antistatic properties).

Adhere to the manufacturer's instructions and information relating to the use, storage, care and replacement of protective gloves. Protective gloves shall be replaced immediately when physically damaged or worn. Design operations thus to avoid permanent use of protective gloves.

Appropriate Material	nitrile rubber		
Breakthrough time	>=	480	min

Other

Wear fully closed, flame retardant clothing. Closed ESD safety footwear (ESD according to EN 61340-4-3 or equivalent).

Environmental exposure controls

No data available.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

State of aggregation	
solid	
Form	
Powder	
Colour	
grey	
Odour	
odourless	
pH value	
No data available	
Boiling point / boiling range	
Value	> 3260 °C
Melting point/freezing point	
Value	1670 °C
Decomposition temperature	
No data available	
Flash point	
not determined	
Ignition temperature	
Value	730 °C
Auto-ignition temperature	
not determined	
Explosive properties	
Product is explosive.	
Flammability	
No data available	
Lower explosion limit	
Value	60 g/m ³

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Upper explosion limit	
No data available	
Vapour pressure	
No data available	
Relative vapour density	
No data available	
Relative density	
No data available	
Density	
Value	4.51 g/cm ³
Solubility in water	
Comments	insoluble
Solubility	
No data available	
Partition coefficient n-octanol/water (log value)	
No data available	
Kinematic viscosity	
No data available	
Particle characteristics	
No data available	

9.2 Other information

Other information
Minimum ignition energy (MIE) with inductivity: 10-30 mJ smouldering temperature: > 400 °C Class number: BZ 3 Max. explosion overpressure (pmax): 6.2 bar KSt value/dust explosion class (St): 75 bar m/s

SECTION 10: Stability and reactivity

10.1 Reactivity

No data available.

10.2 Chemical stability

No data available.

10.3 Possibility of hazardous reactions

No data available.

10.4 Conditions to avoid

Heat, naked flames and other ignition sources. Protect against humidity.

10.5 Incompatible materials

Oxidizing agents; Halogens; Acids; Reactions with oxidizing substances; Contact with water or moisture liberates flammable gases.

10.6 Hazardous decomposition products

Hydrogen

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute oral toxicity
No data available

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Acute dermal toxicity
No data available

Acute inhalational toxicity			
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1	aluminium powder (stabilised)	7429-90-5	231-072-3
LC50	>	0.88	mg/l
Duration of exposure		4	h
State of aggregation	Dust/mist		
Species	rat		
Source	ECHA		
Evaluation/classification	Based on available data, the classification criteria are not met.		

Skin corrosion/irritation
No data available

Serious eye damage/irritation
No data available

Respiratory or skin sensitisation
No data available

Germ cell mutagenicity
No data available

Reproduction toxicity
No data available

Carcinogenicity
No data available

STOT - single exposure
No data available

STOT - repeated exposure
No data available

Aspiration hazard
No data available

Symptoms related to the physical, chemical and toxicological characteristics
Eye contact may cause mechanical irritation through dust particles.

Delayed and immediate effects as well as chronic effects from short and long-term exposure
Inhalation of dusts may irritate the respiratory tract.

11.2 Information on other hazards

Endocrine disrupting properties

No data available.

Other information

No data available.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish (acute)
No data available

Toxicity to fish (chronic)
No data available

Toxicity to Daphnia (acute)
No data available

Toxicity to Daphnia (chronic)

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No data available

Toxicity to algae (acute)

No data available

Toxicity to algae (chronic)

No data available

Bacteria toxicity

No data available

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No data available.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

No data available.

12.6 Endocrine disrupting properties

No data available.

12.7 Other adverse effects

No data available.

12.8 Other information

Other information

Do not discharge product unmonitored into the environment.

Ecological data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Allocation of a waste code number, according to the European Waste Catalogue, should be carried out in agreement with the regional waste disposal company.

Packaging

Residues must be removed from packaging and when emptied completely disposed of in accordance with the regulations for waste removal. Incompletely emptied packaging must be disposed of in the form of disposal specified by the regional disposer.

SECTION 14: Transport information

14.1 Transport ADR/RID/ADN

Class	4.1
Classification code	F3
Packing group	II
Hazard identification no.	40
UN number	UN3089
Proper shipping name	METAL POWDER, FLAMMABLE, N.O.S.
Tunnel restriction code	E
Label	4.1

14.2 Transport IMDG

Class	4.1
Packing group	II
UN number	UN3089
Proper shipping name	METAL POWDER, FLAMMABLE, N.O.S.
EmS	F-G, S-G
Label	4.1

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14.3 Transport ICAO-TI / IATA

Class	4.1
Packing group	II
UN number	UN3089
Proper shipping name	Metal powder, flammable, n.o.s.
Label	4.1

14.4 Other information

No data available.

14.5 Environmental hazards

Information on environmental hazards, if relevant, please see 14.1 - 14.3.

14.6 Special precautions for user

No data available.

14.7 Maritime transport in bulk according to IMO instruments

Not relevant

SECTION 15: Regulatory information

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

EU regulations

Regulation (EC) No 1907/2006 (REACH) Annex XIV (List of substances subject to authorisation)

According to the data available and/or specifications supplied by upstream suppliers, this product does not contain any substances considered as substances requiring authorisation as listed on Annex XIV of the REACH regulation (EC) 1907/2006.

REACH candidate list of substances of very high concern (SVHC) for authorisation

According to available data and the information provided by preliminary suppliers, the product does not contain substances that are considered substances meeting the criteria for inclusion in annex XIV (List of Substances Subject to Authorisation) as laid down in Article 57 and article 59 of REACH (EC) 1907/2006.

Regulation (EC) No 1907/2006 (REACH) Annex XVII: RESTRICTIONS ON THE MANUFACTURE, PLACING ON THE MARKET AND USE OF CERTAIN DANGEROUS SUBSTANCES, MIXTURES AND ARTICLES

The product is considered being subject to REACH regulation (EC) 1907/2006 annex XVII. No 40

The product contains following substance(s) that are considered being subject to REACH regulation (EC) 1907/2006 annex XVII.

No	Substance name	CAS no.	EC no.	No
1	aluminium powder (stabilised)	7429-90-5	231-072-3	75

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances

This product is not subject to Part 1 or 2 of Annex I.

15.2 Chemical safety assessment

A chemical safety assessment has not been carried out for this mixture.

SECTION 16: Other information

Sources of key data used to compile the data sheet:

Regulation (EC) No 1907/2006 (REACH), 1272/2008 (CLP) as amended in each case.

Directives 2000/39/EC, 2006/15/EC, 2009/161/EU, (EU) 2017/164.

National Threshold Limit Values of the corresponding countries as amended in each case.

Transport regulations according to ADR, RID, IMDG, IATA as amended in each case.

The data sources used to determine physical, toxic and ecotoxic data, are indicated directly in the corresponding section.

Full text of the H- and EUH- phrases drawn up in sections 2 and 3 (provided not already drawn up in these sections)

H261

In contact with water releases flammable gases.

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This substance may be marketed in a form which does not have the physical hazards as indicated by the classification in the entry in Part 3. If the results of the relevant method or methods in accordance with Part 2 of Annex I of this Regulation show that the specific form of substance marketed does not exhibit this physical property or these physical hazards, the substance shall be classified in accordance with the result or results of this test or these tests. Relevant information, including reference to the relevant test method(s) shall be included in the safety data sheet.