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)

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

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

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/m³	
	List of approved workplace exposure limits (WELs) / EH40		
	Aluminium metal		
	respirable dust		
	WEL long-term (8-hr TWA reference period)	4 mg/m³	

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/m³
	inhalative	Long term (chronic)	local	3.72	mg/m³

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

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/m³

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/cm³

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

Acute dermal toxicity
No data available

Acute inhalational toxicity				
No	**Substance name**	**CAS no.**	**EC no.**	
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)

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

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.

Notes relating to the identification, classification and labelling of substances and mixtures ((EC) No 1272/2008, Annex VI)

T	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.