SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name

Mediloy® Titan Grade 5 SLM

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

Relevant identified uses of the substance or mixture
Manufacturing of dental prosthesis in a dental laboratory

Uses advised against
No data available.

1.3 Details of the supplier of the safety data sheet

Address
BEGO Bremer Goldschlägerei
Wilh. Herbst GmbH & Co. KG
Wilhelm-Herbst-Str. 1
28359 Bremen

Telephone no. +49/ 421/ 2028 – 0
Fax no. +49/ 421/ 2028 – 115
e-mail msds@bego.com

Information provided by / telephone
Research & Development Department - Materials, alloys and ceramics; +49/ 421/ 2028 – 130 (Chief Development Officer alloys)

Advice on Safety Data Sheet
msds@bego.com

1.4 Emergency telephone number

For medical advice (in German and English):
+49 (0)551 192 40 (Giftinformationszentrum Nord)

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.
P243	Take action to prevent static discharges.
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.
P402+P404	Store in a dry place. Store in a closed container.

2.3 Other hazards

Dust can form an explosive mixture with air. Dust may have irritant effect on skin, eyes and air passages.

PBT assessment
The product is not considered to be a PBT.

vPvB assessment
The product is not considered to be a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not applicable. The product is not a substance.

3.2 Mixtures

Hazardous ingredients

No	Substance name		Additional information	
	CAS / EC / Index / REACH no	Classification (EC) 1272/2008 (CLP)	Concentration	%
1	**titanium**			
	7440-32-6 231-142-3 - 01-2119484878-14	Flam. Sol. 1; H228	>= 70.00 - < 90.00	wt%
2	**aluminium powder**			
	7429-90-5 231-072-3 - 01-2119529243-45	Flam. Sol. 1; H228 Water-react. 2; H261	0.00 - 7.00	wt%

Full text of H- and EUH-phrases, if not already mentioned in section 2.2: see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information
Remove contaminated clothing and shoes and launder thoroughly before reusing.

After inhalation
Remove affected person from the immediate area. Fresh air. Get medical attention if pain still persists.

After skin contact
Wash off immediately with soap and water.

After eye contact
Remove contact lenses, irrigate copiously with clean, fresh water for at least 15 minutes, holding the eyelids apart and seek medical advice.

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

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media
Dry sand; Metal fire powders; table salt

Unsuitable extinguishing media
Water; ABC powder; Halogenated agents

5.2 Special hazards arising from the substance or mixture

Formation of explosive mixtures with air is possible. In the event of fire, the following can be released: Metal oxides; Hydrogen

5.3 Advice for firefighters

Use self-contained breathing apparatus. Adapt extinguisher and fire-fighting measures to fire in the environment. Wear full protective suit.

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
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

Pick up mechanically or by appropriate industrial vacuum cleaner- Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Clean thoroughly. When collected, handle material as described under the section heading "Disposal considerations".

6.4 Reference to other sections

Information regarding personal protective measures, see section 8. Information regarding safe handling, see section 7. Information regarding waste disposal, see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling
Avoid the formation and deposition of dust. Provide good ventilation at the work area (local exhaust ventilation, if necessary).

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. No sparking tools should be used.

Dust explosion class
ST1

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.

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: Substances to be avoided, see section 10.

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	**Dust**		
	List of approved workplace exposure limits (WELs) / EH40		
	Dust respirable		
	WEL long-term (8-hr TWA reference period)	4 mg/m³	
	Comments	see Definition 44 "Dust"	
	List of approved workplace exposure limits (WELs) / EH40		
	Dust inhalable		
	WEL long-term (8-hr TWA reference period)	10 mg/m³	
	Comments	see Definition 44 "Dust"	
2	**aluminium powder**	**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**			**7429-90-5 231-072-3**	
	inhalative	Long term (chronic)		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 bw/day
2	**aluminium powder**			**7429-90-5 231-072-3**	
	oral	Long term (chronic)		7.9	mg/kg bw/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

	soil	-	60	mg/kg dry weight
	sewage treatment plant	-	60	mg/L

8.2 Exposure controls

Appropriate engineering controls
Ensure adequate ventilation, local exhaust at the work station if necessary.

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 P2, P3

Eye / face protection
Tightly fitting safety glasses (EN 166).

Hand protection
In case of thermal processing, thermally insulating protective gloves are to be used. 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
Normal chemical work clothing.

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
solid; Powder

Colour
grey; metallic

Odour
odourless

pH value	
reason for missing pH	substance/mixture is non-soluble (in water)

Boiling point / boiling range			
Value	>	3000	°C

Melting point/freezing point			
Value		1660	°C
Source	supplier		

Decomposition temperature
No data available

Flash point
Not applicable

Ignition temperature			
Value	>	300	°C

Method	DIN EN ISO / IEC 80079-20-2

Oxidising properties
not oxidizing

Explosive properties
Dust explosion class St 1

Flammability
flammable

Lower explosion limit
No data available

Upper explosion limit
No data available

Vapour pressure
Not applicable

Relative vapour density
Not applicable

Relative density
No data available

Density		
Value	4.5	g/cm³
Reference temperature	20	°C
Source	supplier	

Solubility in water	
Comments	insoluble

Solubility
No data available

Partition coefficient n-octanol/water (log value)
No data available

Kinematic viscosity
Not applicable

Particle characteristics	
Comments	Particle size: 20 - 63 µm

9.2 Other information

Other information
Minimum ignition energy (MIE): 55 mJ Dust deflagration index (Kst): 42 bar*m/s Maximum explosion pressure (Pmax): 5,81 barg Maximum rate of pressure rise [(dP/dt)max]: 155 Minimum Explosible Concentration (MEC): 60<MEC<80 g/m3 Limiting oxygen concentration (LOC): 7.5 % O2 Minimum Auto-Ignition Temperature dust-cloud (MAIT): 750 °C Minimum Ignition Temperature dust layer (MIT): >450 °C

SECTION 10: Stability and reactivity

10.1 Reactivity

Dangerous reactions are not expected if the product is handled according to its intended use.

10.2 Chemical stability

Stable under recommended storage and handling conditions (See section 7).

10.3 Possibility of hazardous reactions

Dust can form an explosive mixture with air.

10.4 Conditions to avoid
Heat, naked flames and other ignition sources. Moisture; Avoid formation of dust.

10.5 Incompatible materials
Acids; Alkalis; Oxidizing agents; Halogenated compounds

10.6 Hazardous decomposition products
None if stored, handled and transported properly.

SECTION 11: Toxicological information

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

Acute oral toxicity				
No	**Substance name**	**CAS no.**		**EC no.**
1	**titanium**	**7440-32-6**		**231-142-3**
LD50	>	5000		mg/kg bodyweight
Species	rat			
Source	ECHA / Read across			
2	**aluminium powder**	**7429-90-5**		**231-072-3**
LD50	>	2000		mg/kg bodyweight
Species	rat			
Source	ECHA			

Acute dermal toxicity
No data available

Acute inhalational toxicity				
No	**Substance name**	**CAS no.**		**EC no.**
1	**aluminium powder**	**7429-90-5**		**231-072-3**
LC50	>	0.888		mg/l
Duration of exposure		4		h
State of aggregation	mist			
Species	rat			
Source	ECHA			

Skin corrosion/irritation		
No	**Substance name**	**CAS no.**	**EC no.**
1	**titanium**	**7440-32-6**	**231-142-3**
Source	ECHA
Evaluation/classification	Based on available data, the classification criteria are not met.

Serious eye damage/irritation		
No	**Substance name**	**CAS no.**	**EC no.**
1	**titanium**	**7440-32-6**	**231-142-3**
Source	ECHA
Evaluation/classification	Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation		
No	**Substance name**	**CAS no.**	**EC no.**
1	**titanium**	**7440-32-6**	**231-142-3**
Route of exposure	Skin
Source	ECHA
Evaluation/classification	Based on available data, the classification criteria are not met.

Germ cell mutagenicity		
No	**Substance name**	**CAS no.**	**EC no.**
1	**titanium**	**7440-32-6**	**231-142-3**
Source	ECHA / Read across
Evaluation/classification	Based on available data, the classification criteria are not met.

Reproduction toxicity			
No	**Substance name**	**CAS no.**	**EC no.**

1	titanium	7440-32-6	231-142-3
Source		ECHA / weight of evidence	
Evaluation/classification		Based on available data, the classification criteria are not met.	

Carcinogenicity			
No	Substance name	CAS no.	EC no.
1	titanium	7440-32-6	231-142-3
Source		ECHA / Read across	
Evaluation/classification		Based on available data, the classification criteria are not met.	

STOT - single exposure
No data available

STOT - repeated exposure			
No	Substance name	CAS no.	EC no.
1	titanium	7440-32-6	231-142-3
Source		ECHA / Read across	
Evaluation/classification		Based on available data, the classification criteria are not met.	

Aspiration hazard
No data available

Endocrine disrupting properties
No data available

Delayed and immediate effects as well as chronic effects from short and long-term exposure
Inhalation of vapours in high concentration may cause metal fume fiever and may cause damage of the central nervous system in case of repeated and prolonged exposure. Repeated and prolonged exposure to high dust concentrations may lead to irritation of the respiratory tract. Inhalation of metal-containing dusts may cause acute poisoning, leading to nausea, vomiting and abdominal pain.

11.2 Information on other hazards

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

Results of PBT and vPvB assessment	
Product Name	
Mediloy® Titan Grade 5 SLM	
PBT assessment	The product is not considered to be a PBT.
vPvB assessment	The product is not considered to be a vPvB.

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.

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 UN number or ID number

ADR/RID/ADN	UN3089
IMDG	UN3089
ICAO-TI / IATA	UN3089

14.2 UN proper shipping name

ADR/RID/ADN	METAL POWDER, FLAMMABLE, N.O.S.
Technical name	titanium aluminium powder
IMDG	METAL POWDER, FLAMMABLE, N.O.S.
Technical name	titanium aluminium powder
ICAO-TI / IATA	Metal powder, flammable, n.o.s.
Technical name	titanium aluminium powder

14.3 Transport hazard class(es)

ADR/RID/ADN - Class	4.1
Label	4.1
Classification code	F3
Tunnel restriction code	E
Hazard identification no.	40
IMDG - Class	4.1
Label	4.1
ICAO-TI / IATA - Class	4.1
Label	4.1

14.4 Packing group

ADR/RID/ADN	II

IMDG	II
ICAO-TI / IATA	II

14.5 Environmental hazards

EmS F-G, S-G

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**	**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.

Other regulations
Adhere to the national sanitary and occupational safety regulations when using this product.

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.

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.

Creation of the safety data sheet
UMCO GmbH - D-21107 Hamburg, Georg-Wilhelm-Strasse 187, Tel.: +49(40)555 546 300, Fax: +49(40)555 546 357, e-mail: umco@umco.de

This information is based on our present knowledge and experience.
The safety data sheet describes products with a view to safety requirements.
It does not however, constitute a guarantee for any specific product properties and shall not establish a legally valid contractual relationship.

Document protected by copyright. Alterations or reproductions require the express written permission of UMCO GmbH.
Prod-ID 811411