Feedstock Titanium Ti6Al4V

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

1.1 Product identifier
Trade name/designation:

Feedstock Titanium Ti6Al4V

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

3D-pressure.
Industrial uses.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Headmade Materials GmbH
Langhausstraße 9
97294 Unterpleichfeld
GERMANY
Telephone: +49 9367 40196-0
E-mail: info@headmade-materials.de
Website: https://www.headmade-materials.de

E-mail (competent person): info@headmade-materials.de

1.4 Emergency phone number

24h: +49 551 19240

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 [CLP]

The mixture is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

According to EC directives or the corresponding national regulations the product does not have to be labelled.

Additional information:

In case of fire: Use metal fire extinguishing powder (extinguishing powder: Fire class D), dry sand, Sodium chloride to extinguish. May form combustible dust concentrations in air.

2.3 Other hazards

Adverse human health effects and symptoms:

May cause eye irritation. May cause respiratory irritation.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Description:

Metal powder-mixture, additives

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Ingredients:

Product identifiers	Substance name Classification according to Regulation (EC) No 1272/2008 [CLP]	Content
CAS No.: 7440-32-6 **EC No.:** 231-142-3 **REACH No.:** 01-2119484878-14	**titanium** Flam. Sol. 1 (H228) **Danger**	70 – 90 weight-%
CAS No.: 7429-90-5 **EC No.:** 231-072-3 **Index No.:** 013-002-00-1 **REACH No.:** 01-2119529243-45	**aluminium** Flam. Sol. 1 (H228), Water-react. 2 (H261) **Danger**	4 – 10 weight-%
CAS No.: 7440-62-2 **EC No.:** 231-171-1 **REACH No.:** 01-2119537418-34	**vanadium** The substance is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].	1 – 5 weight-%

Full text of H- and EUH-phrases: see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information:
In case of accident or unwellness, seek medical advice immediately (show directions for use or safety data sheet if possible). Remove victim out of the danger area. Take off contaminated clothing and wash it before reuse. If unconscious but breathing normally, place in recovery position and seek medical advice. Do not leave affected person unattended.

Following inhalation:
Provide fresh air. In case of respiratory tract irritation, consult a physician.

In case of skin contact:
Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention.

After eye contact:
Rinse immediately carefully and thoroughly with eye-bath or water. Do not subject to friction. In case of eye irritation consult an ophthalmologist.

Following ingestion:
If swallowed, rinse mouth with water (only if the person is conscious). Get immediate medical advice/ attention.

4.2 Most important symptoms and effects, both acute and delayed

May cause eye irritation. May cause respiratory irritation.

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:
metal fire extinguishing powder (extinguishing powder: Fire class D), dry sand, Sodium chloride, Cement.

Unsuitable extinguishing media:
Water, Extinguishing powder, carbon dioxide (CO_2)

5.2 Special hazards arising from the substance or mixture

This material is combustible, but will not ignite readily. If dust is generated: May form combustible dust concentrations in air. Warning! Danger of dust explosion.

Hazardous combustion products:
In case of fire may be liberated: metal oxides; carbon oxides (COx); gases/vapours, toxic

5.3 Advice for firefighters

Wear a self-contained breathing apparatus and chemical protective clothing. Use water spray jet to protect personnel and to cool endangered containers. Move undamaged containers from immediate

hazard area if it can be done safely. Suppress gases/vapours/mists with water spray jet. Collect contaminated fire extinguishing water separately. Do not allow entering drains or surface water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

6.1.1 For non-emergency personnel

Personal precautions:
Provide adequate ventilation. Avoid dust formation. Do not breathe dust. Avoid contact with skin, eyes and clothes. Remove persons to safety. Remove all sources of ignition. Safe handling: see section 7.

Protective equipment:
Wear protective gloves/protective clothing/eye protection/face protection. See section 8.

6.1.2 For emergency responders

Personal protection equipment:
Personal protection equipment: see section 8.

6.2 Environmental precautions

Do not allow to enter into surface water or drains.
Do not allow to enter into soil/subsoil.

6.3 Methods and material for containment and cleaning up

For containment:
Do not use a dry brush as dust clouds or static can be created. Take up mechanically, placing in appropriate containers for disposal. Avoid dust formation. Use source extraction with particle filter (HEPA H14).

For cleaning up:
Water (with cleaning agent)

6.4 Reference to other sections

Safe handling: see section 7.
Personal protection equipment: see section 8.
Disposal: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Protective measures

Advices on safe handling:
Provide adequate ventilation. Avoid dust formation. Prevent dust accumulation. Do not breathe dust. Avoid contact with skin, eyes and clothes. Keep container tightly closed. Wear personal protection equipment (refer to section 8).

Fire prevent measures:
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Take action to prevent static discharges.

Measures to prevent aerosol and dust generation:
Dust should be exhausted directly at the point of origin.

Environmental precautions:
Discharge into the environment must be avoided.

Advices on general occupational hygiene

When using do not eat, drink or smoke. Wash hands before breaks and after work. Take off contaminated clothing and wash it before reuse. Draw up and observe skin protection programme. Apply skin care products after work.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions:
Keep container tightly closed in a cool, well-ventilated place. Protect from moisture.

Requirements for storage rooms and vessels:
Keep only in the original container.

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Hints on storage assembly:
Do not store together with: Oxidising agent, Acids, halogenated hydrocarbons
Keep away from food, drink and animal feedingstuffs.

7.3 Specific end use(s)

Recommendation:
3D-pressure.

SECTION 8: Exposure controls / Personal protection

8.1 Control Parameters

8.1.1 Occupational exposure limit values

Limit value type (country)	Substance name	① Long-term occupational exposure limit value ② Short-term occupational exposure limit value ③ Instantaneous value ④ Monitoring and observation processes ⑤ Remark
WEL (GB)	aluminium **CAS No.:** 7429-90-5 **EC No.:** 231-072-3	① 10 mg/m³ ⑤ (inhalable fraction)
WEL (GB)	aluminium **CAS No.:** 7429-90-5 **EC No.:** 231-072-3	① 4 mg/m³ ⑤ (respirable fraction)
WEL (GB)	Dust, respirable fraction	① 4 mg/m³ ⑤ (Dust limit value, respirable fraction)
WEL (GB)	Dust, inhalable fraction	① 10 mg/m³ ⑤ (Dust limit value, inhalable fraction)

8.1.2 Biological limit values

No data available.

8.1.3 DNEL-/PNEC-values

No data available.

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Technical measures and the application of suitable work processes have priority over personal protection equipment. Provide adequate ventilation as well as local exhaustion at critical locations.

8.2.2 Personal protection equipment

Eye/face protection:
Eye glasses with side protection (EN 166)

Skin protection:
Tested protective gloves must be worn (EN ISO 374).
Suitable material: NBR (Nitrile rubber)
Thickness of the glove material: ≥ 0,11 mm
Breakthrough time:: ≥ 480 min
The quality of the protective gloves resistant to chemicals must be chosen as a function of the specific working place concentration and quantity of hazardous substances. Check leak tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well.

Respiratory protection:
Wear breathing apparatus if exposed to vapours/dusts/aerosols. Filtering Half-face mask (EN 149), Filter type FFP3

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Other protection measures:
Wear suitable protective clothing (EN 340).

8.2.3 Environmental exposure controls
Do not empty into drains.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state: solid, Powder
Colour: grey
Odour: odourless

Safety relevant basic data

Parameter	Value	at	① Method ② Remark
pH	*not applicable*		
Melting point	≥ 1,600 °C		
Freezing point	*not applicable*		
Initial boiling point and boiling range	*not applicable*		
Decomposition temperature	*not determined*		
Flash point	*not applicable*		
Evaporation rate	*not applicable*		
Auto-ignition temperature	*not determined*		
Upper/lower flammability or explosive limits	30 g/m³		② Lower explosion limit
Vapour pressure	*not applicable*		
Vapour density	*not applicable*		
Density	≈ 4 g/cm³		
Relative density	*not determined*		
Bulk density	*not determined*		
Water solubility	practically insoluble	20 °C	
Partition coefficient: n-octanol/water, log P (o/w)	*not determined*		
Dynamic viscosity	*not applicable*		
Kinematic viscosity	*not applicable*		
Particle size	< 1 mm		

9.2 Other information

9.2.2 Other safety characteristics
Deposited dust
Maximum explosion pressure: 6,7 bar
Maximum rate of pressure rise and KSt-value respectively: 70 bar*m/s
Dust explosion category: ST 1
Lower explosion limit: 30 g/m³
Minimum ignition energy: 10 - 30 mJ
Minimum ignition temperature of a dust cloud: 540 °C
Whirled up dust
Combustion number (20 °C): BZ 5

SECTION 10: Stability and reactivity

10.1 Reactivity
This material is combustible and can be ignited by heat, sparks, flames, or other sources of ignition (e.g. static electricity, pilot lights, or mechanical/electrical equipment).

10.2 Chemical stability
The product is chemically stable under recommended conditions of storage, use and temperature.

10.3 Possibility of hazardous reactions
No hazardous reaction when handled and stored according to provisions.

10.4 Conditions to avoid
Heat, Humidity. Remove all sources of ignition. Avoid dust formation.

10.5 Incompatible materials
Oxidising agent, Acids, halogenated hydrocarbons

10.6 Hazardous decomposition products
No known hazardous decomposition products.
In case of fire may be liberated: metal oxides; carbon oxides (COx); gases/vapours, toxic

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008
Acute oral toxicity:
Based on available data, the classification criteria are not met.
Acute dermal toxicity:
Based on available data, the classification criteria are not met.
Acute inhalation toxicity:
Based on available data, the classification criteria are not met.
Skin corrosion/irritation:
Based on available data, the classification criteria are not met.
Serious eye damage/irritation:
Based on available data, the classification criteria are not met.
May cause eye irritation.
Respiratory or skin sensitisation:
Based on available data, the classification criteria are not met.
Germ cell mutagenicity:
Based on available data, the classification criteria are not met.
Carcinogenicity:
Based on available data, the classification criteria are not met.
Reproductive toxicity:
Based on available data, the classification criteria are not met.
STOT-single exposure:
Based on available data, the classification criteria are not met.
May cause respiratory irritation.
STOT-repeated exposure:
May cause damage to organs through prolonged or repeated exposure.
Aspiration hazard:
Based on available data, the classification criteria are not met.
Additional information:
No data available.

11.2 Information on other hazards
Endocrine disrupting properties:
This product does not contain a substance that has endocrine disrupting properties with respect to humans as no components meets the criteria.

SECTION 12: Ecological information

12.1 Toxicity
Aquatic toxicity:
Based on available data, the classification criteria are not met.

12.2 Persistence and degradability
Biodegradation:
Biodegradation is not relevant for metals and inorganic substances.

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12.3 Bioaccumulative potential

Accumulation / Evaluation:
No data available. No indication of bioaccumulation potential.

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6 Endocrine disrupting properties

This product does not contain a substance that has endocrine disrupting properties with respect to non-target organisms as no components meets the criteria.

12.7 Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

13.1.1 Product/Packaging disposal

Waste codes/waste designations according to EWC

Waste code product

12 01 04	non-ferrous metal dust and particles

Remark:
The allocation of waste code numbers / waste names must be carried out in accordance with the European Waste Catalogue (EWC).

Waste treatment options

Appropriate disposal / Product:
Dispose of waste according to applicable legislation. Consult the appropriate local waste disposal expert about waste disposal.

Appropriate disposal / Package:
Completely emptied packages can be recycled.

Other disposal recommendations:
Collect in closed and suitable containers for disposal. Do not allow to enter into surface water or drains. Waste for disposal is to be classified and labelled.

SECTION 14: Transport information

Land transport (ADR/RID)	Inland waterway craft (ADN)	Sea transport (IMDG)	Air transport (ICAO-TI-/IATA-DGR)
14.1 UN number or ID number			
UN 0000	UN 0000	UN 0000	UN 0000
14.2 UN proper shipping name			
Not restricted	Not restricted	Not restricted	Not restricted
14.3 Transport hazard class(es)			
No data available.	No data available.	No data available.	No data available.
14.4 Packing group			
		-	
14.5 Environmental hazards			
No data available.	No data available.	No data available.	No data available.
14.6 Special precautions for user			
No data available.	No data available.	No data available.	No data available.

14.7 Maritime transport in bulk according to IMO instruments

not relevant

Additional information:
No data available.

SECTION 15: Regulatory information

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

15.1.1 EU legislation

Other regulations (EU):

Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work Observe restrictions to employment for juveniles according to the 'juvenile work protection guideline' (94/33/EC).

15.1.2 National regulations

No data available.

15.2 Chemical Safety Assessment

No data available.

SECTION 16: Other information

16.1 Indication of changes

Changes executed in version 1.1:
Section 9.2: Particle size, Granulometry, Safety characteristics for dust
General revision
Changes executed in version 1.2:
Section 2: Hazard(s) Identification
Section 11: Toxicological Information
Section 12: Ecological Information (non-mandatory)
Section 14: Transport Information (non-mandatory)
General revision
Changes executed in version 1.3:
Section 15: Regulatory Information (non-mandatory) (correction: Storage class, Germany)
General revision

16.2 Abbreviations and acronyms

See overview table at www.euphrac.eu

16.3 Key literature references and sources for data

European Chemicals Agency (ECHA): https://www.echa.europa.eu
ECHA, C&L Inventory: https://echa.europa.eu/information-on-chemicals/cl-inventory-database
ECHA, Registered substances: https://echa.europa.eu/information-on-chemicals/registered-substances
GESTIS (Gefahrstoffinformationssystem der DGUV): https://www.gestis.dguv.de/search
Hörath Gefährliche Stoffe und Gemische, 8. Auflage, Dr. Angela Schulz

16.4 Classification for mixtures and used evaluation method according to regulation (EC) No. 1272/2008 [CLP]

The mixture is classified as not hazardous according to regulation (EC) No 1272/2008 [CLP].

16.5 Relevant H- and EUH-phrases

Hazard statements	
H228	Flammable solid.
H261	In contact with water releases flammable gases.

16.6 Training advice

No data available.

16.7 Additional information

The information in this safety data sheet has been established to our best knowledge and was up-to-date at time of revision. The information is intended to give you advice about the safe handling of the product for storage, processing, transport and disposal. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.