



Health Development Company

1. PRODUCT AND COMPANY IDENTIFICATION

1.1. Product identifier

Titanium alloy grade 5 ELI - Ti-6Al-4V ELI.

Spider screw, orthodontic screw . All types.

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

For various use in orthodontics. Use for intraoral applications only. Used for skeletal anchorage in orthodontics

1.3. Details of the supplier of the safety data sheet

HDC srl

via dei mestieri, 5/7

36016 Thiene (VI)

ITALY

tel 0039 0445 364148

1.4 Emergency telephone number

0039 0445 364148

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Solid Metallic product.

2.2 Label elements

N/A

2.3 Other hazards

Titanium alloys in their solid state present no inhalation, ingestion or contact health hazard. However, inhaling welding fumes, mists or dust which may be generated during certain manufacturing process (melting, welding, burning, sawing, grinding, machining) may be hazardous to your health. Dusts may be also irritating to the unprotected skin or eyes.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

C: max 0.08%

N: max 0.05%

Fe: max 0.25%

Al: 5.5 – 6.5%

V: 3.5 – 4.5%

O: max 0.13%

Ti: BALANCE

3.2 Mixtures

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N/A

4. FIRST AID MEASURES

4.1 Description of first aid measures

Depending on route of entry:

- INHALATION: Immediately remove victim to fresh air. If condition persists, consult physician.
- EYE CONTACT: Immediately flush with running water to remove particulates, consult physician.
- SKIN CONTACT: If irritation develops, remove clothing and wash with soap and water. If condition persists, consult a physician.
- INGESTION: Consult physician.

4.2 Most important symptoms and effects, both acute and delayed

- ACUTE EFFECTS: Excessive exposure to welding fumes or dust may cause irritation of eyes, nose or throat. Inhalation of dusts may result in metal fume fever (metallic taste in mouth, dryness and irritation of throat, fever).
- CHRONIC EFFECTS: Prolonged inhalation of welding fumes or dusts may cause skin sensitization, neurological damage and respiratory disease such as bronchial asthma, lung fibrosis or pneumoconiosis.

4.3 Indication of any immediate medical attention and special treatment needed

N/A

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Use a D-Class fire extinguisher, dry sand, dry graphite, or inert gas.

5.2 Special hazards arising from the substance or mixture

GENERAL FIRE HAZARD: None for solid formed product. Nonflammable.

This solid formed product does not constitute a fire or explosion hazard. Finely divided chips may present a fire and explosion hazard in the presence of an ignition source. Auto-ignition temperature for powder in air: 249°C.

5.3 Advice for firefighters

DO NOT USE water or CO₂ extinguishers as these agents may cause an explosion.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

None

6.2 Environmental precautions

None

6.3 Methods and material for containment and cleaning up

No special procedures needed.

6.4 Reference to other sections

N/A

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

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No protective measures required in condition as delivered.

7.2 Conditions for safe storage, including any incompatibilities

No protective measures required in condition as delivered. Keep away from incompatible materials (see section 10). No other specific storage requirements for solid form product.

7.3 Specific end use(s)

N/A

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

8.1 Control parameters

N/A

8.2 Exposure controls

Wear eye/face protection and respiratory protection when cutting or grinding or welding this material. Use appropriate protective clothing such as welding aprons and gloves when welding or burning.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- APPEARANCE/COLOUR: Solid/Metallic

- ODOUR: Odourless

- pH-VALUE: N/E

- SOLUBILITY IN WATER: Insoluble

9.2 Other information

N/A

10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions of use, storage and transport for solid product.

10.2 Chemical stability

No decomposition takes place if used as prescribed.

10.3 Possibility of hazardous reactions

Contact with certain acids may result in the release of gaseous acid decomposition products (e.g. hydrogen).

10.4 Conditions to avoid

Contact with incompatible materials. Avoid creating finely divided, concentrated airborne particulates in the presence of ignition sources.

10.5 Incompatible materials

Acids, Oxidizing Agents, Halogens. Reacts with strong acids to form explosive hydrogen gas and heat.

10.6 Hazardous decomposition products

No dangerous decomposition products are known. Welding fumes, gases and dusts may occur through treatment of the metal, including metal and metallic oxide fumes. Reaction with water, steam, acids, etc. can evolve hydrogen, which is highly dangerous fire and explosion hazard.

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11. TOXICOLOGY INFORMATION

11.1. Information on toxicological effects

Studies have indicated that after interaction of the clean surface with the atmosphere titanium metal build immediately a passive titanium dioxide layer. This coating protects the metal from further reaction.

Furthermore, transformation testing has shown that titanium metal compared to titanium dioxide has a similar release rate of titanium ions. In view of this, it may be assumed that human exposure towards titanium metal is secondary to that of titanium dioxide.

- ORAL ACUTE TOXICITY: Has been determined in a study with titanium dioxide, oral LD₅₀ >5000 mg/kg bw/day.

- DERMAL ACUTE TOXICITY: Unknown

- INHALATION ACUTE TOXICITY: Negligible

- SKIN/EYE/RESPIRATORY TRACT IRRITATION/SENSITIZATION: Not irritating/Not sensitizing.

MUTAGENICITY: Not mutagen.

CARCINOGENICITY: Not carcinogen.

12. ECOLOGICAL INFORMATION

12.1. Toxicity

Titanium is solid, compact and not soluble in water. Non-hazardous.

12.2. Persistence and degradability

Not relevant.

12.3. Bioaccumulative potential

N/A

12.4. Mobility in soil

N/A

12.5. Results of PBT and vPvB assessment

N/A

12.6. Other adverse effects

N/A

13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Scrap materials should be recycled, according to local regulations.

14. TRANSPORT INFORMATION

No special regulations, transport as non-hazardous goods.

14.1. UN number

N/A

14.2. UN proper shipping name

N/A

14.3. Transport hazard class

N/A

14.4. Packing group

N/A

14.5. Environmental hazards

N/A

14.6. Special precautions for user

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N/A

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

N/A

15. REGULATORY INFORMATION

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

According to local law.

12.2. Chemical safety assessment

A chemical safety assessment for titanium has been performed.

16. OTHER PRECAUTIONS

Information included in this document was obtained from sources which we believe are reliable. However, HDC srl does not give any assurance with the view of completeness and validity. Because the conditions or methods of handling, storage, use and/or disposal of this product are beyond the control and knowledge of the manufacturer, he cannot assume responsibility for adverse events which may occur in the use and/or misuse of this product. This Material Safety Data Sheet serves only as guideline for adequate handling of the material by an educated person.

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