



According to Regulation (EC) No. 1907/2006

Date of issue: 25.11.2014

Zirkon BioStar S-HT

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Printing date: 15.02.2016

1. Identification of the substance / Preparation and Company:

Identification of the substance or preparation:

Commercial product name: Zirkon BioStar S-HT

Company / Manufacturer:

ERNST HINRICHS Dental GmbH

Borsigstr. 1

D - 38644 Goslar

0 53 21 / 5 06 24

0 53 21 / 5 08 81

info@hinrichs-dental.de / www.hinrichs-dental.de

2. Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008): No classification.

Classification (67/548/EEC, 1999/45/EC) No classification

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008): No labelling required

2.3 Other hazards

This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).

Zirconium dioxide: This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

Hafnium dioxide: This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

Yttrium oxide: This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

3. Composition/information on ingredients

3.1 Mixtures

Chemical nature: Mixture

Hazardous components

Chemical Name	CAS-No. EC-No. Registration number	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
zirconium dioxide	1314-23-4 215-227-2 01- 2119486976-14		> 70 - < 90
hafnium dioxide	12055-23-1 235-013-2 /		> 1 - < 5
yttrium oxide	1314-36-9 215-233-5 /		> 1 - < 5

4. First aid measures

4.1 Description of first aid measures

In case of skin contact: Wash off with soap and water.

If swallowed: Obtain medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms: No information available.

Risks: No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment: No information available.



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5. Firefighting measures

- 5.1 Extinguishing media
 Suitable extinguishing media: The product itself does not burn, Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
 Unsuitable extinguishing media: None known.
- 5.2 Special hazards arising from the substance or mixture
 Specific hazards during firefighting: None known.
 Hazardous combustion products: None known.
- 5.3 Advice for firefighters
 Special protective equipment for firefighters: In the event of fire, wear self-contained breathing apparatus.
 Further information: Prevent fire extinguishing water from contaminating surface water or the ground water system.

6. Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
 Personal precautions: Use personal protective equipment.
 Avoid dust formation.
 Avoid dust accumulation in enclosed space.
- 6.2 Environmental precautions: Do not flush into surface water or sanitary sewer system.
- 6.3 Methods and materials for containment and cleaning up
 Methods for cleaning up: Use mechanical handling equipment.
 Pick up and transfer to properly labelled containers.
- 6.4 Reference to other sections: For personal protection see section 8.

7. Handling and storage

- 7.1 Precautions for safe handling
 Advice on safe handling: Avoid dust formation. Provide sufficient air exchange and/or exhaust in workrooms. Avoid exceeding the given occupational exposure limits (see section 8).
 Advice on protection against fire and explosion: No special precautions required.
 Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Keep working clothes separately.
- 7.2 Conditions for safe storage, including any incompatibilities
 Dust explosion class: No data available.
 Requirements for storage areas and containers: Store in accordance with the particular national regulations.
 Further information on storage conditions: Store in tightly closed containers in a dry place.
- 7.3 Specific end use(s)
 Specific use(s): No data available.

8. Exposure controls/personal protection

8.1 Control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Update	Basis
zirconium dioxide	1314-23-4	TWA	5 mg/m3	2005-04-06	GB EH40
Further information	: Zirconium				
		STEL	10 mg/m3	2005-04-06	GB EH40



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Further information	:	Zirconium
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DNEL

Zirconium dioxide:	End Use: Workers Exposure routes: Skin contact Potential health effects: Long-term systemic effects Value: > 15.75 mg/kg No data available
Hafnium dioxide:	End Use: Workers Exposure routes: Inhalation Potential health effects: Long-term systemic effects Value: 5 mg/m3 No data available.
Yttrium oxide:	No data available
PNEC	
Zirconium dioxide:	No data available.
Hafnium dioxide:	No data available.
Yttrium oxide:	No data available.

8.2 Exposure controls

Engineering measures	Dust must be extracted directly at the point of origin.
Personal protective equipment	
Eye protection	Safety glasses
Hand protection	
Material:	Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374.
Remarks:	The data about break through time/strength of material is not valid for undissolved solids/dust.
Skin and body protection:	Protective suit
Respiratory protection:	Respiratory protective device with particle filter EN 143.
Environmental exposure controls	
General advice:	Do not flush into surface water or sanitary sewer system.

9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance:	disc, block, cylinder, customer-specific form
Colour:	white
Odour:	odourless
Odour Threshold:	No data available.
pH:	No data available.
Melting point/range:	No data available.
Boiling point/boiling range:	Not applicable.
Flash point:	Not applicable.
Evaporation rate:	Not applicable.
Flammability:	Negative.
Lower explosion limit:	No data available.
Upper explosion limit:	No data available.
Vapour pressure:	No data available.
Relative vapour density:	Remarks: Not applicable.
Density:	No data available.
Water solubility:	Practically insoluble.
Partition coefficient: noctanol/water:	Not applicable.
Auto-ignition temperature:	Not auto-flammable.
Thermal decomposition:	Not applicable.
Viscosity, dynamic:	Not applicable.



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Viscosity, kinematic:	Not applicable.
Explosive properties:	Not explosive.
Oxidizing properties:	The substance or mixture is not classified as oxidizing.
9.2 Other information	
Burning number:	1
Flammability (contact with water):	Not highly flammable.

10. Stability and reactivity

10.1 Reactivity	No hazards to be specially mentioned.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	
Hazardous reactions:	None known.
10.4 Conditions to avoid:	None known.
10.5 Incompatible materials	
Materials to avoid:	None known.
10.6 Hazardous decomposition products:	
Other information:	Not applicable.

11. Toxicological information

11.1 Information on toxicological effects	
Product	
Acute oral toxicity:	No data available.
Acute inhalation toxicity:	No data available.
Acute dermal toxicity:	No data available.
Skin corrosion/irritation:	No data available.
Serious eye damage/eye Irritation:	No data available.
Respiratory or skin sensitisation:	No data available.
Germ cell mutagenicity	
Genotoxicity in vitro:	No data available.
Genotoxicity in vivo:	No data available.
Carcinogenicity:	No data available.
Reproductive toxicity:	No data available.
Teratogenicity:	No data available.
STOT - single exposure:	Remarks: No data available.
Repeated dose toxicity:	Remarks: No data available.
STOT - repeated exposure:	Remarks: No data available.
Further information:	For risk assessment data of relevant ingredients: None known.
Components:	
Zirconium dioxide :	
Acute oral toxicity:	LD50 Rat, female: > 5,000 mg/kg Method: OECD Test Guideline 423 GLP: No data available
Acute inhalation toxicity:	LC50 Rat, male and female: 4.3 mg/l Exposure time: 4 h Aerosol Method: OECD Test Guideline 436 GLP: No data available Remarks: An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.
Acute dermal toxicity:	No data available.
Skin corrosion/irritation:	Species: Rabbit Exposure time: 4 h Result: No skin irritation Method: OECD Test Guideline 404 Species: Rabbit
Serious eye damage/eye Irritation:	



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Respiratory or skin sensitisation:	Exposure time: 1 h Result: No eye irritation Method: OECD Test Guideline 405 Test Method: Maximisation Test (GPMT) Species: Guinea pig Result: Does not cause skin sensitisation. Method: OECD Test Guideline 406
Germ cell mutagenicity Genotoxicity in vitro:	Type: Ames test Test species: Salmonella typhimurium with and without metabolic activation Result: negative Method: OECD Test Guideline 471 GLP: No data available Type: Chromosome aberration test in vitro Test species: Human lymphocytes with and without metabolic activation Result: negative Method: OECD Test Guideline 473 GLP: No data available Type: In vitro gene mutation study in mammalian cells Test species: L5178Y cells (mouse lymphoma) with and without metabolic activation Result: negative Method: OECD Test Guideline 476 GLP: No data available
Genotoxicity in vivo: Carcinogenicity: Reproductive toxicity: Teratogenicity: STOT - single exposure:	No data available. No data available. No data available. No data available. Assessment: The substance or mixture is not classified as specific target organ toxicant, single exposure.
Repeated dose toxicity:	Rat, male and female: NOAEL: 3,150 - 7,080 mg/kg Application Route: Oral Exposure time: 90-day Method: OECD Test Guideline 408 Test substance: CH ₂ O ₇ Zr ₂ (CAS-No. 5219-64-4) Remarks: Read-across (Analogy)
STOT - repeated exposure:	Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure. None known.
Further information: Hafnium(IV) oxide :	
Acute oral toxicity:	No data available.
Acute inhalation toxicity:	No data available.
Acute dermal toxicity:	No data available.
Skin corrosion/irritation:	No data available.
Serious eye damage/eye Irritation:	No data available.
Respiratory or skin sensitisation:	No data available.
Germ cell mutagenicity	
Genotoxicity in vitro:	No data available.
Genotoxicity in vivo:	No data available.
Carcinogenicity:	No data available.
Reproductive toxicity:	No data available.
Teratogenicity:	No data available.
STOT - single exposure:	Remarks: No data available.
Repeated dose toxicity:	Remarks: No data available.



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STOT - repeated exposure:	Remarks: No data available.
Further information:	None known.
Yttrium oxide :	
Acute oral toxicity:	LD50 Rat: > 5,000 mg/kg Method: No information available. GLP: No information available.
Acute inhalation toxicity:	No data available.
Acute dermal toxicity:	No data available Species: Rabbit
Skin corrosion/irritation:	Exposure time: 24 h Result: No skin irritation Method: No information available.
Serious eye damage/eye Irritation:	Result: Mild eye irritation Method: No information available.
Respiratory or skin sensitisation:	No data available.
Germ cell mutagenicity	
Genotoxicity in vitro:	No data available.
Genotoxicity in vivo:	No data available.
Carcinogenicity:	No data available.
Reproductive toxicity:	No data available.
Teratogenicity:	No data available.
STOT - single exposure:	Remarks: No data available.
Repeated dose toxicity:	Remarks: No data available.
STOT - repeated exposure:	Remarks: No data available.
Further information:	None known.

12. Ecological information

12.1 Toxicity	
Product:	
Toxicity to fish:	No data available.
Toxicity to daphnia and other aquatic invertebrates:	No data available.
Toxicity to algae:	No data available.
Toxicity to bacteria:	No data available.
Toxicity to fish (Chronic toxicity):	No data available.
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity):	No data available.
Toxicity to soil dwelling organisms:	No data available.
Toxicity to terrestrial organisms:	No data available.
Components:	
Zirconium dioxide :	
Toxicity to fish:	LC50 (Danio rerio (zebra fish)): > 100 mg/l Exposure time: 96 h Test Method: static test Method: OECD Test Guideline 203 GLP: No data available Fresh water
Toxicity to daphnia and other aquatic invertebrates:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Exposure time: 48 h Test Method: static test Method: Directive 67/548/EEC, Annex V, C.2. GLP: No data available Fresh water



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<p>Toxicity to algae:</p>	<p>NOEC (<i>Desmodesmus subspicatus</i>): 0.004 mg/l Exposure time: 72 h Test Method: static test Test substance: Reaction mass of cerium dioxide and zirconium dioxide (909-709-8) Method: OECD Test Guideline 201 GLP: yes Fresh water Weight of Evidence Read-across (Analogy) No data available.</p>
<p>Toxicity to fish (Chronic toxicity): Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): Toxicity to soil dwelling Organisms: Plant toxicity:</p>	<p>No data available. No data available. No data available. NOEC: ≥ 264 mg/kg Species: <i>Lycopersicon esculentum</i> Test substance: Cl_2OZr (CAS-No. 7699-43-6) Method: EPA OPPTS 850.4230 GLP: No data available Read-across (Analogy) No data available.</p>
<p>Toxicity to terrestrial organisms: Hafnium(IV) oxide : Toxicity to fish: Toxicity to daphnia and other aquatic invertebrates: Toxicity to algae: Toxicity to bacteria: Toxicity to fish (Chronic toxicity): Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): Toxicity to soil dwelling: Yttrium oxide : Toxicity to fish: Toxicity to daphnia and other aquatic invertebrates: Toxicity to algae: Toxicity to bacteria: Toxicity to fish (Chronic toxicity): Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity): Toxicity to soil dwelling organisms: Plant toxicity: Toxicity to terrestrial organisms:</p>	<p>No data available. No data available No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available. No data available.</p>
<p>12.2 Persistence and degradability Product: Biodegradability:</p>	<p>The methods for determining biodegradability are not applicable to inorganic substances.</p>
<p>Stability in water: Components: Zirconium dioxide : Biodegradability:</p>	<p>No data available. No data available. The methods for determining biodegradability are not applicable to inorganic substances.</p>



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Stability in water:	No data available.
Hafnium(IV) oxide :	
Biodegradability:	The methods for determining biodegradability are not applicable to inorganic substances.
Stability in water:	No data available
Yttrium oxide :	
Biodegradability:	The methods for determining biodegradability are not applicable to inorganic substances.
Stability in water:	No data available
12.3 Bioaccumulative potential	
Product:	
Bioaccumulation:	This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).
Partition coefficient: noctanol/water:	Not applicable.
Components:	
Zirconium dioxide :	
Bioaccumulation:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Partition coefficient: noctanol/water:	Not applicable.
Hafnium(IV) oxide :	
Bioaccumulation:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Partition coefficient: noctanol/water:	Not applicable.
Yttrium oxide :	
Bioaccumulation:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Partition coefficient: noctanol/water:	Not applicable
12.4 Mobility in soil	
Product:	
Mobility:	No data available.
Components:	
Zirconium dioxide :	
Mobility:	No data available.
Hafnium(IV) oxide :	
Mobility:	No data available.
Yttrium oxide :	
Mobility:	No data available.
12.5 Results of PBT and vPvB assessment:	
Product:	
Assessment:	This mixture contains no substance considered to be persistent, bioaccumulating and toxic (PBT).
Components:	
Zirconium dioxide :	
Assessment	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Hafnium(IV) oxide:	
Assessment:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Yttrium oxide :	
Assessment:	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).



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12.6 Other adverse effects

Product:
Ozone-Depletion Potential: No data available.
Additional ecological information: No information on ecology is available.
None known.

Components:
Zirconium dioxide :
Ozone-Depletion Potential: No data available.
Additional ecological information: None known.
Hafnium(IV) oxide
Ozone-Depletion Potential: No data available.
Additional ecological information: None known.

Yttrium oxide :
Ozone-Depletion Potential: No data available
Additional ecological information: None known.

13. Disposal considerations

13.1 Waste treatment methods
Product: In accordance with local and national regulations.
This product cannot be classified with disposal identification key acc. to the EU disposal directives as a classification results from the intended utilisation purpose of the consumer.

14. Transport information

14.1 UN number
ADR: Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

14.2 Proper shipping name
ADR: Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

14.3 Transport hazard class
ADR: Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

14.4 Packing group
ADR: Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

14.5 Environmental hazards
ADR: Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

14.6 Special precautions for user
Remarks: For personal protection see section 8.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: No data available

15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture.
Major Accident Hazard Legislation Update: 16. Dezember 2003
96/82/EC: Is not subject to the Seveso II Directive.

15.2 Chemical Safety Assessment no



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16. Other information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.