1. Identification of the substance / Preparation and Company:

Identification of the substance or preparation:

Commercial product name:	Zirkon BioStar Blanks HT, high translucent
Company / Manufacturer:	SILADENT Dr. Böhme & Schöps GmbH Im Klei 26 D - 38644 Goslar 0 53 21 / 37 79 – 0 0 53 21 / 38 96 32 info@siladent.de / www.siladent.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 oxide (ZrO2):	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).
Hafnium dioxide	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Aluminium oxide	This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Erbium 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 (67/548/EEC)	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
zirconium dioxide	1314-23-4 215-227-2			> 88 - < 96
yttrium oxide	1314-36-9 215-233-5 /			> 5 - < 10
hafnium dioxide	12055-23-1 235-013-2 /			>= 1 - <= 5
aluminium oxide	1344-28-1 215-691-6 / /			<= 1
dierbium trioxide	12061-16-4 235-045-7			<= 1

4. First aid measures

4.1 Description of first aid measures

If inhaled:	Remove to fresh air. If symptoms persist, call a physician
In case of skin contact:	Wash off with soap and water.
In case of eye contact:	Rinse with plenty of water. If eye irritation persists, consult a specialist.
If swallowed:	Clean mouth with water and drink afterwards plenty of water. 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.

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:

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 work rooms. 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.
Dust explosion class:	No data available.

7.2 Conditions for safe storage, including any incompatibilities

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
Further information	Zirconium				
Aluminium oxide (except γ-aluminium oxide)	1344-28-1	TWA (Inhalable)	10 mg/m3	2005-04-06	GB EH40
Further information	15: For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit. Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3.Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with. Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used				
		TWA (Respirable	4 mg/m3	2005-04-06	GB EH40
Further information	15: For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m-3 8-hour TWA of inhalable dust or 4 mg.m-3 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit. Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/3.Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with. Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used				

DNEL	
Zirconium oxide (ZrO2):	No data available.
Yttrium oxide:	No data available.
Hafnium dioxide:	No data available.
Aluminium oxide:	No data available.
Erbium oxide:	No data available.
PNEC	
Zirconium oxide (ZrO2):	No data available.
Yttrium oxide:	No data available.
Hafnium dioxide:	No data available.
Aluminium oxide:	No data available.
Erbium oxide:	No data available.

8.2 Exposure controls

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
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
Colour:	white
Odour:	odourless
Odour Threshold:	No data available
pH:	No data available
Melting point/range:	No data available
Boiling point/boiling range:	No data available
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:	> 6 g/cm3
Water solubility:	No data available
Partition coefficient: n octanol/ water:	Not applicable
Auto-ignition temperature:	not auto-flammable
Thermal decomposition:	Not applicable
Viscosity, dynamic:	Not applicable
Viscosity, kinematic:	Not applicable
Explosive properties:	Not explosive
Oxidizing properties:	not 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:	Conditions to avoid: None known.
10.5	Incompatible materials :	Materials to avoid: Nome known.
10.6	Hazardous decomposition products:	
	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.
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.

Components:
Zirconium oxide (ZrO2) :

Acute oral toxicity:	
Acute inhalation 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:	None known.

Components:
Zirconium oxide (ZrO2) :

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:	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
Skin corrosion/irritation:	Species: Rabbit 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.

Hafnium(IV) oxide :

Acute oral toxicity:	No data available.
Acute inhalation 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.
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.

Dialuminium trioxide:

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.
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.

Erbium oxide :

Acute oral 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:	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 soil dwelling organisms:	No data available.
Toxicity to terrestrial organisms:	No data available.

Components:
Zirconium oxide (ZrO2) :

Toxicity to fish	
Toxicity to daphnia and other aquatic invertebrates:	No data available.
Toxicity to algae:	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.
Plant toxicity:	No data available.
Toxicity to terrestrial organisms:	No data available.

Yttrium oxide :

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.
Plant toxicity:	No data available.
Toxicity to terrestrial organisms:	No data available.

Hafnium(IV) oxide

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.

Dialuminium trioxide :

Toxicity to fish:	LC50 (Salmo trutta): > 100 mg/l Test Method: semi-static test Method: OECD Test Guideline 203 GLP: No information available.
Toxicity to daphnia and other aquatic invertebrates:	EC50 (Daphnia magna (Water flea)): > 100 mg/l Test Method: semi-static test Method: OECD Test Guideline 202 GLP: No information available.
Toxicity to algae:	ErC50 (Pseudokirchneriella subcapitata): > 100 mg/l Test Method: static test Method: OECD Test Guideline 201 GLP: No information available. Growth rate
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.
Plant toxicity:	No data available.
Toxicity to terrestrial organisms:	No data available.

Erbium oxide :

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.
Plant toxicity:	No data available.
Toxicity to terrestrial organisms:	No data available.

12.2 Persistence and degradability

Product:	
Biodegradability:	The methods for determining biodegradability are not applicable to inorganic substances.

Stability in water: No data available.

Components:
Zirconium oxide (ZrO2):
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.

Hafnium(IV) oxide :
Biodegradability: The methods for determining biodegradability are not applicable to inorganic substances.
Stability in water: No data available.

Dialuminium trioxide :
Biodegradability: The methods for determining biodegradability are not applicable to inorganic substances.
Stability in water: No data available.

Erbium 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 oxide (ZrO2) :
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.

Hafnium(IV) oxide :
Bioaccumulation: This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Partition coefficient: noctanol/water: Not applicable.

Dialuminium trioxide
Bioaccumulation This substance is not considered to be persistent, bioaccumulating and toxic (PBT).
Partition coefficient: noctanol/ water: Not applicable

Erbium 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
Components:
Zirconium oxide (ZrO2) :
Mobility No data available.
Yttrium oxide :
Mobility No data available.
Hafnium(IV) oxide :
Mobility No data available.
Dialuminium trioxide :
Mobility No data available.
Erbium 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 oxide (ZrO2) :
Assessment: This substance is not considered to be persistent, bioaccumulation and toxic (PBT).

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

Dia
luminium trioxide :
Assessment: This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

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

12.6 Other adverse effects

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

Components:
Zirconium oxide (ZrO2) : No data available.
Ozone-Depletion Potential: None known.

Yttrium oxide :
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.

Dialuminium trioxide :

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

Erbium oxide :

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

13. Disposal considerations

13.1	Waste treatment methods:	In accordance with local and national regulations.
	Product	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:	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. December 2003
96/82/EC:	Is not subject to the Seveso II Directive

15.2 Chemical Safety Assessment
no

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.