Safety data sheet

according to 1907/2006/EC, Article 31

Investment: 3D Vest

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

1.1 Product identifier

Phosphate-bonded investment material

Trade name: 3D Vest

REACH registration number: If available, see section 3

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

Identified uses

Exclusively for the production of dental castings and press ceramics

Uses advised against

None known

1.3 Details of the supplier of the safety data sheet

Company name	DFS-DIAMON GmbH
Street address:	Ländenstrasse 1
City and postal code:	D-93339 Riedenburg
Phone:	+49 (0) 9442 9189 0
Fax:	+49 (0) 9442 9189 37
E-mail:	info@dfs-diamon.de
Contact person:	Armin Aunkofer
E-mail (direct)	armin.aunkofer@dfs-diamon.de
Website:	https://www.dfs-diamon.de

1.4 Emergency telephone number

24h Emergency contact (DFS): +49 (0) 700 24112112
US Emergency contact: +1 872 5888271

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Regulation (EC) No. 1272/2008

Specific target organ toxicity — repeated exposure (inhalation, lungs): Category 1

H372 – Causes damage to lungs through prolonged or repeated exposure (inhalation)

2.2 Label elements

According to Regulation (EC) No. 1272/2008

Hazard-determining components:

Quartz (SiO_2)
Cristobalite

Symbol(s)



GHS08

Signal word: Danger

Hazard statement(s): H372: Causes damage to lungs through prolonged or repeated exposure (inhalation)

Precautionary statements:
P260: Do not breathe dust
P264: Wash hands thoroughly with water and soap after handling
P270: Do not eat, drink or smoke when using this product
P314: Get medical advice/attention if you feel unwell
P501: Dispose of contents/container in accordance with local regulations

2.3 Other hazards

May cause silicosis.

Ammonia may be released at temperatures above 200 °C. Ammonia is irritating to the respiratory system. A PBT/vPvB assessment is not available, as no chemical safety assessment was required or conducted.

SECTION 3: Composition/information on ingredients

Information on ingredients / hazardous substances in accordance with Regulation (EC) No. 1272/2008 (CLP)

Substance	Content	CAS No.	EC No.	Classification (CLP)	Hazard Statement(s)
Quartz (SiO_2)	50 – 70 %	14808-60-7	238-878-4	STOT RE 1 (inhalation, lungs)	H372
Cristobalite	10 – 30 %	14464-46-1	238-455-4	STOT RE 1 (inhalation, lungs)	H372
Magnesium oxide	5 – 15 %	1309-48-4	215-171-9	Not classified	—
Ammonium dihydrogen phosphate	5 – 15 %	7722-76-1	231-764-5	Not classified	—

Information on ingredients / hazardous substances in accordance with Directive 67/548/EEC or 1999/45/EC *(for reference purposes only)*

Substance	Content	CAS No.	EC No.	Symbol(s)	Risk Phrase(s)
Quartz (SiO_2)	50 – 70 %	14808-60-7	238-878-4	Xn	R48/20
Cristobalite	10 – 30 %	14464-46-1	238-455-4	Xn	R48/20
Magnesium oxide	5 – 15 %	1309-48-4	215-171-9	—	—
Ammonium dihydrogen phosphate	5 – 15 %	7722-76-1	231-764-5	—	—

For the full wording of the H statements, see Section 16
For the full wording of the R phrases, see Section 16

SECTION 4: First aid measures

4.1 Description of first aid measures

Inhalation
In case of vapors or smoke (e.g. ammonia):
Move the person to fresh air.
In case of dust release:
Move the person to fresh air.
Possible symptoms:
Local irritation or, if applicable, corrosive effects on mucous membranes (eyes, respiratory tract).
If discomfort persists:
Seek medical advice.

Skin contact
Wash thoroughly with water and soap.

Eye contact
After exposure to ammonia vapor:
Rinse thoroughly with plenty of water, keeping the eyelid open.
Consult an eye specialist if symptoms persist.

In case of dust release
Mechanical irritation possible due to foreign body effect
Rinse thoroughly with water as above.
Consult an ophthalmologist if eye irritation persists.

Ingestion
No specific first aid measures required.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms
None known

Hazards
None known

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: All standard extinguishing agents are suitable (e.g. water spray, foam, CO_2, dry chemical)

5.2. Special hazards arising from the substance or mixture
Ammonia may be released at temperatures above 200 °C. The product itself is non-combustible.

5.3. Advice for firefighters
Adapt firefighting measures to the surrounding environment.
Use standard protective equipment for firefighting.
Avoid inhalation of combustion gases.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
In case of dust release:
Always work with appropriate respiratory protection.
Avoid inhalation of dust.
Ensure adequate ventilation.
Avoid contact with eyes and skin.

6.2. Environmental precautions
Prevent entry into soil, surface water, groundwater and sewage systems.

6.3. Methods and material for containment and cleaning up
Collect mechanically using suitable tools.
Avoid dust formation during cleanup.

6.4. Reference to other sections
For personal protective equipment, see Section 8.
For disposal information, see Section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

In case of dust release:
Always use respiratory protection.

In case of vapor release (e.g. ammonia):

Use respiratory protection. Provide local exhaust ventilation if necessary. Follow general safety precautions when handling chemicals. Avoid dust formation. Do not eat, drink or smoke while working with the product.

7.2. Conditions for safe storage, including any incompatibilities
Store in a cool and dry place.
Keep container tightly closed.
Use opened containers promptly.
Protect from moisture and water.

Storage class (LGK):
13 – Non-combustible solid materials

7.3. Specific end use(s)
None other than those listed in Section 1 are known.

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Occupational exposure limits (Germany – TRGS / DFG MAK):

Substance	CAS No.	EC No.	Type of exposure	Limit value	Source / Note
Quartz (SiO_2)	14808-60-7	238-878-4	Respirable fraction	—	Listed in DFG MAK, no specific value assigned
Cristobalite	14464-46-1	238-455-4	Respirable fraction	—	Listed in DFG MAK, no specific value assigned
Magnesium oxide	1309-48-4	215-171-9	Respirable fraction (DFG MAK)	1.5 mg/m³	DFG MAK value
			Inhalable fraction (DFG MAK)	4 mg/m³	DFG MAK value
			Fume (DFG MAK)	—	No MAK value assigned
			Inhalable fraction (AGW, STEL)	10 mg/m³ (short-term)	TRGS 900
			Respirable fraction (AGW)	1.25 mg/m³ (long-term)	TRGS 900

8.2. Exposure controls

Technical protective measures

Ensure suitable local exhaust ventilation or extraction at machines or workplaces.
Avoid dust formation.

Personal protective equipment

Respiratory protection

If occupational exposure limits are exceeded or large quantities of dust are released (e.g. during spillage), wear a half mask with P3 particulate filter.

Hand protection

No special measures required under normal use conditions.

Eye protection

Safety glasses with side protection.
If dust is present: use goggles (basket-type).

Skin and body protection

Wear suitable protective clothing.

Avoid contamination of clothing with product.

Change and wash soiled clothing before reuse.

Hygiene measures

Observe general chemical handling precautions.
Do not eat, drink, or smoke while working.
Wash hands and/or face before breaks and after work.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Property	Value
Appearance	Powder
Colour	Depending on pigmentation
Odour	Almost odourless
pH value	Approx. 5
Melting point / melting range	> 1500 °C
Flash point	Not applicable (non-flammable)
Water solubility	Poorly soluble
Auto-ignition	Not self-igniting; not self-heating

9.2 Other information

Property	Value
Bulk density	1100 – 1200 kg/m³
Additional data	No further physicochemical data have been determined

SECTION 10: Stability and reactivity

10.1. Reactivity

No data available.

10.2. Chemical stability

The product is chemically stable.

10.3. Possibility of hazardous reactions

Risk of decomposition when heated.
Ammonia is released when heated above 200 °C.

10.4. Conditions to avoid

No hazardous reactions known if used as intended.

10.5. Incompatible materials

Moisture, water

10.6. Hazardous decomposition products

Ammonia

SECTION 11: Toxicological information

11.1 Information on toxicological effects

No animal testing has been conducted with this product.

Endpoint	Data / Assessment
Acute toxicity (oral)	No data available
Acute toxicity (inhalation)	No data available
Acute toxicity (dermal)	No data available
Skin irritation	No data available
Eye irritation	No data available
Sensitisation	No data available
Repeated dose toxicity	No data available

STOT – Repeated exposure	Exposure route: Inhalation Target organ: Lungs Classification: According to CLP, STOT RE 1, H372 (based on respirable crystalline silica content). Classification and labelling of the mixture are based on voluntary self-classification by the manufacturer, referring to respirable crystalline silica (RCS) as classified by the Industrial Minerals Association Europe (IMA-Europe).
Germ cell mutagenicity	No data available
Carcinogenicity	No data available
Reproductive toxicity	No data available
Human experience	Mechanical irritation of skin and mucous membranes (eyes, respiratory tract) is possible. Ammonia vapours: May cause local irritation or corrosive effects to skin and mucous membranes (eyes, respiratory tract, gastrointestinal tract if ingested).
Additional information	When used and stored properly, no hazardous reactions are known. Improper handling may lead to silicosis due to respirable crystalline silica dust.

SECTION 12: Ecological information

12.1. Toxicity

No ecotoxicological studies are available for this product.

12.2. Persistence and degradability

Biodegradability: No data available

12.3. Bioaccumulative potential

Bioaccumulation: No data available

12.4. Mobility in soil

Mobility: No data available

12.5. Results of PBT and vPvB assessment

A PBT/vPvB assessment is not available, as a chemical safety assessment was not required or not conducted.

12.6. Other adverse effects

Further information: Do not allow product to enter drains, surface water or soil.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Dispose of in accordance with local official regulations.

Contaminated packaging

Dispose of in accordance with local official regulations

SECTION 14: Transport information

Not classified as dangerous goods under current transport regulations.

Subsection	Details
14.1 UN number	—
14.2 UN proper shipping name	—
14.3 Transport hazard classes	—
14.4 Packing group	—
14.5 Environmental hazards	—
14.6 Special precautions for user	None

SECTION 15: Regulatory information

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

National regulations (Germany):

Water hazard class (WGK):	WGK 1 – Slightly hazardous to water (Classification according to VwVwS, Annex 4)
Occupational safety regulations:	Observe: TRGS 906 (Technical Rules for Hazardous Substances – Carcinogenic Substances)

15.2. Chemical safety assessment

Substance safety assessment	A chemical safety report is not required for this product in accordance with Article 2(8), 2(9) or Article 14 of the REACH Regulation.

SECTION 16: Other information

Full text of R-phrases referred to in Sections 2 and 3

Quartz (SiO_2)

R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Cristobalite

R48/20	Harmful: danger of serious damage to health by prolonged exposure through inhalation.

Full text of H-statements referred to in Sections 2 and 3

Quartz (SiO_2)

H372	Causes damage to lungs through prolonged or repeated exposure (inhalation).

Cristobalite

H372	Causes damage to lungs through prolonged or repeated exposure (inhalation).

Further information

Amendments compared to the previous version are marked in the margin.
This version replaces all previous editions.

Our information is based on the current state of our knowledge and experience and has been compiled to the best of our knowledge. However, it is provided without any warranty or legal obligation. Changes due to technical progress and operational developments are reserved. This information describes only the characteristics of our products and services and does not constitute any guarantee of properties. The customer is not released from the responsibility to perform a careful inspection of the functions and possible applications of the products by appropriately qualified personnel. This also applies with regard to the protection of third-party rights. The mention of trade names of other companies does not constitute a recommendation and does not exclude the use of similar products.

Disclaimer

The above information is, to the best of our knowledge, correct and reliable at the time of compilation. However, DFS-Diamon GmbH does not accept any responsibility, guarantee, or liability for the accuracy, reliability, or completeness of the data provided. It is the responsibility of the user to ensure the suitability and completeness of the information for their specific application.

Training requirements

Employees must be informed about the silicon dioxide content of the product and trained in its intended and safe handling.

Glossary

Abbreviation	Meaning
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration Factor
BetrSichV	German Ordinance on Industrial Safety and Health
c.c.	Closed container
CAS	Chemical Abstracts Service (Registry Number Authority)
CESIO	European Committee on Organic Surfactants and their Intermediates
ChemG	German Chemicals Act
CMR	Carcinogenic, Mutagenic, Reproductive Toxicant
DIN	German Institute for Standardization
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EINECS	European Inventory of Existing Commercial Chemical Substances
EC50	Median Effective Concentration
GefStoffV	German Hazardous Substances Ordinance
GGVSEB	German Ordinance on the Transport of Dangerous Goods by Road, Rail and Inland Waterways
GGVSee	German Ordinance on the Transport of Dangerous Goods by Sea
GLP	Good Laboratory Practice
GMO	Genetically Modified Organism
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
ISO	International Organization for Standardization
LOAEL	Lowest Observed Adverse Effect Level
LOEL	Lowest Observed Effect Level
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
NOEL	No Observed Effect Level
o.c.	Open container
OECD	Organisation for Economic Co-operation and Development
OEL	Occupational Exposure Limit
PBT	Persistent, Bioaccumulative, Toxic
PEC	Predicted Environmental Concentration
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
STOT	Specific Target Organ Toxicity
SVHC	Substance of Very High Concern
TA	Technical Guideline (Technische Anleitung)
TPR	Third Party Representative (Art. 4 of REACH)
TRGS	Technical Rules for Hazardous Substances (Germany)
VCI	German Chemical Industry Association
vPvB	Very Persistent, Very Bioaccumulative
VOC	Volatile Organic Compounds
VwVwS	German Administrative Regulation on the Classification of Substances Hazardous to Water
WGK	Water Hazard Class
WHO	World Health Organization