

BORON NITRIDE COATINGS

According to Regulation (EC) No 1907/2006/EC REACH

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Combat Boron Nitride Coatings - Barium Free

Product name:

Combat Boron Nitride Coatings - Barium Free

Product Code

V, E, Sf, Sfg, 5Sf, 10Sf, 10Sfg

CAS-number: -

EC-number: -

REACH registration number:

01-2119947399-20-0003 (preregistration number boron nitride)

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

Identified uses of the substance/mixture: Industrial applications.

Not recommended uses of the substance/mixture:

Not intended for food and drug use.

1.3 Identification of the company

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2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

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

This mixture is classified as not hazardous according to Regulation (EC) 1272/2008.

Classification according to Directive 67/548/EEC and 1999/45/EC

This preparation is not dangerous in the sense of Directive 67/548/EEC and 1999/45/EC.

2.2 Label elements

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

There is no obligatory labelling requirement according to Regulation (EC) No 1272/2008.

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2.3 Other hazards

Unknown.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Mixtures

Substance	EC No.	CAS No.	REACH registration No	Concentration (%)	Classification according to Regulation (EC) No 1272/2008	Classification according to Directive 67/548/EEC
Boron Nitride	233-136-6	10043-11-5	17-2119680038-36-000	4-35	classified as non hazardous	classified as non hazardous
Smectite	235-374-6	12199-37-0	-	<30	classified as non hazardous	classified as non hazardous
Aluminium oxide	215-691-6	1344-28-1	-	0-15	classified as non hazardous	classified as non hazardous
Mortmorillonte	215-288-5	1318-93-0	-	0-10	classified as non hazardous	classified as non hazardous
Non-crystalline hydrated silica	-	20243-18-9	-	0-5	classified as non hazardous	classified as non hazardous
Water	231-791-2	7732-18-5	-	60-95	classified as non hazardous	classified as non hazardous

4. FIRST AID MEASURES

4.1 Description of first aid measures

General information:

Get medical attention if irritation develops and/or persists.

Inhalation:

If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

Skin contact:

Immediately wash skin with plenty of soap and water for 15 to 20 minutes. Remove contaminated clothing and shoes. Get medical attention if irritation develops or persists.

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Eye contact:

Immediately flush eyes with plenty of water for 15 to 20 minutes. Get medical attention, if irritation or symptoms of overexposure persists.

Ingestion:

If swallowed, do NOT induce vomiting. Call a physician or poison control centre immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms:

Exposure to dust may be irritating to eyes, skin, nose, throat and respiratory tract. Ingestion can cause nausea, vomiting, diarrhea and gastrointestinal irritation.

Inhalation may cause temporary mechanical irritation of the nose, throat and respiratory tract.

Nature of Hazard:

Routes of entry: inhalation, skin, eyes, ingestion; Target organs: not specified

4.3 Indication of any immediate medical attention and special treatment needed

Emergency aid: First Aid, decontamination, treatment of symptoms.

Treatment: Treat symptomatically.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable:

Chose appropriate extinguishing media according to the surrounding area.

Unsuitable:

High power water jet.

5.2 Special hazards arising from the substance or mixture

Decomposition of this product may yield oxides of boron and nitrogen (nitrogen oxides, e.g. NO₂, NO₃), irritating smoke and fumes, carbon monoxide (CO), carbon dioxide (CO₂), hydrogen chloride, ammonia, and oxides of magnesium, alumina and barium.

5.3 Advice for fire fighters

Wear special protective equipment for fire-fighters as self-contained breathing apparatus and full protective suit.

Additional information

Material is non-combustible and is not expected to pose a fire or explosion hazard. Chose appropriate extinguishing media according to the surrounding area. Dispose of fire debris and contaminated fire fighting water in accordance with official regulations. Keep upwind.

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6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Avoid generation and inhalation of dust/spray mist. Avoid contact with skin, eyes and clothes. Wear personal protective equipment. Refer to section 7 and 8.

6.2 Environmental precautions

Do not allow entering drains or surface water. Dumping into the environment must be prevented.

6.3 Methods and material for containment and cleaning up

Absorb with liquid-binding material (e.g. sand, diatomaceous earth, acid- or universal binding agents). Avoid generation of dust. Do not inhale dust/spray mist. Provide ventilation. Shovel or sweep up for re-use or disposal. Clean up spills immediately observing precautions in section 8. Waste disposal according to official state regulations. Refer to section 13.

6.4 Reference to other sections

Refer to section 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Information for safe handling

For industrial use only. Handle with care. Wear personal protective equipment. Avoid generation and inhalation of dust or spray mist. Avoid contact with skin, eyes and clothes. Do not use in areas without adequate ventilation. Wash hands and face after handling.

Technical measures

Provide for sufficient ventilation and punctiform suction at critical points to control airborne levels below recommended exposure limits. Provide sufficient washing facilities.

Precautions against fire and explosion

Product is not combustible. However, keep away from sources of ignition - No smoking. Refer to section 5. No further action is necessary.

7.2 Conditions for safe storage, including any incompatibilities

Technical measures and storage conditions

Store in a cool, dry, well ventilated area away from sources of heat and incompatible materials. Keep container tightly closed when not in use.

Packaging materials

Keep/store only in original container.

Requirements for storerooms and containers

Store locked up. Keep container tightly closed in a cool, well-ventilated place.

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Information about storing together in storage facility

Do not store together with incompatible materials. Keep away from food, drink and animal feeding stuffs.

Further information concerning storage conditions

None

Storage class: 12 Non combustible liquid materials

7.3 Specific end use(s)

Refer to section 1.2

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Limits for occupational exposure

Occupational exposure limit values

Substance	CAS No	Type of limit value (Country)	Occupational exposure limit value				Limitation of exposure peaks	Source/ Remark
			Long term		Short term			
			mg/m ³	ml/m ³ (ppm)	mg/ml ³	ml/m ³ (ppm)		
Dust, inhalable	-	OEL (AT, DK, DE)	10	-	20	-	2 (II)	GESTIS Int. Limit Values, TR GS 900, DE: AGS
		OEL (DE)	4	-	-	-	-	GESTIS Int. Limit Values, DFG
		OEL (BE, FR, HU, ES, SE, CH)	10	-	-	-	-	GESTIS Int. Limit Values, FR: restrictive statutory limit value
		OEL (USA)	15	-	-	-	-	GESTIS Int. Limit Values, OSHA
Dust, respirable	-	OEL (AT)	5	-	10	-	-	GESTIS Int. Limit Values
		OEL (BE, ES, CH)	3	-	-	-	-	GESTIS Int. Limit Values
		OEL (FR, SE, USA)	5	-	-	-	-	GESTIS Int. Limit Values, FR: respirable aerosol
		OEL (DE)	3	-	6	-	2 (II)	GESTIS Int. Limit Values, TR GS 900; AGS
		OEL (DE)	1.5	-	-	-	-	GESTIS Int. Limit Values, DFG

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Aluminium oxides	1344-28-1	OEL (DE)	4 (1.5)	-	-	-	-	GESTIS Int. Limit Values, DFG, inhalable aerosol (respirable aerosol)
		OEL (DK)	5 (2)	-	10 (4)	-	-	GESTIS Int. Limit Values, inhalable aerosol (respirable aerosol)
		OEL (PL)	2.5 (1.2)	-	16	-	-	GESTIS Int. Limit Values; fume, total dust (fume, respirable dust)
		OEL (AT)	5	-	10	-	-	GESTIS Int. Limit Values, respirable aerosol
		OEL (UK)	10 (4)	-	-	-	-	GESTIS Int. Limit Values, inhalable aerosol (respirable aerosol)
		OEL (ES)	10 (5)	-	-	-	-	GESTIS Int. Limit Values, inhalable Aerosol (respirable aerosol)
		OEL (SE)	5 (2)	-	-	-	-	GESTIS Int. Limit Values, inhalable aerosol (respirable aerosol)
		OEL (FR)	10	-	-	-	-	GESTIS Int. Limit Values; respirable aerosol

DNEL and PNEC values

DNEL values

Substance	CAS No.	Exposure route	Exposure frequency	Worker/consumer	DNEL
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Aluminium oxide	1344-28-1	Inhalation	Local effects – long term exposure	Worker	15.62 mg/m ³
		Oral	Systemic effects – long term effects	Consumer	3.29 mg/kg bw/day

PNEC values

Substance	CAS No.	Medium	PNEC
Aluminium oxide	1344-28-1	Freshwater	74.9 µg/L
		PNEC STP	20 mg/L

8.2 Exposure controls

Occupational exposure controls

General protection and hygiene measures: Wash hands and face before breaks and at the end of work. Do not eat, drink, smoke or sneeze at the workplace. Provide adequate ventilation at workplace. Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

Chemical handling

Avoid contact with skin, eyes and clothing. Avoid generation and inhalation of dust. Wash contaminated clothing prior to re-use. Apply moisturizing cream to areas of skin that may be dry due to powder handling.

Personal protection equipment

Wear personal protection equipment. Wash contaminated clothing prior to reuse.

Respiratory protection

If ventilation is not sufficient to effectively prevent build-up of dusts, appropriate respiratory protection must be provided (appropriate: respirator according to European Standard EN 149).

Hand protection

Wear appropriate, impervious gloves.

Eye protection

Wear safety glasses with side shields.

Skin protection

Normal work clothing (long sleeved shirt, long pants and gloves) is recommended.

Environmental exposure controls

Refer to section 6. No further action is necessary.

Consumer exposure controls

Refer to section 7. No further action is necessary.

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9. PHYSICAL & CHEMICAL PROPERTIES

9.1. Information on the basic physical and chemical properties

State of matter	Liquid
Colour	White
Odour	Odourless
Odour threshold	No data available
Density	1.0 – 2.1 g/cm ³
Package density	Not applicable
pH	4.5 - 9
Melting point / range	Not determined
Boiling temperature / range	107 °C (225 °F)
Flash point	No data available
Flammability	Not flammable
Lower flammability limit	Not applicable
Upper flammability limit	Not applicable
Explosion hazard	No data available
Lower explosion limit	No data available
Upper explosion limit	No data available
Ignition temperature	Not relevant
Decomposition temperature	2204 °C (decomposition temperature of boron nitride)
Oxidizing characteristics	No data available
Vapour pressure	Not applicable
Relative vapour density	Not applicable
Speed of vaporization / evaporation rate	Not applicable
Volatility	50 – 60 %
Solubility in water	Not applicable
Solubility in other solvents	No data available
log P O/W (n-octanol / water)	No data available
Viscosity (dynamic / kinematic)	No data available

9.2. Other information

Explosive dust-air mixtures may form if high concentrations of product dust are suspended in air.

10. CHEMICAL STABILITY & REACTIVITY INFORMATION

10.1 Reactivity

No ignition, explosion, self-heating or visible decomposition under standard conditions.

10.2 Chemical stability

Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

Reactions possible with strong acids and/or oxidizing agents. Explosive dust-air mixtures may form if high concentrations of product dust is suspended in air.

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10.4 Conditions to avoid

Extreme heat, sparks and open flames. Incompatible materials and oxidizing conditions.

10.5 Incompatible materials

Strong acids, strong oxidizing agents

10.6 Hazardous decomposition products

Decomposition of this product (in case of fire) may yield oxides of boron and nitrogen (nitrogen oxides, e.g. NO₂, NO₃), irritating smoke and fumes, carbon monoxide (CO), carbon dioxide (CO₂), hydrogen chloride, ammonia, and oxides of magnesium, alumina and barium. Decomposition of boron nitride occurs at 2204 °C.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Boron nitride

Acute toxicity, rabbit (dermal): LD50 > 20 mL/kg bw

Aluminium oxide

Acute toxicity, rat (oral): LD50 > 2000 mg/kg bw (OECD 420)

Acute toxicity, (inhalation): LC50 > 2.3 mg/L (OECD 403)

11.2 Irritation and etching

Irritant effect on the skin	May cause skin irritation.
Irritant effect on the eye	May cause eye irritation.
Irritant effect on the respiratory tract	Inhalation of dusts may cause temporary mechanical irritation of the nose, throat and respiratory tract.
Etching	Unknown

11.3 Sensitization

Unknown for the product. Aluminium oxide does not have skin sensitizing potential under the conditions of the Landsteiner / Draize method test.

11.4 Repeated dose toxicity

Unknown for the product. For aluminium oxide the repeated dose inhalation toxicity NOAEC is 70 mg/m³ (OECD 413).

11.5 CMR effects

Carcinogenicity Unknown.
Mutagenicity Unknown.
Reproductive toxicity Unknown.

11.6 General remarks

Specific symptoms in laboratory animals (aluminium oxide): The test substance was determined to not be irritating to the skin of rabbits (OECD 404) and not irritating to eyes (OECD 405). In regard to genetic in vitro toxicity no effects were observed in 5 rats at the highest dose levels (OECD TG 420).

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12. ECOLOGICAL INFORMATION

12.1 Toxicity

No ecotoxicity data was found for the product.

Acute toxicity - Aluminium oxide

Acute fish toxicity (Salmo trutta) NOEC: > 0.072 mg/l (96h; OECD 203)

Acute fish toxicity (Pimephales promelas) LC50: > 218.64 mg/l (96h; total Al, not filtered)

Acute daphnia toxicity (Daphnia magna) NOEC: > 0.071 mg/l (48h; dissolved; OECD 202)

12.2 Persistence and degradability

No data available.

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

No information available.

13. TRANSPORTATION INFORMATION

13.1 Waste treatment methods

Appropriate disposal/product

The generation of waste should be avoided or minimized wherever possible. Waste disposal according to official state regulations.

Appropriate disposal/packaging

Handle contaminated packaging in the same way as the substance itself. Waste disposal according to official state regulations.

Control report for waste code/ waste marking according to EWC

Consult the appropriate authorities about waste disposal.

14. TRANSPORTATION INFORMATION

Not a hazardous material with respect to these transportation regulations: ADR/RID, IMDG-Code/ ICAO-TI/ IATA-DGR.

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15. REGULATORY INFORMATION

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

EU-Regulations

Regulation (EC) No 1907/2006 (REACH)

Regulation (EC) No 1272/2008 (CLP)

Directive 67/548/EEC and 1999/45/EC

Information on working limitations

Observe employment restrictions under the Maternity Protection Directive (92/85/EEC) for expectant or nursing mothers. Observe employment restrictions under the law for the protection of young people at work (94/33/EC). Observe regulation 98/24/EC for employee health protection against the threat of chemical substances in the workplace.

National regulations

National legislation has to be observed!

Major Accidents Ordinance

No information available.

Storage class according to TRGS 510 (DE)

12 non combustible liquid materials

Water Hazard Class according to VwVwS (DE)

No information available.

Technical Instructions on Air Quality Control (TA-Luft) (DE)

No information available.

15.2 Chemical safety assessment

For this preparation a chemical safety assessment has not been carried out.

16. OTHER INFORMATION

16.1 Wording of the H and R phrases under section 2 and 3

Regulation (EC) No 1272/2008 (CLP)

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Directive 67/548/EEC and 1999/45/EC

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16.2 Training instructions

The product should only be handled by persons, who were informed sufficiently about the dangerous nature or the product and about the necessary safety precautions.

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16.3 Further remarks

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety datasheet is not necessarily valid for the new made-up material.

16.4 Documentation of changes

Section 1: Adjustment of information (product code)

Section 3: Adjustment of information on product composition (pigments)

Section 8: Adjustment of occupational exposure limit values (aluminium oxide); addition DNEL and PNEC values

Section 11: Minor adjustments (general remarks)

Section 12: Minor adjustments

Section 13: Adjustment of information on appropriate disposal/product

Section 14: Adjustment of transport information

Section 15: Adjustment of information on EU regulations, storage class and chemical safety assessment

Section 16: Adjustment of training instructions, documentation of changes and key and definitions

16.5 Data sources

Data arise from reference works and literature.

16.6 Key and definition

AGS: Committee on Hazardous Substances

DFG: German Research Foundation

DNEL: derived no effect level

LC50: median lethal concentration

LD50: median lethal dose

NOAEC: no observed adverse effect concentration

NOEC: no observed effect concentration

OECD: Organisation for Economic Co-operation and Development

OEL: occupational exposure limit value

OSHA: Occupational Safety and Health Administration

PNEC: predicted no effect concentration

TRGS: Technical Rules for Hazardous Substances