



Safety Data Sheet according to Regulation (EC) No 1907/2006

Page 1 of 12

BERGQUIST SIL PAD TSP K1300 known as Sil-Pad K-10

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

1.1. Product identifier

BERGQUIST SIL PAD TSP K1300 known as Sil-Pad K-10

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

Intended use:

Thermal Interface Material

1.3. Details of the supplier of the safety data sheet

Henkel AG & Co. KGaA

Henkelstr. 67

40589 Düsseldorf

Germany

Phone: +49 211 797 0

Fax-no.: +49 211 798 2009

ua-productsafety.uk@henkel.com

1.4. Emergency telephone number

24 Hours Emergency Tel: +44 (0)1442 278497

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (CLP):

Substances and preparations marketed in a specific form or within specific containers need not to be classified according to the REACH Regulation Article 3 (3).

2.2. Label elements

Label elements (CLP):

Substances and preparations marketed in a specific form or within specific containers need not to be classified according to the REACH Regulation Article 3 (3).

2.3. Other hazards

None if used properly.

Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.

SECTION 3: Composition/information on ingredients

3.2. Mixtures

General chemical description:

Manufactured item - article

Declaration of the ingredients according to CLP (EC) No 1272/2008:

Hazardous components CAS-No.	EC Number REACH-Reg No.	content	Classification
3-Aminopropyltriethoxysilane 919-30-2	213-048-4 01-2119480479-24	0,1- < 1 %	Skin Sens. 1 H317 Skin Corr. 1B H314 Acute Tox. 4; Oral H302
Boron oxide (B2O3) 1303-86-2	215-125-8 01-2119486655-24	0,1- < 0,3 %	Repr. 1B H360FD ===== EU. REACH Candidate List of Substances of Very High Concern for Authorization (SVHC)

For full text of the H - statements and other abbreviations see section 16 "Other information".
Substances without classification may have community workplace exposure limits available.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:

Move to fresh air. If symptoms persist, seek medical advice.

Skin contact:

Rinse with running water and soap.
Obtain medical attention if irritation persists.

Eye contact:

Rinse immediately with plenty of running water (for 10 minutes). Seek medical attention if necessary.

Ingestion:

Rinse mouth, drink 1-2 glasses of water, do not induce vomiting, consult a doctor.

4.2. Most important symptoms and effects, both acute and delayed

No data available.

4.3. Indication of any immediate medical attention and special treatment needed

See section: Description of first aid measures

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media:

water, carbon dioxide, foam, powder

Extinguishing media which must not be used for safety reasons:

High pressure waterjet

5.2. Special hazards arising from the substance or mixture

In the event of a fire, carbon monoxide (CO), carbon dioxide (CO₂) and nitrogen oxides (NO_x) can be released.
In case of fire, keep containers cool with water spray.

5.3. Advice for firefighters

Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Additional information:

In case of fire, keep containers cool with water spray.

SECTION 6: Accidental release measures**6.1. Personal precautions, protective equipment and emergency procedures**

Avoid contact with skin and eyes.

Wear protective equipment.

Ensure adequate ventilation.

6.2. Environmental precautions

Do not empty into drains / surface water / ground water.

6.3. Methods and material for containment and cleaning up

Scrape up as much material as possible.

Sweep up spilled material. Avoid creating dust.

Keep in suitable and closed containers for disposal.

6.4. Reference to other sections

See advice in section 8

SECTION 7: Handling and storage**7.1. Precautions for safe handling**

Avoid skin and eye contact.

See advice in section 8

Hygiene measures:

Good industrial hygiene practices should be observed.

Wash hands before work breaks and after finishing work.

Do not eat, drink or smoke while working.

7.2. Conditions for safe storage, including any incompatibilities

Ensure good ventilation/extraction.

Keep container tightly sealed.

Refer to Technical Data Sheet

7.3. Specific end use(s)

Thermal Interface Material

SECTION 8: Exposure controls/personal protection

8.1. Control parameters**Occupational Exposure Limits**

Valid for
Great Britain

Ingredient [Regulated substance]	ppm	mg/m ³	Value type	Short term exposure limit category / Remarks	Regulatory list
Silicon dioxide 7631-86-9 [SILICA, AMORPHOUS, INHALABLE DUST]		6	Time Weighted Average (TWA):		EH40 WEL
Silicon dioxide 7631-86-9 [SILICA, AMORPHOUS, RESPIRABLE DUST]		2,4	Time Weighted Average (TWA):		EH40 WEL
Diboron trioxide 1303-86-2 [DIBORON TRIOXIDE]		10	Time Weighted Average (TWA):		EH40 WEL
Diboron trioxide 1303-86-2 [DIBORON TRIOXIDE]		20	Short Term Exposure Limit (STEL):		EH40 WEL

Occupational Exposure Limits

Valid for
Ireland

Ingredient [Regulated substance]	ppm	mg/m ³	Value type	Short term exposure limit category / Remarks	Regulatory list
Silicon dioxide 7631-86-9 [SILICA, AMORPHOUS, TOTAL INHALABLE DUST]		6	Time Weighted Average (TWA):		IR_OEL
Silicon dioxide 7631-86-9 [SILICA, AMORPHOUS, RESPIRABLE DUST]		2,4	Time Weighted Average (TWA):		IR_OEL
Diboron trioxide 1303-86-2 [BORON OXIDE]		10	Time Weighted Average (TWA):		IR_OEL
Diboron trioxide 1303-86-2 [BORON OXIDE]		20	Short Term Exposure Limit (STEL):		IR_OEL

Predicted No-Effect Concentration (PNEC):

Name on list	Environmental Compartment	Exposure period	Value				Remarks
			mg/l	ppm	mg/kg	others	
3-Aminopropyltriethoxysilane 919-30-2	aqua (freshwater)		0,33 mg/l				
3-Aminopropyltriethoxysilane 919-30-2	aqua (marine water)		0,033 mg/l				
3-Aminopropyltriethoxysilane 919-30-2	aqua (intermittent releases)		3,3 mg/l				
3-Aminopropyltriethoxysilane 919-30-2	Soil				0,05 mg/kg		
3-Aminopropyltriethoxysilane 919-30-2	sewage treatment plant (STP)		13 mg/l				
3-Aminopropyltriethoxysilane 919-30-2	sediment (freshwater)				1,2 mg/kg		
3-Aminopropyltriethoxysilane 919-30-2	sediment (marine water)				0,12 mg/kg		
Boron oxide (B2O3) 1303-86-2	aqua (freshwater)		2,9 mg/l				
Boron oxide (B2O3) 1303-86-2	aqua (marine water)		2,9 mg/l				
Boron oxide (B2O3) 1303-86-2	sewage treatment plant (STP)		10 mg/l				
Boron oxide (B2O3) 1303-86-2	Soil				5,7 mg/kg		

Derived No-Effect Level (DNEL):

Name on list	Application Area	Route of Exposure	Health Effect	Exposure Time	Value	Remarks
3-Aminopropyltriethoxysilane 919-30-2	Workers	dermal	Acute/short term exposure - systemic effects		8,3 mg/kg	
3-Aminopropyltriethoxysilane 919-30-2	Workers	Inhalation	Acute/short term exposure - systemic effects		59 mg/m3	
3-Aminopropyltriethoxysilane 919-30-2	Workers	dermal	Long term exposure - systemic effects		8,3 mg/kg	
3-Aminopropyltriethoxysilane 919-30-2	Workers	Inhalation	Long term exposure - systemic effects		59 mg/m3	
3-Aminopropyltriethoxysilane 919-30-2	General population	oral	Acute/short term exposure - systemic effects		5 mg/kg	
3-Aminopropyltriethoxysilane 919-30-2	General population	dermal	Acute/short term exposure - systemic effects		5 mg/kg	
3-Aminopropyltriethoxysilane 919-30-2	General population	Inhalation	Acute/short term exposure - systemic effects		17,4 mg/m3	
3-Aminopropyltriethoxysilane 919-30-2	General population	oral	Long term exposure - systemic effects		5 mg/kg	
3-Aminopropyltriethoxysilane 919-30-2	General population	dermal	Long term exposure - systemic effects		5 mg/kg	
3-Aminopropyltriethoxysilane 919-30-2	General population	Inhalation	Long term exposure - systemic effects		17 mg/m3	
Boron oxide (B2O3) 1303-86-2	Workers	inhalation	Long term exposure - systemic effects		4,66 mg/m3	
Boron oxide (B2O3) 1303-86-2	Workers	dermal	Long term exposure - systemic effects		220,6 mg/kg	

Biological Exposure Indices:

None

8.2. Exposure controls:

Engineering controls:
Ensure good ventilation/extraction.

Respiratory protection:
Ensure adequate ventilation.
An approved mask or respirator fitted with an organic vapour cartridge should be worn if the product is used in a poorly ventilated area
Filter type: A (EN 14387)

Hand protection:
Chemical-resistant protective gloves (EN 374).
Suitable materials for short-term contact or splashes (recommended: at least protection index 2, corresponding to > 30 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
Suitable materials for longer, direct contact (recommended: protection index 6, corresponding to > 480 minutes permeation time as per EN 374):
nitrile rubber (NBR; >= 0.4 mm thickness)
This information is based on literature references and on information provided by glove manufacturers, or is derived by analogy with similar substances. Please note that in practice the working life of chemical-resistant protective gloves may be considerably shorter than the permeation time determined in accordance with EN 374 as a result of the many influencing factors (e.g. temperature). If signs of wear and tear are noticed then the gloves should be replaced.

Eye protection:
Wear protective glasses.
Protective eye equipment should conform to EN166.

Skin protection:
Wear suitable protective clothing.
Protective clothing should conform to EN 14605 for liquid splashes or to EN 13982 for dusts.

Advices to personal protection equipment:

The information provided on personal protective equipment is for guidance purposes only. A full risk assessment should be conducted prior to using this product to determine the appropriate personal protective equipment to suit local conditions. Personal protective equipment should conform to the relevant EN standard.

SECTION 9: Physical and chemical properties**9.1. Information on basic physical and chemical properties**

Appearance	solid Film beige
Odor	Slight
Odour threshold	No data available / Not applicable
pH	No data available / Not applicable
Melting point	No data available / Not applicable
Solidification temperature	No data available / Not applicable
Initial boiling point	No data available / Not applicable
Flash point	> 93,3 °C (> 199.94 °F)Product is a solid.
Evaporation rate	No data available / Not applicable
Flammability	No data available / Not applicable
Explosive limits	No data available / Not applicable
Vapour pressure	No data available / Not applicable
Relative vapour density:	No data available / Not applicable
Density	No data available / Not applicable
Bulk density	No data available / Not applicable

Solubility	No data available / Not applicable
Solubility (qualitative)	No data available / Not applicable
Partition coefficient: n-octanol/water	No data available / Not applicable
Auto-ignition temperature	No data available / Not applicable
Decomposition temperature	No data available / Not applicable
Viscosity	No data available / Not applicable
Viscosity (kinematic)	No data available / Not applicable
Explosive properties	No data available / Not applicable
Oxidising properties	No data available / Not applicable

9.2. Other information

No data available / Not applicable

SECTION 10: Stability and reactivity

10.1. Reactivity

None.

10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

See section reactivity

10.4. Conditions to avoid

Stable under normal conditions of storage and use.

10.5. Incompatible materials

See section reactivity.

10.6. Hazardous decomposition products

carbon oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects**Acute oral toxicity:**

Hazardous substances CAS-No.	Value type	Value	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	LD50	1.457 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)
Boron oxide (B2O3) 1303-86-2	LD50	> 2.600 mg/kg	rat	OECD Guideline 401 (Acute Oral Toxicity)

Acute dermal toxicity:

Hazardous substances CAS-No.	Value type	Value	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	LD50	4.076 mg/kg	rabbit	OECD Guideline 402 (Acute Dermal Toxicity)
Boron oxide (B2O3) 1303-86-2	LD50	> 2.000 mg/kg	rabbit	not specified

Acute inhalative toxicity:

No data available.

Skin corrosion/irritation:

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	corrosive		rabbit	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Boron oxide (B2O3) 1303-86-2	not irritating	24 h	rabbit	not specified

Serious eye damage/irritation:

Hazardous substances CAS-No.	Result	Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	highly irritating		rabbit	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Boron oxide (B2O3) 1303-86-2	not irritating		rabbit	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

Hazardous substances CAS-No.	Result	Test type	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)
Boron oxide (B2O3) 1303-86-2	not sensitising	Buehler test	guinea pig	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

Hazardous substances CAS-No.	Result	Type of study / Route of administration	Metabolic activation / Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		OECD Guideline 471 (Bacterial Reverse Mutation Assay)
3-Aminopropyltriethoxysilane 919-30-2	negative	in vitro mammalian chromosome aberration test	with and without		OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
3-Aminopropyltriethoxysilane 919-30-2	negative	mammalian cell gene mutation assay	with and without		OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Boron oxide (B2O3) 1303-86-2	negative	bacterial reverse mutation assay (e.g Ames test)	with and without		not specified
Boron oxide (B2O3) 1303-86-2	negative	mammalian cell gene mutation assay	with and without		not specified
Boron oxide (B2O3) 1303-86-2	negative	sister chromatid exchange assay in mammalian cells	with and without		not specified
3-Aminopropyltriethoxysilane 919-30-2	negative	intraperitoneal		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Boron oxide (B2O3) 1303-86-2	negative	oral: gavage		mouse	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Carcinogenicity

Hazardous components CAS-No.	Result	Route of application	Exposure time / Frequency of treatment	Species	Sex	Method
Boron oxide (B2O3) 1303-86-2	not carcinogenic	oral: feed	103 w daily	mouse	male/female	OECD Guideline 451 (Carcinogenicity Studies)

Reproductive toxicity:

Hazardous substances CAS-No.	Result / Value	Test type	Route of application	Species	Method
Boron oxide (B2O3) 1303-86-2	NOAEL P 336 mg/kg NOAEL F1 100 mg/kg NOAEL F2 100 mg/kg	three- generation study	oral: feed	rat	not specified

STOT-single exposure:

No data available.

STOT-repeated exposure::

Hazardous substances CAS-No.	Result / Value	Route of application	Exposure time / Frequency of treatment	Species	Method
3- Aminopropyltriethoxysila ne 919-30-2	NOAEL 200 mg/kg	oral: gavage	90 d daily	rat	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
Boron oxide (B2O3) 1303-86-2	NOAEL 100 mg/kg	oral: feed	2 y daily	rat	not specified

Aspiration hazard:

No data available.

SECTION 12: Ecological information

12.1. Toxicity

Toxicity (Fish):

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	LC50	> 934 mg/l	96 h	Brachydanio rerio (new name: Danio rerio)	OECD Guideline 203 (Fish, Acute Toxicity Test)
Boron oxide (B2O3) 1303-86-2	LC50	513,3 mg/l	96 h	Pimephales promelas	EPA OPPTS 850.1075 (Freshwater and Saltwater Fish Acute Toxicity Test)
Boron oxide (B2O3) 1303-86-2	NOEC	41,2 mg/l	34 d	Danio rerio (reported as Brachydanio rerio)	OECD Guideline 210 (fish early lite stage toxicity test)

Toxicity (Daphnia):

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	EC50	331 mg/l	48 h	Daphnia magna	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)

Chronic toxicity to aquatic invertebrates

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
Boron oxide (B2O3) 1303-86-2	NOEC	69,6 mg/l	21 d	Daphnia magna	OECD 211 (Daphnia magna, Reproduction Test)

Toxicity (Algae):

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	EC50	603 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
3-Aminopropyltriethoxysilane 919-30-2	NOEC	1,3 mg/l	72 h	Scenedesmus subspicatus (new name: Desmodesmus subspicatus)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Boron oxide (B2O3) 1303-86-2	EC50	337,5 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)
Boron oxide (B2O3) 1303-86-2	EC10	225,4 mg/l	72 h	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)	OECD Guideline 201 (Alga, Growth Inhibition Test)

Toxicity to microorganisms

Hazardous substances CAS-No.	Value type	Value	Exposure time	Species	Method
3-Aminopropyltriethoxysilane 919-30-2	EC10	13 mg/l	5 h		not specified

12.2. Persistence and degradability

Hazardous substances CAS-No.	Result	Test type	Degradability	Exposure time	Method
3-Aminopropyltriethoxysilane 919-30-2		aerobic	67 %		OECD Guideline 301 A (new version) (Ready Biodegradability: DOC Die Away Test)

12.3. Bioaccumulative potential

No data available.

12.4. Mobility in soil

No data available.

12.5. Results of PBT and vPvB assessment

Hazardous substances CAS-No.	PBT / vPvB
3-Aminopropyltriethoxysilane 919-30-2	Not fulfilling Persistent, Bioaccumulative and Toxic (PBT), very Persistent and very Bioaccumulative (vPvB) criteria.
Boron oxide (B ₂ O ₃) 1303-86-2	According to Annex XIII of regulation (EC) 1907/2006 a PBT and vPvB assessment shall not be conducted for inorganic substances.

12.6. Other adverse effects

No data available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Product disposal:

Do not empty into drains / surface water / ground water.

Dispose of in accordance with local and national regulations.

Disposal of uncleaned packages:

Dispose of in accordance with local and national regulations.

SECTION 14: Transport information

14.1. UN number

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.2. UN proper shipping name

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.3. Transport hazard class(es)

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.4. Packing group

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.5. Environmental hazards

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.6. Special precautions for user

Not hazardous according to RID, ADR, ADN, IMDG, IATA-DGR.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

not applicable

SECTION 15: Regulatory information

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

VOC content 0 %
(2010/75/EC)

15.2. Chemical safety assessment

A chemical safety assessment has not been carried out.

SECTION 16: Other information

The labelling of the product is indicated in Section 2. The full text of all abbreviations indicated by codes in this safety data sheet are as follows:

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H317 May cause an allergic skin reaction.

H360FD May damage fertility. May damage the unborn child.

Further information:

This Safety Data Sheet has been produced for sales from Henkel to parties purchasing from Henkel, is based on Regulation (EC) No 1907/2006 and provides information in accordance with applicable regulations of the European Union only. In that respect, no statement, warranty or representation of any kind is given as to compliance with any statutory laws or regulations of any other jurisdiction or territory other than the European Union. When exporting to territories other than the European Union, please consult with the respective Safety Data Sheet of the concerned territory to ensure compliance or liaise with Henkel's Product Safety and Regulatory Affairs Department (ua-productsafety.de@henkel.com) prior to export to other territories than the European Union.

This information is based on our current level of knowledge and relates to the product in the state in which it is delivered. It is intended to describe our products from the point of view of safety requirements and is not intended to guarantee any particular properties.

Substances and preparations marketed in a specific form or within specific containers need not to be classified according to the REACH Regulation Article 3 (3).

Relevant changes in this safety data sheet are indicated by vertical lines at the left margin in the body of this document. Corresponding text is displayed in a different color on shadowed fields.