Section 1. Identification of the substance/preparation and of the company/undertaking

Product name:
BERGQUIST Hi Flow THF 1600P

Other means of identification:
BERGQUIST Hi Flow THF 1600P

Product code:
IDH2478278

Recommended use of the chemical and restrictions on use

Intended use:
Thermal Interface Material

Manufacturer/Importer/Distributor Representative Company

Henkel Thailand Ltd. The Offices at Centralworld,
35th Floor, 999/9 Rama 1 Rd.,
Kwang Patumwan, Khet Patumwan,
10330 Bangkok

Thailand

Phone: +66 (2209) 8000
Fax-no.: +66 (2209) 8008

E-mail address of person responsible for Safety Data Sheet:
ap-ua-psra.sea@henkel.com

Emergency Telephone for Chemical Accidents:
FOR EMERGENCIES ONLY (Spill, major leak, Fire, Exposure, or Accident). Call: +662 209 8008

Section 2. Hazards identification

GHS Classification:

Substance or mixture is not classified as hazardous according to Globally Harmonized System(GHS).

GHS label elements:

Substance or mixture is not classified as hazardous according to Globally Harmonized System(GHS).

Section 3. Composition / information on ingredients

Substance or Mixture:
Mixture

Declaration of hazardous chemical:

Hazard component CAS-No.	Content	GHS Classification
Aluminium oxide - non fibrous form 1344-28-1	60- 100 %	
Paraffin waxes and Hydrocarbon waxes 8002-74-2	1- 10 %	
diboron trioxide 1303-86-2	0.1- 1 %	Toxic to reproduction 1B H360

Section 4. 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 from a specialist.

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

Section 5. Fire fighting measures

Suitable extinguishing media:
water, carbon dioxide, foam, powder

Improper extinguishing media:
High pressure waterjet

Specific hazards arising from the chemical:
In the event of a fire, carbon monoxide (CO) and carbon dioxide (CO2) can be released.
In case of fire, keep containers cool with water spray.

Special protection equipment and precautions for firefighters:
Wear self-contained breathing apparatus and full protective clothing, such as turn-out gear.

Section 6. Accidental release measures

Personal precautions:
Avoid contact with skin and eyes.
Wear protective equipment.
Ensure adequate ventilation.
Remove sources of ignition.

Environmental precautions:
Do not empty into drains / surface water / ground water.

Clean-up methods:
Scrape up as much material as possible.
Sweep up spilled material. Avoid creating dust.

Store in a partly filled, closed container until disposal.
Dispose of contaminated material as waste according to Section 13.

Section 7. Handling and storage

Handling:
Avoid skin and eye contact.
See advice in section 8

Storage:
Store in tightly closed containers. In a cool/well-ventilated area.

Section 8. Exposure controls / personal protection

Components with specific control parameters for workplace:

ALUMINUM METAL AND INSOLUBLE COMPOUNDS, RESPIRABLE FRACTION 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	1
	Remarks	ACGIH
ALPHA-ALUMINA, RESPIRABLE DUST 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	5
	Remarks	TH OEL
Particles (insoluble or poorly soluble) not otherwise specified, respirable particles 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	3
	Remarks	ACGIH
Particles (insoluble or poorly soluble) not otherwise specified, inhalable particles 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	10
	Remarks	ACGIH
ALPHA-ALUMINA, INHALABLE DUST 1344-28-1	**Value type**	Time Weighted Average (TWA):
	mg/m³	15
	Remarks	TH OEL
Paraffin wax fume 8002-74-2	**Value type**	Time Weighted Average (TWA):
	mg/m³	2
	Remarks	ACGIH
BORON OXIDE 1303-86-2	**Value type**	Time Weighted Average (TWA):
	mg/m³	10
	Remarks	ACGIH

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:
Safety glasses with sideshields or chemical safety goggles should be worn if there is a risk of splashing.

Body protection:
Wear suitable protective clothing.

Engineering controls:
Provide local and general exhaust ventilation to effectively remove and prevent buildup of any vapors or mists generated from the handling of this product.

General protection and hygiene measures:
The workplace should be equipped with an emergency shower and eye-rinsing facility.

Hygienic measures:
Wash hands before work breaks and after finishing work.
Do not eat, drink or smoke while working.
Take off contaminated clothing and wash before reuse.

Section 9. Physical and chemical properties

Appearance:	Green Solid
Odor:	Slight
Odor threshold (CA):	No data available.
pH:	Not applicable, Product is non-soluble (in water).
Melting point / freezing point:	Not applicable, Decomposes.
Specific gravity:	2.83
Boiling point:	> 200 °C (> 392 °F)
Flash point:	Not applicable
Evaporation rate:	No data available.
Flammability (solid, gas):	The product is not flammable.
Lower explosive limit:	No data available.
Upper explosive limit:	No data available.
Vapor pressure: (; 20 °C (68 °F))	< 1 hPa
Vapor density:	Not applicable, Product is a solid
Density:	2.1 - 2.3 g/cm3
Solubility:	No data available.
Partition coefficient: n-octanol/water:	No data available.
Auto ignition:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.
VOC content: (2010/75/EC)	< 5 %

Section 10. Stability and reactivity

Reactivity/Incompatible materials:
Reacts with oxidants, acids and lyes
Chemical stability:
Stable under recommended storage conditions.
Conditions to avoid:
Excessive heat.
Hazardous decomposition products:
No decomposition if used according to specifications.

Section 11. Toxicological information

Symptoms of Overexposure**:** None known.

Acute oral toxicity:

Aluminium oxide - non fibrous form 1344-28-1	Value type	LD50
	Value	> 10,000 mg/kg
	Species	rat
	Method	equivalent or similar to OECD Guideline 401 (Acute Oral Toxicity)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Value type	LD50
	Value	> 5,000 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)
diboron trioxide 1303-86-2	Value type	LD50
	Value	> 2,600 mg/kg
	Species	rat
	Method	OECD Guideline 401 (Acute Oral Toxicity)

Acute dermal toxicity:

Paraffin waxes and Hydrocarbon waxes 8002-74-2	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rat
	Method	OECD Guideline 402 (Acute Dermal Toxicity)
diboron trioxide 1303-86-2	Value type	LD50
	Value	> 2,000 mg/kg
	Species	rabbit
	Method	not specified

Skin corrosion/irritation:

Aluminium oxide - non fibrous form 1344-28-1	Result	not irritating
	Exposure time	24 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	not irritating
	Exposure time	4 h
	Species	rabbit
	Method	OECD Guideline 404 (Acute Dermal Irritation / Corrosion)
diboron trioxide 1303-86-2	Result	not irritating
	Exposure time	24 h
	Species	rabbit
	Method	not specified

Serious eye damage/irritation:

Aluminium oxide - non fibrous form 1344-28-1	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	equivalent or similar to OECD Guideline 405 (Acute Eye Irritation / Corrosion)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)
diboron trioxide 1303-86-2	Result	not irritating
	Exposure time	
	Species	rabbit
	Method	OECD Guideline 405 (Acute Eye Irritation / Corrosion)

Respiratory or skin sensitization:

Aluminium oxide - non fibrous form 1344-28-1	Result	not sensitising
	Test type	Draize Test
	Species	guinea pig
	Method	Landsteiner & Jacobs Method
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	not sensitising
	Test type	Guinea pig maximisation test
	Species	guinea pig
	Method	OECD Guideline 406 (Skin Sensitisation)
diboron trioxide 1303-86-2	Result	not sensitising
	Test type	Buehler test
	Species	guinea pig
	Method	OECD Guideline 406 (Skin Sensitisation)

Germ cell mutagenicity:

Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Aluminium oxide - non fibrous form 1344-28-1	Result	positive without metabolic activation
	Type of study / Route of administration	in vitro mammalian chromosome aberration test
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	positive without metabolic activation
	Type of study / Route of administration	in vitro mammalian cell micronucleus test
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 487 (In vitro Mammalian Cell Micronucleus Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
Aluminium oxide - non fibrous form 1344-28-1	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	
	Species	rat
	Method	OECD Guideline 475 (Mammalian Bone Marrow Chromosome Aberration Test)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 471 (Bacterial Reverse Mutation Assay)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	negative
	Type of study / Route of administration	in vitro mammalian chromosome aberration test
	Metabolic activation / Exposure time	with and without
	Method	equivalent or similar to OECD Guideline 473 (In vitro Mammalian Chromosome Aberration Test)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	OECD Guideline 476 (In vitro Mammalian Cell Gene Mutation Test)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	negative
	Type of study / Route of administration	intraperitoneal
	Metabolic activation / Exposure time	
	Species	mouse
	Method	equivalent or similar to OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)
diboron trioxide 1303-86-2	Result	negative
	Type of study / Route of administration	bacterial reverse mutation assay (e.g Ames test)
	Metabolic activation / Exposure time	with and without
	Method	not specified
diboron trioxide 1303-86-2	Result	negative
	Type of study / Route of administration	mammalian cell gene mutation assay
	Metabolic activation / Exposure time	with and without
	Method	not specified
diboron trioxide 1303-86-2	Result	negative
	Type of study / Route of administration	sister chromatid exchange assay in mammalian cells
	Metabolic activation / Exposure time	with and without
	Method	not specified
diboron trioxide 1303-86-2	Result	negative
	Type of study / Route of administration	oral: gavage
	Metabolic activation / Exposure time	

	Species	mouse
	Method	OECD Guideline 474 (Mammalian Erythrocyte Micronucleus Test)

Repeated dose toxicity:

Aluminium oxide - non fibrous form 1344-28-1	Result	NOAEL=>= 0.075 mg/l
	Route of application	inhalation: dust
	Exposure time / Frequency of treatment	6 months6 h/d, 5 d/week
	Species	rat
	Method	equivalent or similar to OECD Guideline 452 (Chronic Toxicity Studies)
Aluminium oxide - non fibrous form 1344-28-1	Result	NOAEL=113.36 mg/kg
	Route of application	oral: drinking water
	Exposure time / Frequency of treatment	364 dAd libitum (daily)
	Species	rat
	Method	OECD Guideline 452 (Chronic Toxicity Studies)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	NOAEL=1,500 mg/kg
	Route of application	oral: feed
	Exposure time / Frequency of treatment	90 d
	Species	rat
	Method	OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity in Rodents)
diboron trioxide 1303-86-2	Result	NOAEL=100 mg/kg
	Route of application	oral: feed
	Exposure time / Frequency of treatment	2 ydaily
	Species	rat
	Method	not specified

Section 12. Ecological information

General ecological information: Do not empty into drains / surface water / ground water.

Toxicity:

Aluminium oxide - non fibrous form 1344-28-1	Value type	LC50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Salmo trutta
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Aluminium oxide - non fibrous form 1344-28-1	Value type	EC50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Aluminium oxide - non fibrous form 1344-28-1	Value type	NOEC
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC50
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Selenastrum capricornutum (new name: Pseudokirchneriella subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)

Aluminium oxide - non fibrous form 1344-28-1	Value type	EC0
	Value	Toxicity > Water solubility
	Acute Toxicity Study	Bacteria
	Exposure time	
	Species	not specified
	Method	not specified
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Value type	LC50
	Value	> 100 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	not specified
	Method	OECD Guideline 203 (Fish, Acute Toxicity Test)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Value type	EC50
	Value	> 10,000 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Daphnia magna
	Method	OECD Guideline 202 (Daphnia sp. Acute Immobilisation Test)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Value type	NOEC
	Value	> 100 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	not specified
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC50
	Value	> 100 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	not specified
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
Paraffin waxes and Hydrocarbon waxes 8002-74-2	Value type	EC0
	Value	> 100 mg/l
	Acute Toxicity Study	Bacteria
	Exposure time	30 min
	Species	Pseudomonas putida
	Method	DIN 38412, part 27 (Bacterial oxygen consumption test)
diboron trioxide 1303-86-2	Value type	LC50
	Value	513.3 mg/l
	Acute Toxicity Study	Fish
	Exposure time	96 h
	Species	Pimephales promelas
	Method	other guideline:
	Value type	NOEC
	Value	41.2 mg/l
	Acute Toxicity Study	Fish
	Exposure time	34 d
	Species	Danio rerio (reported as Brachydanio rerio)
	Method	OECD Guideline 210 (fish early lite stage toxicity test)
diboron trioxide 1303-86-2	Value type	EC50
	Value	586.04 mg/l
	Acute Toxicity Study	Daphnia
	Exposure time	48 h
	Species	Ceriodaphnia dubia
	Method	other guideline:
diboron trioxide 1303-86-2	Value type	EC50
	Value	337.5 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)
	Value type	EC10
	Value	225.4 mg/l
	Acute Toxicity Study	Algae
	Exposure time	72 h
	Species	Pseudokirchneriella subcapitata (reported as Raphidocelis subcapitata)
	Method	OECD Guideline 201 (Alga, Growth Inhibition Test)

Persistence and degradability:

Paraffin waxes and Hydrocarbon waxes 8002-74-2	Result	not readily biodegradable.
	Route of application	aerobic
	Degradability	> 0 - < 60 %
	Method	OECD Guideline 301 B (Ready Biodegradability: CO2 Evolution Test)

Section 13. Disposal considerations

Product

Method of disposal:
Dispose of in accordance with local and national regulations.

Packaging

Disposal of uncleaned packages:
Packaging that cannot be cleaned are to be disposed of in the same manner as the product.

Section 14. Transport information

Road transport ADR:
Not dangerous goods

Railroad transport RID:
Not dangerous goods

Inland water transport ADN:
Not dangerous goods

Marine transport IMDG:
Not dangerous goods

Air transport IATA:
Not dangerous goods

Section 15. Regulatory information

Regulatory Information:
Ministry of Industry Notice. The system to classify and communicate the hazard of hazardous material, BE. 2555

Global inventory status:

Regulatory list	Notification
TCSI	yes
TSCA	yes
AIIC	yes
DSL	yes
ENCS (JP)	yes
ISHL (JP)	yes
KECI (KR)	yes
PICCS (PH)	yes
IECSC	yes

Section 16. Other information

Disclaimer:
This Safety Data Sheet has been generated based on Ministry of Industry Notice. The system to classify and communicate the hazard of hazardous material, BE. 2555 only. No warranty or representation of any kind is given with respect to the substantive or export laws of any other jurisdiction or country. Please confirm that the information provided herein conforms to the substantive export or other law of any other jurisdiction prior to export. Please contact Henkel Product Safety and Regulatory Affairs for additional assistance.
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