

SAFETY DATA SHEET

GHS
United States

Section 1. Product and company identification

Product name	VAROX® DBPH-50 SG	<u>In case of emergency</u>
Code	71104	1-203-853-1400
Supplier/Manufacturer	Vanderbilt Chemicals, LLC 30 Winfield Street Norwalk, CT 06855	Chemtrec: 1-800-424-9300 Outside US: +1-703-527-3887
Chemical name	2,5-dimethyl-2,5-di(tert-butylperoxy)hexane	
Synonym	(1,1,4,4-tetramethyl-1,4-butanediyl)bis(1,10dimethylethyl)	
Material uses	Peroxide Accelerator	
Product type	Solid.	

Section 2. Hazards identification

OSHA/HCS status	This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).
Classification of the substance or mixture	ORGANIC PEROXIDES - Type E SKIN CORROSION/IRRITATION - Category 2 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2A

GHS label elements

Hazard pictograms



Signal word

Warning

Hazard statements

Heating may cause a fire.
Causes serious eye irritation.
Causes skin irritation.

Precautionary statements

General

Read label before use. Keep out of reach of children. If medical advice is needed, have product container or label at hand.

Prevention

Wear protective gloves. Wear eye or face protection: Recommended: safety glasses with side-shields. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Keep away from clothing, incompatible materials and combustible materials. Keep only in original container. Wash hands thoroughly after handling.

Response

IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing. Wash contaminated clothing before reuse. If skin irritation occurs: Get medical attention.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical attention.

Section 2. Hazards identification

Storage Protect from sunlight. Store at temperatures not exceeding 30 °C/86 °F. Keep cool. Store away from other materials.

Disposal Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazards not otherwise classified Temperature control may be required. Hazardous decomposition may occur.

Section 3. Composition/information on ingredients

Substance/mixture Substance

Ingredient name	CAS number	% by weight
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	78-63-7	40 - 46
silicone oil	63148-62-9	19 - 28
silicone gum (dimethyl polymer)	68083-19-2	16 - 25
silica gel, precipitated, crystalline free	112926-00-8	5 - 13

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact	Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention.
Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention. Wash clothing before reuse. Clean shoes thoroughly before reuse.
Ingestion	Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

Eye contact	Causes serious eye irritation.
Inhalation	No known significant effects or critical hazards.
Skin contact	Causes skin irritation.
Ingestion	Irritating to mouth, throat and stomach.

Section 4. First aid measures

Over-exposure signs/symptoms

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	No specific data.
Skin contact	Adverse symptoms may include the following: irritation redness
Ingestion	No specific data.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments	No specific treatment.
Protection of first-aiders	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media	Use dry chemical, CO ₂ , water spray (fog) or foam.
Unsuitable extinguishing media	Do not use water jet.

Specific hazards arising from the chemical

This material increases the risk of fire and may aid combustion. Heating may cause a fire. May re-ignite itself after fire is extinguished. Hazardous decomposition may occur. Runoff to sewer may create fire or explosion hazard.

Hazardous thermal decomposition products

Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
metal oxide/oxides

Special protective actions for fire-fighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.

Special protective equipment for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
For emergency responders	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
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Methods and materials for containment and cleaning up

Small spill	Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid contamination with reactive substances. Avoid dust generation. Mix with an inert material and then wet the mixture down with water. Place in a sealed container. Dispose of via a licensed waste disposal contractor.
Large spill	Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid contamination with reactive substances. Avoid dust generation. Do not dry sweep. Mix with an inert material and then wet the mixture down with water. Place in a sealed container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use only non-sparking tools. Keep away from clothing, incompatible materials and combustible materials. Temperature control may be required. Empty containers retain product residue and can be hazardous. Do not reuse container.
Advice on general occupational hygiene	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities

To avoid the risk of formation of shock-sensitive crystals or loss of stability, it is important to store the product within the recommended temperature range. Temperature control may be required. Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store at temperatures not exceeding 30 °C/86 °F. Eliminate all ignition sources. Separate from reducing agents and combustible materials. Keep container tightly closed and sealed until ready for use. Prevent product contamination. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not

Section 7. Handling and storage

store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
silica gel, precipitated, crystalline free	<p>ACGIH (United States, 1994). TWA: 10 mg/m³</p> <p>OSHA (United States, 1989). TWA: 6 mg/m³</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 6 mg/m³ 8 hours.</p> <p>NIOSH REL (United States, 10/2013). TWA: 6 mg/m³ 10 hours.</p>

Appropriate engineering controls

Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

Hygiene measures

Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face protection

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.
Recommended: safety glasses with side-shields

Skin protection

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

Body protection

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: lab coat

Other skin protection

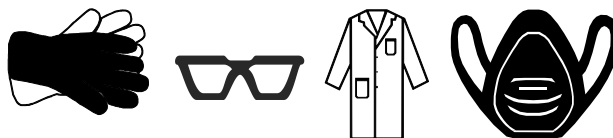
Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Section 8. Exposure controls/personal protection

Respiratory protection

Use a properly fitted, particulate filter respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Recommended: Dust respirator.

Personal protective equipment (Pictograms)



Section 9. Physical and chemical properties

Appearance

Physical state	Solid. [Paste.]
Color	White to off-white.
Odor	Menthol-like.
Odor threshold	Not available.
pH	Not available.
Melting point	Not available.
Boiling point	Not available.
Flash point	Not available.
Burning time	Not available.
Burning rate	Not available.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Lower and upper explosive (flammable) limits	Not available.
Vapor pressure	Not available.
Vapor density	10 [Air = 1]
Density	1.09 g/cm ³
Relative density	Not available.
Solubility	Insoluble in the following materials: cold water.
Solubility in water	Not available.
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
SADT	80°C (176°F)
Viscosity	Not available.

Section 10. Stability and reactivity

Reactivity

This product, in laboratory testing, neither detonates nor deflagrates and only shows low or no effect when heated under confinement.

Chemical stability

The product is stable.

Section 10. Stability and reactivity

Possibility of hazardous reactions

Hazardous reactions or instability may occur under certain conditions of storage or use. Conditions may include the following:
 temperature increase
 high temperature
 Reactions may include the following:
 hazardous decomposition
 risk of causing fire

Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Avoid increased storage temperature.

Incompatible materials

Reactive or incompatible with the following materials:
 combustible materials
 reducing materials
 Copper
 iron
 rust

Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Instability Remarks

Thermal decomposition

Ca. 80°C

Method: SADT (UN test H.4)

Rapid, exothermic reaction may occur above the Self Accelerated Decomposition Temperature (SADT).

SADT – Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction. This reaction will generate flammable vapors which may autoignite.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	LD50 Dermal	Rabbit	4100 mg/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
silicone oil	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	17000 mg/kg	-
silica gel, precipitated, crystalline free	LD50 Dermal	Rabbit	>2000 mg/kg	-
	LD50 Oral	Rat	>31600 mg/kg	-

Irritation/Corrosion

Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane silicone oil	Skin - Moderate irritant	Rabbit	-	-	-
	Eyes - Mild irritant	Rabbit	-	1 hours 100 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 microliters	-

Sensitization

Product/ingredient name	Route of exposure	Species	Result
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	skin	Guinea pig	Not sensitizing

Conclusion/Summary

Skin

2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane: Not a sensitizer.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	-	Subject: Bacteria	Negative

Carcinogenicity

Not available.

Product/ingredient name	OSHA	IARC	NTP
silica gel, precipitated, crystalline free	-	3	-

Reproductive toxicity

Not available.

Teratogenicity

Not available.

Specific target organ toxicity (single exposure)

Not available.

Specific target organ toxicity (repeated exposure)

Not available.

Aspiration hazard

Not available.

Information on the likely routes of exposure

Routes of entry anticipated: Dermal, Inhalation.

Section 11. Toxicological information

Potential acute health effects

Eye contact	Causes serious eye irritation.
Inhalation	No known significant effects or critical hazards.
Skin contact	May be harmful in contact with skin. Causes skin irritation.
Ingestion	Irritating to mouth, throat and stomach.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact	Adverse symptoms may include the following: pain or irritation watering redness
Inhalation	No specific data.
Skin contact	Adverse symptoms may include the following: irritation redness
Ingestion	No specific data.

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects	Not available.
Potential delayed effects	Not available.

Long term exposure

Potential immediate effects	Not available.
Potential delayed effects	Not available.

Potential chronic health effects

Not available.

General	No known significant effects or critical hazards.
Carcinogenicity	No known significant effects or critical hazards.
Mutagenicity	No known significant effects or critical hazards.
Teratogenicity	No known significant effects or critical hazards.
Developmental effects	No known significant effects or critical hazards.
Fertility effects	No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Dermal	6115.4 mg/kg

Other information Not available.

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	EC50 6.17 mg/l	Algae	72 hours
silicone oil	EC50 >0.0065 mg/l	Daphnia	504 hours
	LC50 4.5 mg/l	Fish	96 hours
	NOEC 1.88 mg/l	Algae	72 hours
	NOEC >0.0065 mg/l	Daphnia	504 hours
	Acute LC50 44.5 ppm	Daphnia	48 hours
	Acute LC50 3160 to 4150 µg/l	Fish	96 hours

Persistence and degradability

Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	7.34	839	high

Mobility in soil

Soil/water partition coefficient (K_{oc}) Not available.

Other adverse effects No known significant effects or critical hazards.

Section 13. Disposal considerations






Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

RCRA classification D003

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Section 14. Transport information

Regulatory information	UN number	Proper shipping name	Classes	PG*	Label	Additional information
DOT Classification	3108	Organic Peroxide Type E, Solid (50% 2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane)	5.2	-		-
TDG Classification	3108	Organic Peroxide Type E, Solid (50% 2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane)	5.2	-		-
ADR/RID Class	3108	Organic Peroxide Type E, Solid (50% 2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane)	5.2	-		-
IMDG Class	3108	Organic Peroxide Type E, Solid (50% 2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane)	5.2	-		-
IATA-DGR Class	3108	Organic Peroxide Type E, Solid (50% 2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane)	5.2	-		-

PG* : Packing group

Section 15. Regulatory information

[United States inventory \(TSCA 8b\)](#) All components are listed or exempted.

[U.S. Federal regulations](#)

TSCA 8(a) PAIR: silicone oil

TSCA 8(a) CDR Exempt/Partial exemption: Not determined

[SARA 302/304](#)

[Composition/information on ingredients](#)

No products were found.

[SARA 304 RQ](#)

Not applicable.

[SARA 311/312](#)

[Classification](#)

ORGANIC PEROXIDES - Type E
SKIN IRRITATION - Category 2
EYE IRRITATION - Category 2A

[Composition/information on ingredients](#)

Name	%	Classification
2,5-dimethyl-2,5-di-(tert-butyl peroxy) hexane	40 - 46	FLAMMABLE LIQUIDS - Category 4 ORGANIC PEROXIDES - Type C SKIN IRRITATION - Category 2

[State regulations](#)

[Massachusetts](#)

The following components are listed: PRECIPITATED SILICA; Silica, precipitated

Section 15. Regulatory information

New York	None of the components are listed.
New Jersey	The following components are listed: 2,5-Dimethyl-2,5-di-(tert-butylperoxy) hexane; SILICA, AMORPHOUS, PRECIPITATE & GEL
Pennsylvania	The following components are listed: Silica gel, pptd., cryst.-free
California Prop. 65	None of the components are listed.
International regulations	
Australia inventory (AICS)	All components are listed or exempted.
Canada inventory	All components are listed or exempted.
China inventory (IECSC)	All components are listed or exempted.
Europe inventory	All components are listed or exempted.
Japan inventory (ENCS)	All components are listed or exempted.
Korea inventory (KECI)	All components are listed or exempted.
New Zealand Inventory of Chemicals (NZIoC)	All components are listed or exempted.
Philippines inventory (PICCS)	All components are listed or exempted.
Taiwan Chemical Substances Inventory (TCSI)	All components are listed or exempted.

Section 16. Other information

Hazardous Material Identification System (U.S.A.)	Health	2
	Flammability	1
	Physical hazards	1

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

[National Fire Protection Association \(U.S.A.\)](#)



[History](#)

Date of printing	11/8/2017
Validation date	11/8/2017
Date of previous issue	6/7/2016
Version	5
Key to abbreviations	<p>ATE = Acute Toxicity Estimate BCF = Bioconcentration Factor GHS = Globally Harmonized System of Classification and Labelling of Chemicals IATA = International Air Transport Association IBC = Intermediate Bulk Container IMDG = International Maritime Dangerous Goods LogPow = logarithm of the octanol/water partition coefficient</p>

Section 16. Other information

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)

UN = United Nations

References

Not available.

Information contact

Vanderbilt Global Services, LLC
Corporate Risk Management

1-203-295-2143

Visit www.vanderbiltchemicals.com for more information.

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