SAFETY DATA SHEET

according to the Globally Harmonized System and US regulation

PERKADOX GB-50L

Version 4 Revision Date 01/08/2020 Print Date 01/29/2020 US / Z8

1. IDENTIFICATION

Product name	:	PERKADOX GB-50L
Product Use Description	:	Specific use(s): Curing agent
Company	:	Nouryon Functional Chemicals LLC 131 S Dearborn St, Suite 1000 Chicago IL 60603-5566 US
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Emergency telephone	:	24 hours:+31 57 06 79211, CHEMTREC-USA:1-800-424-9300, CANUTEC-CANADA:1-613-996-6666, 化学事故应急咨询电话：国家化学事故应急响应中心 +86 532 8388 9090

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	powder
Color	white
Odor	Faint.
Hazard Summary	Risk of dust explosion.

GHS Classification

Organic peroxides, Type D
Eye irritation, Category 2B
Skin sensitization, Category 1
Short-term (acute) aquatic hazard, Category 1
Long-term (chronic) aquatic hazard, Category 1

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H242 Heating may cause a fire.
H317 May cause an allergic skin reaction.
H320 Causes eye irritation.

H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P220 Keep/Store away from clothing/ combustible materials.
P234 Keep only in original container.
P235 Keep cool.
P261 Avoid breathing dust or fume.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
Response:
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
P391 Collect spillage.
Storage:
P410 Protect from sunlight.
P420 Store away from other materials.
Disposal:
P501 Dispose of contents/container in accordance with local regulation.

Carcinogenicity:

IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA : No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP : No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Classification	Concentration [% W/W]
Ethylene glycol dibenzoate	94-49-5	Aquatic Chronic 2; H411	48 - 52
Dibenzoyl peroxide	94-36-0	Org. Perox. B; H241 Eye Irrit. 2B; H320 Skin Sens. 1A; H317 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute): 10 M-Factor (Chronic): 10	48 - 52

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.

Inhalation : Remove to fresh air.
Keep patient warm and at rest.
Rinse nose and mouth with water.

Skin contact : Take off contaminated clothing and shoes immediately.
Wash the skin immediately with soap and water.
If skin irritation persists, call a physician.

Eye contact : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Obtain medical attention.

Ingestion : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.

Notes to physician

Symptoms : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Risks : May cause an allergic skin reaction.
Causes eye irritation.

Treatment	:	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	:	High volume water jet
Specific hazards during fire fighting / Specific hazards arising from the chemical	:	CAUTION: reignition may occur. Supports combustion. Do not use a solid water stream as it may scatter and spread fire. Water spray may be ineffective unless used by experienced firefighters. Do not allow run-off from fire fighting to enter drains or water courses. Risks of ignition followed by flame propagation or secondary explosions shall be prevented by avoiding accumulation of dust, e.g. on floors and ledges. Hazardous decomposition products formed under fire conditions.
Combustion products	:	Fire will produce smoke containing hazardous combustion products (see section 10).
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.
Further information	:	Use water spray to cool unopened containers. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

See also Section 9. Physical and chemical properties: Safety data

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Wear respiratory protection. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation. Remove all sources of ignition.
Emergency measures on accidental release	:	Evacuate personnel to safe areas. Only qualified personnel equipped with suitable protective equipment may intervene. Prevent unauthorized persons entering the zone.
Environmental precautions	:	Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up / Methods for containment	:	Soak up with inert absorbent material and dispose of as hazardous waste. Keep wetted with water. Confinement must be avoided. Pick up and arrange disposal without creating dust. Keep in suitable, closed containers for disposal. Never return spills in original containers for re-use.
Reference to other sections	:	For disposal considerations see section 13. For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	For personal protection see section 8. Avoid formation of respirable particles. Do not breathe vapors/dust. Avoid contact with skin, eyes and clothing. Keep away from heat/sparks/open flames/hot surfaces. No smoking. Smoking, eating and drinking should be prohibited in the application area. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.
Advice on protection against fire and explosion	:	Use explosion protected equipment. Provide appropriate exhaust ventilation at places where dust is formed. Keep away from sources of ignition - No smoking. No sparking tools should be used. Keep away from reducing agents (e.g. amines), acids, alkalies and heavy metal compounds (e.g. accelerators, driers, metal soaps). Do not cut or weld on or near this container even when empty. Keep away from combustible material.
Temperature class	:	It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded.

Storage

Requirements for storage areas and containers	:	No smoking. Keep in a well-ventilated place. Keep in a dry place. Electrical installations / working materials must comply with the technological safety standards. Store at room temperature in the original container. Keep only in original container. Store away from other materials.
Maximum storage temperature:	:	25 °C (77 °F)
Other data	:	Do not allow to dry out.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Ingredients with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Dibenzoyl peroxide	94-36-0	TWA	5 mg/m3	2013-03-01	ACGIH	
	Further information	:	URT irr: Upper Respiratory Tract irritation skin irr: Skin irritation A4: Not classifiable as a human carcinogen			
		TWA	5 mg/m3	2013-10-08	NIOSH REL	
		TWA	5 mg/m3	1997-08-04	OSHA Z-1	
		TWA	5 mg/m3	1989-01-19	OSHA P0	
		PEL	5 mg/m3	2014-11-26	CAL PEL	
Dust		TWA	50 Million particles per cubic foot	2011-07-01	OSHA Z-3	total dust
	Further information	:	a: Based on impinger samples counted by light-field techniques. d: All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1. mppcf X 35.3 = million particles per cubic meter = particles per c.c			
Dust		TWA	15 mg/m3	2011-07-01	OSHA Z-3	total dust
	Further information	:	d: All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1.			
Dust		TWA	5 mg/m3	2011-07-01	OSHA Z-3	respirable fraction
	Further information	:	d: All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1.			
Dust		TWA	15 Million particles per cubic foot	2011-07-01	OSHA Z-3	respirable fraction
	Further information	:	a: Based on impinger samples counted by light-field techniques. d: All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by this limit, which is the same as the Particulates Not Otherwise Regulated (PNOR) limit in Table Z-1. mppcf X 35.3 = million particles per cubic meter = particles per c.c			

ACGIH: American Conference of Governmental Industrial Hygienists
BEI: Biological Exposure Index
MAC: Maximum Allowable Concentration
NIOSH: National Institute for Occupational Safety and Health
OEL: OEL: Occupational exposure limit.
STEL: Short term exposure limit
TWA: Time Weighted Average

Occupational exposure limits of decomposition products

Decomposition products	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Benzene	71-43-2	TWA	0.5 ppm	2007-01-01	ACGIH	

	Further information	:	leukemia: Leukemia BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section) A1: Confirmed human carcinogen Skin: Danger of cutaneous absorption			
		STEL	2.5 ppm	2007-01-01	ACGIH	
	Further information	:	leukemia: Leukemia BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section) A1: Confirmed human carcinogen Skin: Danger of cutaneous absorption			
		TWA	0.1 ppm	2013-10-08	NIOSH REL	
	Further information	:	Ca: Potential Occupational Carcinogen See Appendix A			
		ST	1 ppm	2013-10-08	NIOSH REL	
	Further information	:	Ca: Potential Occupational Carcinogen See Appendix A			
		TWA	10 ppm	2012-07-01	OSHA Z-2	
	Further information	:	Z37.40-1969 (a): This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.			
		CEIL	25 ppm	2012-07-01	OSHA Z-2	
	Further information	:	Z37.40-1969 (a): This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.			
		Peak	50 ppm	2012-07-01	OSHA Z-2	
	Further information	:	Z37.40-1969 (a): This standard applies to the industry segments exempt from the 1 ppm 8-hour TWA and 5 ppm STEL of the benzene standard at 1910.1028.			
	Further information	:	See 1910.1028. See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028 d: The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except some subsegments of industry where exposures are consistently under the action level (i.e., distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures); for the excepted subsegments, the benzene limits in Table Z-2 apply.			
	Further information	:	Substance listed; for more information see OSHA document 1910.1028 See Table Z-2 for the limits applicable in the operations or sectors excluded in 1910.1028d. (d)The final benzene standard in 1910.1028 applies to all occupational exposures to benzene except in some circumstances the distribution and sale of fuels, sealed containers and pipelines, coke production, oil and gas drilling and production, natural gas processing, and the percentage exclusion for liquid mixtures; for the excepted subsegments, the benzene limits in Table Z-2 apply. See 1910.1028 for specific circumstances.			
		PEL	1 ppm	2012-04-03	OSHA CARC	
	Further information	:	1910.1028 This section applies to all occupational exposures to benzene. Chemical Abstracts Service Registry No. 71-43-2, except as provided in paragraphs (a)(2) and (a)(3) of this section. Paragraph (a)(2): This section does not apply to: (i) The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities, except that operations where gasoline or motor fuels are dispensed for more than 4 hours per day in an indoor location are covered by this section. (ii) Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section. (iii) The storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or			

			liquid, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section. (iv) Containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene. (v) Work operations where the only exposure to benzene is from liquid mixtures containing 0.5 percent or less of benzene by volume, or the vapors released from such liquids until September 12, 1988; work operations where the only exposure to benzene is from liquid mixtures containing 0.3 percent or less of benzene by volume or the vapors released from such liquids from September 12, 1988, to September 12, 1989; and work operations where the only exposure to benzene is from liquid mixtures containing 0.1 percent or less of benzene by volume or the vapors released from such liquids after September 12, 1989; except that tire building machine operators using solvents with more than 0.1 percent benzene are covered by paragraph (i) of this section. (vi) Oil and gas drilling, production and servicing operations. (vii) Coke oven batteries. Paragraph (a)(3): The cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) methods of compliance, paragraph (e)(1) exposure monitoring-general, and paragraph (e)(6) accuracy of monitoring. Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible. Benzene (C6H6) (CAS Registry No. 71-43-2) means liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials OSHA specifically regulated carcinogen			
		STEL	5 ppm	2012-04-03	OSHA CARC	
	Further information	:	1910.1028 This section applies to all occupational exposures to benzene. Chemical Abstracts Service Registry No. 71-43-2, except as provided in paragraphs (a)(2) and (a)(3) of this section. Paragraph (a)(2): This section does not apply to: (i) The storage, transportation, distribution, dispensing, sale or use of gasoline, motor fuels, or other fuels containing benzene subsequent to its final discharge from bulk wholesale storage facilities, except that operations where gasoline or motor fuels are dispensed for more than 4 hours per day in an indoor location are covered by this section. (ii) Loading and unloading operations at bulk wholesale storage facilities which use vapor control systems for all loading and unloading operations, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section. (iii) The storage, transportation, distribution or sale of benzene or liquid mixtures containing more than 0.1 percent benzene in intact containers or in transportation pipelines while sealed in such a manner as to contain benzene vapors or liquid, except for the provisions of 29 CFR 1910.1200 as incorporated into this section and the emergency provisions of paragraphs (g) and (i)(4) of this section. (iv) Containers and pipelines carrying mixtures with less than 0.1 percent benzene and natural gas processing plants processing gas with less than 0.1 percent benzene. (v) Work operations where the only exposure to benzene is from liquid mixtures containing 0.5 percent or less of benzene by volume, or the vapors released from such liquids until September 12, 1988; work operations where the only exposure to benzene is from liquid mixtures containing 0.3 percent or less of benzene by volume or the vapors released from such liquids from September 12, 1988, to September 12, 1989; and work operations where the only exposure to benzene is from liquid mixtures containing 0.1 percent or less of benzene by volume or the vapors released from such liquids after September 12, 1989; except that tire building machine operators using solvents with more than 0.1 percent benzene are covered by paragraph (i) of this section. (vi) Oil and gas drilling, production and servicing operations. (vii) Coke oven batteries. Paragraph (a)(3): The cleaning and repair of barges and tankers which have contained benzene are excluded from paragraph (f) methods of compliance, paragraph (e)(1) exposure monitoring-general, and paragraph (e)(6) accuracy of monitoring. Engineering and work practice controls shall be used to keep exposures below 10 ppm unless it is proven to be not feasible. Benzene (C6H6) (CAS Registry No. 71-43-2) means liquefied or gaseous benzene. It includes benzene contained in liquid mixtures and the benzene vapors released by these liquids. It does not include trace amounts of unreacted benzene contained in solid materials OSHA specifically regulated carcinogen			
		PEL	1 ppm	2014-11-26	CAL PEL	

	Further information	:	S: Skin see Section 5218			
		STEL	5 ppm	2014-11-26	CAL PEL	
	Further information	:	S: Skin see Section 5218			
Carbon dioxide	124-38-9	TWA	5,000 ppm	2007-01-01	ACGIH	
	Further information	:	asphyxia: Asphyxia			
		STEL	30,000 ppm	2007-01-01	ACGIH	
	Further information	:	asphyxia: Asphyxia			
		TWA	5,000 ppm 9,000 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	Normal constituent of air (about 300 ppm).			
		ST	30,000 ppm 54,000 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	Normal constituent of air (about 300 ppm).			
		TWA	5,000 ppm 9,000 mg/m3	1997-08-04	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	10,000 ppm 18,000 mg/m3	1989-01-19	OSHA P0	
	Further information	:	e: Exposures under 10,000 ppm to be cited as de minimus.			
		STEL	30,000 ppm 54,000 mg/m3	1989-01-19	OSHA P0	
		PEL	5,000 ppm 9,000 mg/m3	2014-11-26	CAL PEL	
		STEL	30,000 ppm 54,000 mg/m3	2014-11-26	CAL PEL	

Hazardous substance

Substance name	CAS-No.	Value	Control parameters	Basis	Update
Dibenzoyl peroxide	94-36-0	Immediately Dangerous to Life or Health Concentration Value	1500 mg/m3	US IDLH	1995-03-01
	Further information	: Immediately Dangerous to Life or Health Concentrations (IDLH)			

Appropriate engineering controls

Explosion proof ventilation recommended.
Provide appropriate exhaust ventilation at places where dust is formed.
Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection : Tightly fitting safety goggles

Hand protection : Glove material: Neoprene

: Glove material: Nitrile rubber

Skin and body protection : Protective suit

Respiratory protection : Use respiratory protection (air supplied respirator) unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.

Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. Wash contaminated clothing before re-use.

Environmental exposure controls

General advice	:	Prevent product from entering drains. If the product contaminates rivers and lakes or drains inform respective authorities.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	powder
Color	:	white
Odor	:	Faint.
Odor Threshold	:	No data available

Safety data

pH	:	Not applicable
Melting point	:	Decomposes before melting.
Boiling point/boiling range	:	Decomposes below the boiling point.
Flash point	:	Above the SADT value
Evaporation rate	:	No data available
Flammability (solid, gas)	:	
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Vapor pressure	:	Not applicable
Relative vapor density	:	Not applicable
Relative density	:	No data available
Bulk density	:	640 kg/m3 at 20 °C
Water solubility	:	at 20 °C insoluble
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	No data available

Autoignition temperature	:	Test method not applicable
Decomposition temperature	:	SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Self-Accelerating decomposition temperature (SADT)	:	55 °C
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	Not applicable
Explosive properties	:	Not explosive
Oxidizing properties	:	Not classified as oxidizing.
Active Oxygen Content	:	3.3 %
Organic peroxides	:	50 %

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Do not allow to dry out. Confinement must be avoided. Heat, flames and sparks.
Materials to avoid	:	Contact with the following incompatible materials will result in hazardous decomposition: Acids and bases Iron Copper Reducing agents Heavy metals Rust Do not mix with peroxide accelerators, unless under controlled processing. Use only stainless steel 316, PP, polyethylene or glass-lined equipment. For queries regarding the suitability of other materials please contact the supplier.
Hazardous decomposition products	:	Carbon oxides Benzoic acid Benzene Carbon dioxide

Thermal decomposition	:	SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Reactivity	:	Stable under normal conditions.
Chemical stability	:	Stable under recommended storage conditions.
Hazardous reactions	:	Dust may form explosive mixture in air.
Self-Accelerating decomposition temperature (SADT)	:	55 °C (131 °F)

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Hazard Summary

Acute toxicity	:	Not classified based on available information.
Skin corrosion/irritation	:	Not classified based on available information.
Serious eye damage/eye irritation	:	Causes eye irritation.
Respiratory or skin sensitization	:	Respiratory sensitization: Not classified based on available information. Skin sensitization: May cause an allergic skin reaction.
Germ cell mutagenicity	:	Not classified based on available information.
Carcinogenicity	:	Not classified based on available information.
Reproductive toxicity	:	Not classified based on available information.
STOT-single exposure	:	Not classified based on available information.
STOT-repeated exposure	:	Not classified based on available information.
Aspiration hazard	:	Not classified based on available information.

Potential Health Effects

Inhalation	:	Thermal decomposition can lead to release of irritating gases and vapors. Product dust may be irritating to respiratory system.
Skin	:	Product dust may be irritating to skin. May cause an allergic skin reaction. May cause skin irritation.
Eyes	:	Causes serious eye irritation.

Ingestion	:	May cause irritation of the mucous membranes.
Aggravated Medical Condition	:	None known.
Symptoms of Overexposure	:	The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Toxicology Assessment

Further information	:	Inhalation may cause central nervous system effects. May cause damage to organs. This product may cause adverse reproductive effects. immune system effects Expected to produce developmental effects. blood effects Avoid skin contact. Do not breathe vapors/dust. Wear respiratory protection. Wear suitable protective clothing and gloves.

Carcinogenicity:

IARC	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	:	No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.
NTP	:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

TOXICOLOGY DATA FOR THE INGREDIENTS:

Toxicology Assessment

Component: Ethylene glycol dibenzoate

CMR effects	:	Carcinogenicity: Based on available data, the classification criteria are not met. Mutagenicity: Based on available data, the classification criteria are not met. Reproductive toxicity: Based on available data, the classification criteria are not met.

Component: Dibenzoyl peroxide

CMR effects	:	Carcinogenicity: Not carcinogenic. Mutagenicity: Not mutagenic. Teratogenicity: Did not show teratogenic effects in animal experiments. Reproductive toxicity: No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

Test result

Component: Ethylene glycol dibenzoate

Acute oral toxicity	:	LD50: > 2,000 mg/kg Species: Rat Method: OECD Test Guideline 423
Skin irritation	:	Species: Rabbit Result: No skin irritation Method: OECD Test Guideline 404 Exposure time: 4 h
Eye irritation	:	Species: Rabbit Result: No eye irritation Method: OECD Test Guideline 405 Exposure time: 1 h
Sensitization	:	Local lymph node assay (LLNA) Species: Mouse Result: Not a skin sensitizer. Method: OECD Test Guideline 429
Repeated dose toxicity	:	Species: Rat, male and female NOAEL: 300 mg/kg LOAEL: 1,000 mg/kg Application Route: Oral Exposure time: 92 d Number of exposures: 1 /day Method: OECD Test Guideline 422 GLP: yes
Germ cell mutagenicity		
Genotoxicity in vitro	:	reverse mutation assay Bacteria Result: negative Method: OECD Test Guideline 471 Chromosome aberration test in vitro Human lymphocytes Result: negative Method: OECD Test Guideline 473 In vitro gene mutation study in mammalian cells mouse lymphoma cells Result: negative
Genotoxicity in vivo	:	Species: Mouse Method: OECD Test Guideline 474 Dose: 2000 mg/kg total Result: negative
Reproductive toxicity/Fertility	:	Test Type: reproductive and developmental toxicity study Species: Rat, male and female Application Route: Oral Dose: 100, 300, 1000 mg/kg bw/day Frequency of Treatment: 1 daily

General Toxicity Parent: NOAEL (No observed adverse effect level): 300 mg/kg bw/day
General Toxicity F1: NOAEL (No observed adverse effect level): 300 mg/kg bw/day
Method: OECD Test Guideline 422
GLP: yes
Result: Animal testing did not show any effects on fertility.

Reproductive toxicity/Development/Teratogenicity : Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: NOAEL (No observed adverse effect level): 300 mg/kg bw/day
Developmental Toxicity: NOAEL (No observed adverse effect level): 300 mg/kg bw/day
Method: OECD Test Guideline 422
GLP: yes
Result: No effects on fertility., No effects on reproduction parameters., Some evidence of adverse effects on development, based on animal experiments.

Component: Dibenzoyl peroxide

Acute oral toxicity : LD50: > 2,000 mg/kg
Species: Mouse
Method: OECD Test Guideline 401

LD50: > 5,000 mg/kg
Species: Rat

Acute inhalation toxicity : LC50 (Rat, male): > 24.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

Skin irritation : Species: Rabbit
Method: OECD Test Guideline 404
Exposure time: 4 h
Not irritating.

Eye irritation : Species: Rabbit
Result: Irritation to eyes, reversing within 7 days

Sensitization : Species: Guinea pig
Classification: May cause sensitization by skin contact.
Method: OECD Test Guideline 406

Local lymph node assay (LLNA)
Species: Mouse
Classification: The product is a skin sensitizer, sub-category 1A.
Method: OECD Test Guideline 429

Germ cell mutagenicity

Genotoxicity in vitro : In vitro gene mutation study in mammalian cells
mouse lymphoma cells
Result: negative

Method: OECD Test Guideline 476

Genotoxicity in vivo	:	Micronucleus test Species: Mouse Method: OECD Test Guideline 474 Result: negative
Carcinogenicity	:	Not classified due to data which are conclusive although insufficient for classification.
Reproductive toxicity/Fertility	:	Test Type: reproductive and developmental toxicity study Species: Rat, male and female Application Route: Oral General Toxicity F1: NOAEL (No observed adverse effect level): 500 mg/kg bw/day Method: OECD Test Guideline 422 GLP: yes
Reproductive toxicity/Development/Teratogenicity	:	Species: Rat Application Route: Oral General Toxicity Maternal: NOAEL (No observed adverse effect level): 300 mg/kg bw/day Embryo-fetal toxicity.: NOAEL (No observed adverse effect level): 300 mg/kg bw/day Method: OECD Test Guideline 414 GLP: yes
Target Organ Systemic Toxicant - Single exposure	:	Routes of exposure: Ingestion The substance or mixture is not classified as specific target organ toxicant, single exposure.
Target Organ Systemic Toxicant - Repeated exposure	:	Routes of exposure: Ingestion The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Aspiration toxicity	:	No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects. Notice to users: Do not release to water. (SDS)

Further information on ecology

Hazardous to the ozone layer

Regulation	:	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	:	This product neither contains, nor was manufactured with a

Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

COMPONENTS:

Ecotoxicology Assessment

Component: Ethylene glycol dibenzoate

Long-term (chronic) aquatic hazard : Toxic to aquatic life with long lasting effects.

Test result

Component: Ethylene glycol dibenzoate

Ecotoxicity effects

Toxicity to fish : LC50: > 0.434 mg/l
Exposure time: 96 h
Species: Danio rerio (zebra fish)
Test Type: static test
Method: OECD Test Guideline 203
No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates : EC50: > 2.4 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test Type: static test
Method: OECD Test Guideline 202
No toxicity at the limit of solubility.

NOEC: 2.4 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test Type: static test
Method: OECD Test Guideline 202
No toxicity at the limit of solubility.

Toxicity to algae : ErC50: > 0.87 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Test Type: static test
Method: OECD Test Guideline 201
No toxicity at the limit of solubility.

NOEC: 0.045 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Test Type: static test
Method: OECD Test Guideline 201

Toxicity to bacteria : EC50: > 1,280 mg/l
Exposure time: 3 h
Species: activated sludge
Test Type: static test
Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity)	:	NOEC: 0.073 mg/l Exposure time: 34 d mortality Species: Danio rerio (zebra fish) Test Type: semi-static test Method: OECD Test Guideline 210
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC10: 0.79 mg/l Exposure time: 21 d reproduction rate Species: Daphnia magna (Water flea) Test Type: semi-static test Method: OECD Test Guideline 211 NOEC: 0.65 mg/l Exposure time: 21 d reproduction rate Species: Daphnia magna (Water flea) Test Type: semi-static test Method: OECD Test Guideline 211

Elimination information (persistence and degradability)

Biodegradability	:	Test Type: Closed Bottle test Biodegradation: 81 % Exposure time: 28 d Method: OECD Test Guideline 301D GLP: yes Readily biodegradable.

Component: Dibenzoyl peroxide

Ecotoxicity effects

Toxicity to fish	:	LC50: 0.06 mg/l Exposure time: 96 h Species: Oncorhynchus mykiss (rainbow trout) Test Type: semi-static test Method: OECD Test Guideline 203
Toxicity to daphnia and other aquatic invertebrates	:	EC50: 0.11 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Test Type: static test Method: OECD Test Guideline 202
Toxicity to algae	:	NOEC: 0.02 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (green algae) Test Type: static test Method: OECD Test Guideline 201
M-Factor (Acute)	:	10
M-Factor (Chronic)	:	10
Toxicity to bacteria	:	EC50: 35 mg/l Exposure time: 0.5 h

Species: activated sludge
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10: 0.001 mg/l
Exposure time: 21 d
reproduction rate
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Analytical monitoring: yes
Method: OECD Test Guideline 211

Elimination information (persistence and degradability)

Biodegradability : Test Type: Ready biodegradability
Inoculum: activated sludge, non-adapted
Concentration: 2 mg/l
Result: Readily biodegradable.
Testing period: 7 d
Exposure time: 28 d
Kinetic:

7 d: 58 %
15 d: 63 %
21 d: 71 %
28 d: 71 %
Method: OECD Test Guideline 301D
GLP: yes

13. DISPOSAL CONSIDERATIONS

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Hazardous waste
Dispose of contents/container in accordance with local regulation.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not burn, or use a cutting torch on, the empty drum.
Due to the high risk of contamination recycling/recovery is not recommended.
Follow all warnings even after the container is emptied.

14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 3106
Proper shipping name : Organic peroxide type D, solid (Dibenzoyl peroxide)
Class : 5.2

Subsidiary risk	:	HEAT
Packing group	:	Not Assigned
Labels	:	5.2 (HEAT)
Packing instruction (cargo aircraft)	:	570
Packing instruction (passenger aircraft)	:	570
Environmentally hazardous	:	yes

IMDG-Code

UN number	:	UN 3106
Proper shipping name	:	ORGANIC PEROXIDE TYPE D, SOLID (Dibenzoyl peroxide)
Class	:	5.2
Packing group	:	Not Assigned
Labels	:	5.2
EmS Code	:	F-J, S-R
Marine pollutant	:	yes (Dibenzoyl peroxide)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 3106
Proper shipping name	:	Organic peroxide type D, solid
	:	(Dibenzoyl peroxide, 50%)
Class	:	5.2
Packing group	:	Not Assigned
Labels	:	5.2
ERG Code	:	145
Marine pollutant	:	yes (Dibenzoyl peroxide)
Reportable Quantity	:	This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

15. REGULATORY INFORMATION

Notification status

TCSI	:	YES. On the inventory, or in compliance with the inventory
TSCA	:	YES. All substances listed as active on the TSCA inventory
AICS	:	NO. Not in compliance with the inventory
DSL	:	NO. This product contains one or several components that are not on the Canadian DSL nor NDSL.
ENCS	:	YES. On the inventory, or in compliance with the inventory
ISHL	:	YES. On the inventory, or in compliance with the inventory
KECI	:	NO. Not in compliance with the inventory
PICCS	:	NO. Not in compliance with the inventory
IECSC	:	NO. Not in compliance with the inventory
NZIoC	:	YES. On the inventory, or in compliance with the inventory

For explanation of abbreviations, see section 16.

TSCA list

TSCA 5(a)(2)	:	The following substance(s) is/are subject to a Significant New Use Rule: Ethylene glycol dibenzoate
TSCA 12(b)	:	The following substance(s) is/are subject to TSCA 12(b) export

notification requirements: Ethylene glycol dibenzoate

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	:	Organic peroxides Serious eye damage or eye irritation Respiratory or skin sensitization
SARA 302	:	This material does not contain any components with a section 302 EHS TPQ.
SARA 313	:	The following components are subject to reporting levels established by SARA Title III, Section 313: Dibenzoyl peroxide 94-36-0 48 - 52 %

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

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California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

Full text of H-Statements

H241	:	Heating may cause a fire or explosion.
H317	:	May cause an allergic skin reaction.
H320	:	Causes eye irritation.
H400	:	Very toxic to aquatic life.
H410	:	Very toxic to aquatic life with long lasting effects.
H411	:	Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
CAL PEL	:	California permissible exposure limits for chemical contaminants (Title 8, Article 107)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits

OSHA CARC	:	OSHA Specifically Regulated Chemicals/Carcinogens
OSHA P0	:	USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
OSHA Z-2	:	USA. Occupational Exposure Limits (OSHA) - Table Z-2
OSHA Z-3	:	USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts

ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
CAL PEL / STEL	:	Short term exposure limit
CAL PEL / PEL	:	Permissible exposure limit
NIOSH REL / TWA	:	Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST	:	STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
OSHA CARC / PEL	:	Permissible exposure limit (PEL)
OSHA CARC / STEL	:	Excursion limit
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA Z-1 / TWA	:	8-hour time weighted average
OSHA Z-2 / TWA	:	8-hour time weighted average
OSHA Z-2 / CEIL	:	Acceptable ceiling concentration
OSHA Z-2 / Peak	:	Acceptable maximum peak above the acceptable ceiling concentration for an 8-hr shift
OSHA Z-3 / TWA	:	8-hour time weighted average

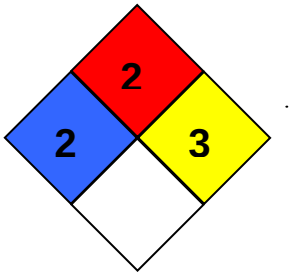
AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TSCA - Toxic

Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

Further information

HMIS Classification : Health Hazard: 2
Chronic Health Hazard: /
Flammability: 2
Physical hazards: 3

NFPA Classification : Health Hazard: 2
Fire Hazard: 2
Reactivity Hazard: 3



Notification status explanation

TCSI	Taiwan Chemical Substance Inventory (TCSI)
TSCA	United States TSCA Inventory
AICS	Australia Inventory of Chemical Substances (AICS)
DSL	Canadian Domestic Substances List (DSL)
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)
NZIoC	New Zealand. Inventory of Chemical Substances

Further information

Revision Date	01/08/2020

This data sheet contains changes from the previous version in section(s):
Regulatory information

The information in this safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the c ontext of the user's operations and use of this product. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old,call to make certain that this sheet is current. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates

only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.