SAFETY DATA SHEET

according to the Globally Harmonized System and US regulation

CADOX L-30A

Version 3 Revision Date 02/18/2019 Print Date 09/27/2019 US / Z8

1. IDENTIFICATION

Product name	:	CADOX L-30A
Product Use Description	:	Specific use(s): Curing agent
Company	:	Nouryon Functional Chemicals B.V. Velperweg 76 Arnhem 6824 BM NL
Telephone	:	+31263664433
Fax	:	+31263665830
E-mail address	:	RegulatoryAffairs@nouryon.com
Emergency telephone	:	24 hours:+31 57 06 79211, US-CHEMTREC:1-800-424-9300, CA-CANUTEC:1-613-996-6666, JP: +81 (3) 3234 0801, CN: 化学事故应急咨询电话：+86 532 8388 9090

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Color	clear, colorless
Odor	Faint.

GHS Classification

Organic peroxides, Type E
Acute toxicity, Category 4, Oral
Acute toxicity, Category 4, Inhalation
Skin corrosion, Category 1B
Serious eye damage, Category 1
Reproductive toxicity, Category 2
Short-term (acute) aquatic hazard, Category 2
Long-term (chronic) aquatic hazard, Category 3

GHS label elements

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H242 Heating may cause a fire.
H302 + H332 Harmful if swallowed or if inhaled.

H314 Causes severe skin burns and eye damage.
H361d Suspected of damaging the unborn child.
H401 Toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
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 mist, vapours or spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.
P308 + P313 IF exposed or concerned: 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.
Storage:
P405 Store locked up.
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

Common Name : Organic peroxide
Pure substance/mixture : Mixture

Hazardous ingredients

Chemical name	CAS-No.	Classification	Concentration [% W/W]
2,2,4-Trimethyl-1,3-pentanediol diisobutanoate	6846-50-0	Repr. 2; H361d Aquatic Acute 2; H401 Aquatic Chronic 3; H412	73 - 83
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4	Org. Perox. A; H240 Acute Tox. 4; H302 Acute Tox. 4; H332 Skin Corr. 1B; H314 Eye Dam. 1; H318 Aquatic Acute 2; H401	17 - 22
Methyl ethyl ketone	78-93-3	Flam. Liq. 2; H225 Eye Irrit. 2A; H319 STOT SE 3; H336	1 - 2

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

4. FIRST AID MEASURES

General advice : Immediate medical attention is required.
Move out of dangerous area.
Show this material safety data sheet to the doctor in attendance.

Inhalation : If breathed in, move person into fresh air.
Consult a physician after significant exposure.

Skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.

Eye contact : Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport of patient.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

Ingestion	:	Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Take victim immediately to hospital. Do not induce vomiting! May cause chemical burns in mouth and throat.

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	:	Harmful if swallowed or if inhaled. Causes serious eye damage. Suspected of damaging the unborn child. Causes severe burns.
Treatment	:	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Specific hazards during fire fighting / Specific hazards arising from the chemical	:	CAUTION: reignition may occur. Supports combustion. Water spray may be ineffective unless used by experienced firefighters. Do not allow run-off from fire fighting to enter drains or water courses. 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. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

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. 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 aerosol. Do not breathe vapors or spray mist. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. 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. 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	:	Prevent unauthorized access. No smoking. Keep in a well-ventilated place. Electrical installations / working materials must comply with the technological safety standards. Keep only in original container. Store away from other materials.
Maximum storage temperature:	:	30 °C (86 °F)

Other data : No decomposition if stored and applied as directed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Ingredients with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4	C	0.2 ppm	2013-03-01	ACGIH	
	Further information	:	eye irr: Eye irritation liver dam: Liver damage kidney dam: Kidney damage skin irr: Skin irritation			
		C	0.2 ppm 1.5 mg/m3	2013-10-08	NIOSH REL	
		C	0.7 ppm 5 mg/m3	1989-01-19	OSHA P0	
		C	0.2 ppm 1.5 mg/m3	2014-11-26	CAL PEL	
Methyl ethyl ketone	78-93-3	TWA	200 ppm	2013-03-01	ACGIH	
	Further information	:	CNS impair: Central Nervous System impairment URT irr: Upper Respiratory Tract irritation PNS impair: Peripheral Nervous System impairment BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)			
		STEL	300 ppm	2013-03-01	ACGIH	
	Further information	:	CNS impair: Central Nervous System impairment URT irr: Upper Respiratory Tract irritation PNS impair: Peripheral Nervous System impairment BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)			
		TWA	200 ppm 590 mg/m3	2013-10-08	NIOSH REL	
		ST	300 ppm 885 mg/m3	2013-10-08	NIOSH REL	
		TWA	200 ppm 590 mg/m3	1997-08-04	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	200 ppm 590 mg/m3	1989-01-19	OSHA P0	
		STEL	300 ppm 885 mg/m3	1989-01-19	OSHA P0	
		PEL	200 ppm 590 mg/m3	2014-11-26	CAL PEL	
		STEL	300 ppm 885 mg/m3	2014-11-26	CAL PEL	

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
Formic acid	64-18-6, 64-18-6	TWA	5 ppm	2013-03-01	ACGIH	
	Further information	:	URT irr: Upper Respiratory Tract irritation eye irr: Eye irritation skin irr: Skin irritation			
		STEL	10 ppm	2013-03-01	ACGIH	
	Further information	:	URT irr: Upper Respiratory Tract irritation eye irr: Eye irritation skin irr: Skin irritation			
		TWA	5 ppm 9 mg/m3	2013-10-08	NIOSH REL	
		TWA	5 ppm 9 mg/m3	2011-07-01	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	5 ppm 9 mg/m3	1989-01-19	OSHA P0	
		PEL	5 ppm 9 mg/m3	2014-11-26	CAL PEL	
		STEL	10 ppm 19 mg/m3	2014-11-26	CAL PEL	
Acetic acid	64-19-7, 64-19-7	TWA	10 ppm	2013-03-01	ACGIH	
	Further information	:	pulm func: Pulmonary function URT irr: Upper Respiratory Tract irritation eye irr: Eye irritation			
		STEL	15 ppm	2013-03-01	ACGIH	
	Further information	:	pulm func: Pulmonary function URT irr: Upper Respiratory Tract irritation eye irr: Eye irritation			
		TWA	10 ppm 25 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	Can be found in concentrations of 5-8% in vinegar			
		ST	15 ppm 37 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	Can be found in concentrations of 5-8% in vinegar			
		TWA	10 ppm 25 mg/m3	1997-08-04	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	10 ppm 25 mg/m3	1989-01-19	OSHA P0	
		PEL	10 ppm 25 mg/m3	2014-11-26	CAL PEL	
		STEL	15 ppm 37 mg/m3	2014-11-26	CAL PEL	
		C	40 ppm	2014-11-26	CAL PEL	
Propionic acid	79-09-4, 79-09-4	TWA	10 ppm	2013-03-01	ACGIH	
	Further	:	URT irr: Upper Respiratory Tract irritation			

	information		eye irr: Eye irritation skin irr: Skin irritation			
		TWA	10 ppm 30 mg/m3	2013-10-08	NIOSH REL	
		ST	15 ppm 45 mg/m3	2013-10-08	NIOSH REL	
		TWA	10 ppm 30 mg/m3	1989-01-19	OSHA P0	
		PEL	10 ppm 30 mg/m3	2014-11-26	CAL PEL	
Methyl ethyl ketone	78-93-3, 78-93-3	TWA	200 ppm	2013-03-01	ACGIH	
	Further information	:	CNS impair: Central Nervous System impairment URT irr: Upper Respiratory Tract irritation PNS impair: Peripheral Nervous System impairment BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)			
		STEL	300 ppm	2013-03-01	ACGIH	
	Further information	:	CNS impair: Central Nervous System impairment URT irr: Upper Respiratory Tract irritation PNS impair: Peripheral Nervous System impairment BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section)			
		TWA	200 ppm 590 mg/m3	2013-10-08	NIOSH REL	
		ST	300 ppm 885 mg/m3	2013-10-08	NIOSH REL	
		TWA	200 ppm 590 mg/m3	1997-08-04	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	200 ppm 590 mg/m3	1989-01-19	OSHA P0	
		STEL	300 ppm 885 mg/m3	1989-01-19	OSHA P0	
		PEL	200 ppm 590 mg/m3	2014-11-26	CAL PEL	
		STEL	300 ppm 885 mg/m3	2014-11-26	CAL PEL	

Biological occupational exposure limits

Substance name	CAS-No.	Control parameters	Sampling time	Update
Methyl ethyl ketone	78-93-3	methyl ethyl ketone: 2 mg/l (Urine)	End of shift (As soon as possible after exposure ceases)	2014-03-01

Hazardous substance

Substance name	CAS-No.	Value	Control parameters	Basis	Update
Methyl ethyl ketone	78-93-3	Immediately Dangerous to Life or Health Concentration Value	3000 parts per million	US IDLH	1995-03-01
	Further information	: Immediately Dangerous to Life or Health Concentrations (IDLH)			

Appropriate engineering controls

Explosion proof ventilation recommended.
Effective exhaust ventilation system
Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection : Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection	:	Glove material: Neoprene
	:	Glove material: Nitrile rubber
Skin and body protection	:	Protective suit
Respiratory protection	:	In the case of vapor or aerosol formation use a respirator with an approved filter. Filter A
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.

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	:	liquid
Color	:	clear colorless
Odor	:	Faint.
Odor Threshold	:	No data available

Safety data

pH	:	Weakly acidic
Melting point	:	No data available
Boiling point/boiling range	:	No data available
Flash point	:	Not applicable
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Flammability (liquids)	:	Decomposition products may be flammable.
Lower explosion limit	:	Not applicable
Upper explosion limit	:	Not applicable
Vapor pressure	:	not determined
Relative vapor density	:	No data available

Relative density	:	1.0 at 20 °C
Bulk density	:	Not applicable
Water solubility	:	at 20 °C partly miscible
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)	:	60 °C
Viscosity, dynamic	:	No data available
Viscosity, kinematic	:	No data available
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.
Active Oxygen Content	:	5.2 - 5.4 %
Organic peroxides	:	17 - 22 %

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	:	A high degree of 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 Formic acid Acetic acid Propionic acid Methyl ethyl ketone
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	:	No dangerous reaction known under conditions of normal use.
Self-Accelerating decomposition temperature (SADT)	:	60 °C (140 °F)

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Hazard Summary

Acute toxicity	:	Harmful if swallowed or if inhaled.
Skin corrosion/irritation	:	Causes severe burns.
Serious eye damage/eye irritation	:	Causes serious eye damage.
Respiratory or skin sensitization	:	Respiratory sensitization: Not classified based on available information. Skin sensitization: Not classified based on available information.
Germ cell mutagenicity	:	Not classified based on available information.
Carcinogenicity	:	Not classified based on available information.
Reproductive toxicity	:	Suspected of damaging the unborn child.
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	:	Inhalation of aerosols may cause irritation to mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Harmful if inhaled.
Skin	:	Symptoms may be delayed. Causes severe skin burns.
Eyes	:	Causes serious eye damage.
Ingestion	:	Harmful if swallowed. Causes burns.
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	:	Suspected of damaging fertility or the unborn child.

Test result

Acute oral toxicity	:	LD50 Oral: 1,535 mg/kg Species: Rat The value is calculated
Acute inhalation toxicity	:	LC50 (Rat): 2.3 mg/l Exposure time: 4 h Test atmosphere: dust/mist The value is calculated
Acute dermal toxicity	:	LD50: 6,037 mg/kg Species: Rabbit The value is calculated

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: 2,2,4-Trimethyl-1,3-pentanediol diisobutanoate

CMR effects	:	Reproductive toxicity: Some evidence of adverse effects on

development, based on animal experiments.

Test result

Component: 2,2,4-Trimethyl-1,3-pentanediol diisobutanoate

Acute oral toxicity	:	LD50: > 2,000 mg/kg Species: Rat
Acute inhalation toxicity	:	LCLo (Rat): > 0.12 mg/l Exposure time: 6 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50: > 2,000 mg/kg Species: Rabbit
Skin irritation	:	Species: Rabbit Result: No skin irritation Classification: No skin irritation Method: OECD Test Guideline 404 Exposure time: 4 h
Eye irritation	:	Species: Rabbit Result: No eye irritation Classification: No eye irritation Method: OECD Test Guideline 405 Dose 0.1 ml
Sensitization	:	Species: Guinea pig Classification: The substance or mixture is not classified. Result: Not a skin sensitizer. Species: Human. Classification: The substance or mixture is not classified. Result: Not a skin sensitizer.
Repeated dose toxicity	:	Species: Rat, male and female NOAEL: 750 mg/kg bw/day Application Route: Oral Not classified due to data which are conclusive although insufficient for classification.
Germ cell mutagenicity		
Genotoxicity in vitro	:	In vitro gene mutation study in mammalian cells Chinese hamster ovary cells Result: negative Method: OECD Test Guideline 476 reverse mutation assay Salmonella typhimurium Result: negative Method: Regulation (EC) No. 440/2008, Annex, B.13/14 (Ames test)
Reproductive toxicity	:	Species: Rabbit

Application Route: Oral
NOAEL:
F1: 300 mg/kg

Aspiration toxicity : No aspiration toxicity classification

Component: Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Acute oral toxicity : LD50: 1,017 mg/kg
Species: Rat

Acute inhalation toxicity : LC50 (Rat): 1.5 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist

Acute dermal toxicity : LD50: 4,000 mg/kg
Species: Rat

Skin irritation : Result: Causes burns.

Eye irritation : Result: Risk of serious damage to eyes.

Germ cell mutagenicity
Genotoxicity in vitro : Ames test
Result: negative

Genotoxicity in vivo : Not classified due to data which are conclusive although insufficient for classification.

Carcinogenicity : No data available

Reproductive toxicity/Fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0 25, 50, 75 milligram per kilogram
General Toxicity Parent: NOAEL (No observed adverse effect level): 50 mg/kg bw/day
General Toxicity F1: No observed adverse effect level F1: 50 mg/kg bw/day
Fertility: No observed adverse effect level Parent: 75 mg/kg bw/day
Method: OECD Test Guideline 421
GLP: yes

Target Organ Systemic Toxicant - Repeated exposure : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration toxicity : No aspiration toxicity classification

Component: Methyl ethyl ketone

Acute oral toxicity : LD50: 2,737 mg/kg
Species: Rat

Acute dermal toxicity : LD50: 6,480 mg/kg

Species: Rabbit

Skin irritation	:	Result: Repeated exposure may cause skin dryness or cracking. Moderately irritating.
Eye irritation	:	Result: Irritating to eyes.
Target Organ Systemic Toxicant - Single exposure	:	Routes of exposure: Inhalation The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.
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. Toxic to aquatic life. Harmful to aquatic life with long lasting effects.

Test result

Ecotoxicity effects

Toxicity to fish	:	LC50: 66.7 mg/l Exposure time: 96 h Species: Poecilia reticulata (guppy) Test Type: semi-static test The value is calculated
Toxicity to daphnia and other aquatic invertebrates	:	EC50: 59 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) Test Type: Immobilization The value is calculated
Toxicity to algae	:	ErC50: 8.4 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (algae) Test Type: Growth inhibition The value is calculated
Toxicity to bacteria	:	EC10: 18 mg/l Exposure time: 0.5 h Species: activated sludge Test Type: Respiration inhibition Method: Domestic OECD Guideline 209 The value is calculated

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: 2,2,4-Trimethyl-1,3-pentanediol diisobutanoate

Short-term (acute) aquatic hazard : No toxicity at the limit of solubility.

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

Test result

Component: 2,2,4-Trimethyl-1,3-pentanediol diisobutanoate

Ecotoxicity effects

Toxicity to fish : NOEC: >= 6 mg/l
Exposure time: 96 h
Species: Fish

Toxicity to daphnia and other aquatic invertebrates : EC50: > 1.46 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test Type: static test

Toxicity to algae : EC50: > 7.49 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Test Type: Fresh water
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Lowest observable effect level: > 1.3 mg/l
Exposure time: 21 d
reproduction rate
Species: Daphnia magna (Water flea)

NOEC: 0.7 mg/l
Exposure time: 21 d
reproduction rate
Species: Daphnia magna (Water flea)

Elimination information (persistence and degradability)

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
Concentration: 0.00519 mg/l
Bioconcentration factor (BCF): 194

Species: Lepomis macrochirus (Bluegill sunfish)
Concentration: 0.0517 mg/l

Bioconcentration factor (BCF): 183

Species: Lepomis macrochirus (Bluegill sunfish)
Concentration: 0.0956 mg/l
Bioconcentration factor (BCF): 1.95

Surface tension : 27.8 mN/m
at 22 °C

Biodegradability : Test Type: CO2 Evolution Test
Biodegradation: 70.73 %
Exposure time: 28 d
The 10 day time window criterion is not fulfilled.

Component: Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Ecotoxicity effects

Toxicity to fish : LC50: 44.2 mg/l
Exposure time: 96 h
Species: Poecilia reticulata (guppy)
Test Type: semi-static test

Toxicity to daphnia and other aquatic invertebrates : 39 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test Type: Immobilization

Toxicity to algae : ErC50: 5.6 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (algae)
Test Type: Growth inhibition

Toxicity to bacteria : EC10: 12 mg/l
Exposure time: 0.5 h
Species: activated sludge
Test Type: Respiration inhibition
Method: Domestic OECD Guideline 209

Elimination information (persistence and degradability)

Bioaccumulation : Bioconcentration factor (BCF): 10.3
Not expected considering the low log Pow value.

Biodegradability : Result: Readily biodegradable.
Method: Closed Bottle test

Component: Methyl ethyl ketone

Ecotoxicity effects

Toxicity to fish : LC50: 3,220 mg/l
Exposure time: 96 h
Species: Lepomis macrochirus (Bluegill sunfish)

Elimination information (persistence and degradability)

Biodegradability : Result: Readily biodegradable.

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 3107
Proper shipping name	:	Organic peroxide type E, liquid (Methyl ethyl ketone 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	:	no

IMDG-Code

UN number	:	UN 3107
Proper shipping name	:	ORGANIC PEROXIDE TYPE E, LIQUID (Methyl ethyl ketone peroxide)
Class	:	5.2
Packing group	:	Not Assigned
Labels	:	5.2
EmS Code	:	F-J, S-R
Marine pollutant	:	no

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 3107
Proper shipping name	:	Organic peroxide type E, liquid

	:	(Methyl ethyl ketone peroxide, <=40%)
Class	:	5.2
Packing group	:	Not Assigned
Labels	:	5.2
ERG Code	:	145
Marine pollutant	:	no
Reportable Quantity	:	This product contains the following substance(s) which are environmentally hazardous per 49 CFR 172.101, Appendix A: (Methyl ethyl ketone peroxide)

15. REGULATORY INFORMATION

Notification status

DSL	:	YES. All components of this product are on the Canadian DSL
AICS	:	YES. On the inventory, or in compliance with the inventory
NZIoC	:	YES. On the inventory, or in compliance with the inventory
ENCS	:	YES. On the inventory, or in compliance with the inventory
ISHL	:	YES. On the inventory, or in compliance with the inventory
KECI	:	YES. On the inventory, or in compliance with the inventory
PICCS	:	YES. On the inventory, or in compliance with the inventory
IECSC	:	YES. On the inventory, or in compliance with the inventory
TCSI	:	YES. On the inventory, or in compliance with the inventory
TSCA	:	YES. All chemical substances in this product are either listed on the TSCA Inventory or in compliance with a TSCA Inventory exemption.

For explanation of abbreviations, see section 16.

TSCA list

TSCA 5(a)(2)	:	No substances are subject to a Significant New Use Rule.
TSCA 12(b)	:	No substances are subject to TSCA 12(b) export notification requirements.

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ (lbs)
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4	10 lbs
Methyl ethyl ketone	78-93-3	5000 lbs
Methyl ethyl ketone	78-93-3	100 lbs
Methyl ethyl ketone	78-93-3	5000 lbs
Methyl ethyl ketone	78-93-3	100 lbs

SARA 304 Extremely Hazardous Substances Reportable Quantity

Components	CAS-No.	Component RQ (lbs)
Hydrogen peroxide solution	7722-84-1	1000 lbs

SARA 311/312 Hazards : Organic peroxides
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation
Reproductive toxicity

SARA 302 : This material does not contain any components with a section 302 EHS TPQ.

SARA 313 : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489):

Methyl ethyl ketone	78-93-3	1 - 2 %

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

US State Regulations

Massachusetts Right To Know

Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4
Methyl ethyl ketone	78-93-3
Hydrogen peroxide solution	7722-84-1

Pennsylvania Right To Know

2,2,4-Trimethyl-1,3-pentanediol diisobutanoate	6846-50-0
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4
Methyl ethyl ketone	78-93-3
Hydrogen peroxide solution	7722-84-1

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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

H225	:	Highly flammable liquid and vapor.
H240	:	Heating may cause an explosion.
H302	:	Harmful if swallowed.
H314	:	Causes severe skin burns and eye damage.
H318	:	Causes serious eye damage.
H319	:	Causes serious eye irritation.
H332	:	Harmful if inhaled.
H336	:	May cause drowsiness or dizziness.

H361d	:	Suspected of damaging the unborn child.
H401	:	Toxic to aquatic life.
H412	:	Harmful 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 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

ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
ACGIH / C	:	Ceiling limit
CAL PEL / STEL	:	Short term exposure limit
CAL PEL / PEL	:	Permissible exposure limit
CAL PEL / C	:	Ceiling
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
NIOSH REL / C	:	Ceiling value not be exceeded at any time.
OSHA P0 / TWA	:	8-hour time weighted average
OSHA P0 / STEL	:	Short-term exposure limit
OSHA P0 / C	:	Ceiling limit
OSHA Z-1 / TWA	:	8-hour time weighted average

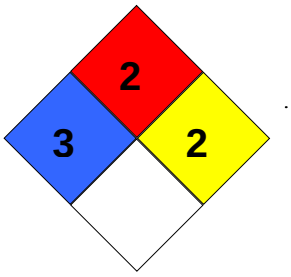
AICS - Australian Inventory of Chemical Substances; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; CPR - Controlled Products Regulations; DIN - Standard of the German Institute 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: 3
Chronic Health Hazard: *
Flammability: 2
Reactivity: 2

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



Notification status explanation

REACH	1907/2006 (EU)
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
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)
TCSI	Taiwan Chemical Substance Inventory (TCSI)
TSCA	United States TSCA Inventory

Further information

Revision Date	02/18/2019

This data sheet contains changes from the previous version in section(s):
Hazards identification
Composition/information on ingredients
Toxicological information

The information in this material 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.