SAFETY DATA SHEET

Crystic VE 679-03PA

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

1.1 Product identifier

Product name : Crystic VE 679-03PA

Product code : R5020000

Product type : Liquid.

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

Identified uses
Resins.

1.3 Details of the supplier of the safety data sheet

Scott Bader Co Ltd,
Wollaston.
Northants
NN297RL
United Kingdom
+44 (0)1933663100

e-mail address of person responsible for this SDS : SDS@scottbader.com

1.4 Emergency telephone number

Telephone number (Hours of operation) : +44 1865 407333 (NCEC) 24h

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226
Acute Tox. 4, H332
Skin Irrit. 2, H315
Eye Irrit. 2, H319
Skin Sens. 1, H317
Repr. 2, H361d (Unborn child)
STOT SE 3, H335
STOT RE 1, H372
Aquatic Chronic 3, H412

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Physical/chemical hazards : Flammable.

Human health hazards : Possible risk of harm to the unborn child. Harmful by inhalation. Harmful: danger of serious damage to health by prolonged exposure through inhalation. Irritating to eyes and skin.

Environmental hazards : Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

See Section 16 for the full text of the H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

SECTION 2: Hazards identification

Hazard pictograms :

Signal word : Danger

Hazard statements :
H226 - Flammable liquid and vapour.
H332 - Harmful if inhaled.
H319 - Causes serious eye irritation.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H361d - Suspected of damaging the unborn child.
H335 - May cause respiratory irritation.
H372 - Causes damage to organs through prolonged or repeated exposure.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements

Prevention :
P201 - Obtain special instructions before use.
P280 - Wear protective gloves. Wear protective clothing. Wear eye or face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 - Avoid release to the environment.
P260 - Do not breathe vapour.

Response :
P304 + P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

Storage : P405 - Store locked up.

Disposal : P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous ingredients :
styrene
cobalt bis(2-ethylhexanoate)
triphenylphosphine

Supplemental label elements : Not applicable.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

2.3 Other hazards

Other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

Substance/mixture : Mixture

Product/ingredient name	Identifiers	%	Classification Regulation (EC) No. 1272/2008 [CLP]	Type

SECTION 3: Composition/information on ingredients

styrene	REACH #: 01-2119457861-32 EC: 202-851-5 CAS: 100-42-5 Index: 601-026-00-0	≥25 - ≤50	Flam. Liq. 3, H226 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Repr. 2, H361d (Unborn child) STOT SE 3, H335 STOT RE 1, H372 (hearing organs) Asp. Tox. 1, H304 Aquatic Chronic 3, H412	[1] [2]
cobalt bis (2-ethylhexanoate)	REACH #: 01-2119524678-29 EC: 205-250-6 CAS: 136-52-7	≤0.3	Eye Irrit. 2, H319 Skin Sens. 1A, H317 Repr. 2, H361f (Fertility) Aquatic Acute 1, H400 (M=1) Aquatic Chronic 3, H412	[1] [2]
triphenylphosphine	EC: 210-036-0 CAS: 603-35-0	≤0.3	Acute Tox. 4, H302 Skin Sens. 1B, H317 STOT RE 2, H373 (central nervous system (CNS), peripheral nervous system) (inhalation)	[1]
1-methoxy-2-propanol	EC: 203-539-1 CAS: 107-98-2 Index: 603-064-00-3	≤0.1	Flam. Liq. 3, H226 STOT SE 3, H336	[1] [2]
1,4-naphthoquinone	EC: 204-977-6 CAS: 130-15-4	<0.1	Acute Tox. 3, H301 Acute Tox. 3, H311 Acute Tox. 1, H330 Aquatic Acute 1, H400 (M=10) Aquatic Chronic 1, H410 (M=10)	[1]
(2-methoxymethylethoxy) propanol	EC: 252-104-2 CAS: 34590-94-8	≤0.1	Not classified.	[2]
1,4-dihydroxybenzene	REACH #: 1-2119524016-51-0 EC: 204-617-8 CAS: 123-31-9 Index: 604-005-00-4	≤0.1	Acute Tox. 4, H302 Eye Dam. 1, H318 Skin Sens. 1, H317 Muta. 2, H341 Carc. 2, H351 Aquatic Acute 1, H400 (M=10)	[1] [2]
2-methoxy-1-methylethyl acetate	REACH #: 01-2119475791-29 EC: 203-603-9 CAS: 108-65-6 Index: 607-195-00-7	≤0.1	Flam. Liq. 3, H226 **See Section 16 for the full text of the H statements declared above.**	[2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs or vPvBs or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII
[5] Substance of equivalent concern
[6] Additional disclosure due to company policy

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

SECTION 4: First aid measures

4.1 Description of 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 it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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 necessary, call a poison center or physician. 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 : Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. 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. 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.

Protection of first-aiders : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced foetal weight
increase in foetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced foetal weight
increase in foetal deaths
skeletal malformations

SECTION 4: First aid measures

Ingestion : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

Specific treatments : No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Use dry chemical, CO_2, water spray (fog) or foam.

Unsuitable extinguishing media : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture : Flammable liquid and vapour. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is harmful to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

5.3 Advice for firefighters

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. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 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 spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Avoid breathing vapour or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialised 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".

6.2 Environmental precautions : Avoid dispersal of spilt 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). Water polluting material. May be harmful to the environment if released in large quantities.

SECTION 6: Accidental release measures

6.3 Methods and material for containment and cleaning up

Small spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large spill : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Approach the release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations. Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilt product.

6.4 Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapour or mist. Do not ingest. Avoid release to the environment. 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 explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. 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.

7.2 Conditions for safe storage, including any incompatibilities

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 locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Seveso Directive - Reporting thresholds (in tonnes)

Danger criteria

Category	Notification and MAPP threshold	Safety report threshold
P5c: Flammable liquids 2 and 3 not falling under P5a or P5b	5000	50000

SECTION 7: Handling and storage

7.3 Specific end use(s)

Recommendations : Not available.

Industrial sector specific solutions : Not available.

SECTION 8: Exposure controls/personal protection

The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
styrene	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** STEL: 250 ppm 15 minutes. TWA: 100 ppm 8 hours. TWA: 430 mg/m³ 8 hours. STEL: 1080 mg/m³ 15 minutes.
cobalt bis(2-ethylhexanoate)	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Inhalation sensitiser.** TWA: 0.1 mg/m³, (as Co) 8 hours.
1-methoxy-2-propanol	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin.** STEL: 560 mg/m³ 15 minutes. STEL: 150 ppm 15 minutes. TWA: 375 mg/m³ 8 hours. TWA: 100 ppm 8 hours.
(2-methoxymethylethoxy)propanol	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin.** TWA: 308 mg/m³ 8 hours. TWA: 50 ppm 8 hours.
1,4-dihydroxybenzene	**EH40/2005 WELs (United Kingdom (UK), 12/2011).** TWA: 0.5 mg/m³ 8 hours.
2-methoxy-1-methylethyl acetate	**EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin.** STEL: 548 mg/m³ 15 minutes. TWA: 50 ppm 8 hours. TWA: 274 mg/m³ 8 hours. STEL: 100 ppm 15 minutes.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

DNELs/DMELs

SECTION 8: Exposure controls/personal protection

Product/ingredient name	Type	Exposure	Value	Population	Effects
styrene	DNEL	Short term Inhalation	289 mg/m³	Workers	Systemic
	DNEL	Short term Inhalation	306 mg/m³	Workers	Local
	DNEL	Long term Dermal	406 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	85 mg/m³	Workers	Systemic
	DNEL	Short term Inhalation	174.25 mg/m³	Consumers	Systemic
	DNEL	Short term Inhalation	182.75 mg/m³	Consumers	Local
	DNEL	Long term Dermal	343 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	10.2 mg/m³	Consumers	Systemic
	DNEL	Long term Oral	2.1 mg/kg bw/day	Consumers	Systemic
1,4-dihydroxybenzene	DNEL	Long term Dermal	128 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	7 mg/m³	Workers	Systemic
	DNEL	Long term Inhalation	1 mg/m³	Workers	Local
	DNEL	Long term Dermal	64 mg/kg bw/day	Human via the environment	Systemic
	DNEL	Long term Inhalation	1.74 mg/m³	Human via the environment	Systemic
	DNEL	Long term Inhalation	0.5 mg/m³	Human via the environment	Local

PNECs

Product/ingredient name	Compartment Detail	Value	Method Detail
styrene	Fresh water	0.028 mg/l	-
	Marine water	0.0028 mg/l	-
	Fresh water sediment	0.614 mg/kg dwt	-
	Marine water sediment	0.0614 mg/kg dwt	-
	Soil	0.2 mg/kg dwt	-
	Sewage Treatment Plant	5 mg/l	-
1,4-dihydroxybenzene	Fresh water	0.114 µg/l	-
	Marine water	0.0114 µg/l	-
	Fresh water sediment	0.00098 mg/kg	-
	Marine water sediment	0.000097 mg/kg	-
	Soil	0.000129 mg/kg	-
	Sewage Treatment Plant	0.71 mg/l	-

8.2 Exposure controls

Appropriate engineering controls : Use only with adequate ventilation. 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, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Individual protection measures

SECTION 8: Exposure controls/personal protection

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. Contaminated work clothing should not be allowed out of the workplace. 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.

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. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Refer to European Standard EN 1149 for further information on material and design requirements and test methods.

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.

Respiratory protection : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

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.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state : Liquid.

Colour : Translucent.

Odour : Solvent

Odour threshold : Not available.

pH : Not available.

Melting point/freezing point : Not available.

Initial boiling point and boiling range : Not available.

Flash point : Closed cup: 32°C

Evaporation rate : Not available.

Flammability (solid, gas) : Not available.

Burning time : Not applicable.

Burning rate : Not applicable.

Upper/lower flammability or explosive limits : Not available.

SECTION 9: Physical and chemical properties

Vapour pressure : Not available.

Vapour density : Not available.

Relative density : 1.1 to 1.2

Solubility(ies) : Not available.

Solubility in water : Not available.

Partition coefficient: n-octanol/ water : Not available.

Auto-ignition temperature : Not available.

Decomposition temperature : Not available.

Viscosity : Kinematic (40°C): >0.4 cm^2/s

Explosive properties : Not available.

Oxidising properties : Not available.

9.2 Other information

Heat of combustion : Not available.

Enclosed space ignition - Time equivalent : Not applicable.

No additional information.

SECTION 10: Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurise, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
styrene	LC50 Inhalation Gas.	Rat	2770 ppm	4 hours
	LC50 Inhalation Vapour	Rat	11800 mg/m³	4 hours
	LD50 Dermal	Rat	>2000 mg/kg	-
	LD50 Oral	Rat	2650 mg/kg	-
cobalt bis(2-ethylhexanoate)	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	>2000 mg/kg	-
triphenylphosphine	LC50 Inhalation Gas.	Rat	1135 ppm	4 hours
	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	700 mg/kg	-
1-methoxy-2-propanol	LD50 Dermal	Rabbit	13 g/kg	-
	LD50 Oral	Rat	6600 mg/kg	-
1,4-naphthoquinone	LC50 Inhalation Vapour	Rat	0.046 mg/l	4 hours

SECTION 11: Toxicological information

	LD50 Dermal	Rat	202 mg/kg	-
	LD50 Oral	Rat	190 mg/kg	-
1,4-dihydroxybenzene	LD50 Oral	Rat	>375 mg/kg	-
2-methoxy-1-methylethyl acetate	LD50 Dermal	Rabbit	>5 g/kg	-
	LD50 Oral	Rat	8532 mg/kg	-

Conclusion/Summary : Not available.

Acute toxicity estimates

Route	ATE value
Inhalation (gases)	7160.2 ppm
Inhalation (vapours)	30.5 mg/l

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
styrene	Eyes - Mild irritant	Human	-	50 parts per million	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 milligrams	-
	Eyes - Severe irritant	Rabbit	-	100 milligrams	-
	Skin - Mild irritant	Rabbit	-	500 milligrams	-
	Skin - Moderate irritant	Rabbit	-	100 Percent	-
triphenylphosphine	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
1-methoxy-2-propanol	Skin - Mild irritant	Rabbit	-	500 milligrams	-

Conclusion/Summary : Not available.

Sensitisation

Product/ingredient name	Route of exposure	Species	Result
1,4-dihydroxybenzene	skin	Mouse	Sensitising
	skin	Guinea pig	Not sensitizing

Conclusion/Summary : Not available.

Mutagenicity

Product/ingredient name	Test	Experiment	Result
1,4-dihydroxybenzene	-	Experiment: In vivo Subject: Mammalian-Animal	Positive
	-	Experiment: In vivo Subject: Bacteria	Negative

Conclusion/Summary : Not available.

Carcinogenicity

Conclusion/Summary : Not available.

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

SECTION 11: Toxicological information

Product/ingredient name	Category	Route of exposure	Target organs
styrene	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
styrene triphenylphosphine	Category 1 Category 2	Not determined Inhalation	hearing organs central nervous system (CNS) and peripheral nervous system

Aspiration hazard

Product/ingredient name	Result
styrene	ASPIRATION HAZARD - Category 1

Information on likely routes of exposure : Not available.

Potential acute health effects

Eye contact : Causes serious eye irritation.

Inhalation : Harmful if inhaled. May cause respiratory irritation.

Skin contact : Causes skin irritation. May cause an allergic skin reaction.

Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
pain or irritation
watering
redness

Inhalation : Adverse symptoms may include the following:
respiratory tract irritation
coughing
reduced foetal weight
increase in foetal deaths
skeletal malformations

Skin contact : Adverse symptoms may include the following:
irritation
redness
reduced foetal weight
increase in foetal deaths
skeletal malformations

Ingestion : Adverse symptoms may include the following:
reduced foetal weight
increase in foetal deaths
skeletal malformations

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Short term exposure

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Long term exposure

SECTION 11: Toxicological information

Potential immediate effects : Not available.

Potential delayed effects : Not available.

Potential chronic health effects

Product/ingredient name	Result	Species	Dose	Exposure
styrene	Chronic NOAEL Dermal	Rat	615 mg/kg	-
	Chronic NOAEL Inhalation Gas.	Rat	20 ppm	8 hours
1,4-dihydroxybenzene	Sub-chronic NOAEL Oral	Rat	20 mg/kg	90 days
	Sub-chronic NOAEL Dermal	Rat	>73.9 mg/kg	90 days

Conclusion/Summary : Not available.

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : No known significant effects or critical hazards.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : Suspected of damaging the unborn child.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : No known significant effects or critical hazards.

Other information : Not available.

SECTION 12: Ecological information

12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
styrene	Acute EC50 1400 µg/l Fresh water	Algae - Pseudokirchneriella subcapitata	72 hours
	Acute EC50 33 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 4700 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 52 mg/l Marine water	Crustaceans - Artemia salina	48 hours
	Acute LC50 4020 µg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 1.01 mg/l	Daphnia	21 days
1,4-naphthoquinone	Acute IC50 0.011 mg/l	Algae	72 hours
1,4-dihydroxybenzene	Acute EC50 0.134 mg/l	Daphnia	48 hours
	Acute LC50 0.638 mg/l	Fish	96 hours
	Chronic EC50 0.33 mg/l	Aquatic plants	72 hours
	Chronic NOEC 0.019 mg/l	Aquatic plants	72 hours
	Chronic NOEC 0.0057 mg/l	Daphnia	21 days
2-methoxy-1-methylethyl acetate	Acute EC50 373 mg/l	Daphnia	48 hours
	Acute LC50 >100 mg/l	Fish	96 hours

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
1,4-naphthoquinone	-	35 % - 5 days	-	-
1,4-dihydroxybenzene	-	70 % - Readily - 14 days	-	-

Conclusion/Summary : Not available.

SECTION 12: Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
styrene	-	-	Readily
cobalt bis(2-ethylhexanoate)	-	-	Not readily
1,4-naphthoquinone	-	-	Inherent
1,4-dihydroxybenzene	-	-	Readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
styrene	0.35	13.49	low
cobalt bis(2-ethylhexanoate)	-	15600	high
triphenylphosphine	2.83	4801	high
1-methoxy-2-propanol	<1	-	low
1,4-naphthoquinone	1.71	-	low
(2-methoxymethylethoxy) propanol	0.004	-	low
1,4-dihydroxybenzene	0.59	3.162	low
2-methoxy-1-methylethyl acetate	1.2	-	low

12.4 Mobility in soil

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

Mobility : Not available.

12.5 Results of PBT and vPvB assessment

PBT : Not applicable.

vPvB : Not applicable.

12.6 Other adverse effects

: No known significant effects or critical hazards.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product

Methods of disposal : The generation of waste should be avoided or minimised 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.

Hazardous waste : The classification of the product may meet the criteria for a hazardous waste.

Packaging

Methods of disposal : The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Special precautions : 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. Vapour from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

	ADR/RID	IMDG	IATA
14.1 UN number	UN1866	UN1866	UN1866
14.2 UN proper shipping name	RESIN SOLUTION	RESIN SOLUTION	Resin solution
14.3 Transport hazard class(es)	3 	3 	3 
14.4 Packing group	III	III	III
14.5 Environmental hazards	No.	No.	No.
Additional information	**Hazard identification number** 30 **Limited quantity** 5 L **Special provisions** 640E **Tunnel code** (D/E)	**Emergency schedules** F-E, _S-E_ **Special provisions** 223, 955	**Quantity limitation** Passenger and Cargo Aircraft: 60 L. Packaging instructions: 355. Cargo Aircraft Only: 220 L. Packaging instructions: 366. Limited Quantities - Passenger Aircraft: 10 L. Packaging instructions: Y344. **Special provisions** A3

14.6 Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code : Not available.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH)

Annex XIV - List of substances subject to authorisation

Annex XIV

None of the components are listed.

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles : Not applicable.

Other EU regulations

Black List Chemicals (76/464/EEC) :

Priority List Chemicals (793/93/EEC) : Not determined

SECTION 15: Regulatory information

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
styrene	-	-	Repr. 2, H361d (Unborn child)	-
cobalt bis (2-ethylhexanoate)	-	-	-	Repr. 2, H361f (Fertility)
1,4-dihydroxybenzene	Carc. 2, H351	Muta. 2, H341	-	-

Seveso Directive

This product is controlled under the Seveso Directive.

Danger criteria

Category
P5c: Flammable liquids 2 and 3 not falling under P5a or P5b

National regulations

Product/ingredient name	List name	Name on list	Classification	Notes
cobalt bis(2-ethylhexanoate)	UK Occupational Exposure Limits EH40 - WEL	cobalt compounds	Carc.	-

International regulations

Listed on inventory. : Not determined

15.2 Chemical safety assessment : This product contains substances for which Chemical Safety Assessments are still required.

SECTION 16: Other information

Indicates information that has changed from previously issued version.

Abbreviations and acronyms : ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
DMEL = Derived Minimal Effect Level
DNEL = Derived No Effect Level
EUH statement = CLP-specific Hazard statement
PBT = Persistent, Bioaccumulative and Toxic
PNEC = Predicted No Effect Concentration
RRN = REACH Registration Number
vPvB = Very Persistent and Very Bioaccumulative

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
Flam. Liq. 3, H226	On basis of test data
Acute Tox. 4, H332	Calculation method
Skin Irrit. 2, H315	Calculation method
Eye Irrit. 2, H319	Calculation method
Skin Sens. 1, H317	Calculation method
Repr. 2, H361d (Unborn child)	Calculation method
STOT SE 3, H335	Calculation method
STOT RE 1, H372	Calculation method
Aquatic Chronic 3, H412	Calculation method

SECTION 16: Other information

Full text of abbreviated H statements :

H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H311	Toxic in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.
H336	May cause drowsiness or dizziness.
H341	Suspected of causing genetic defects.
H351	Suspected of causing cancer.
H361d	Suspected of damaging the unborn child.
H361f	Suspected of damaging fertility.
H372	Causes damage to organs through prolonged or repeated exposure.
H373 (inhalation)	May cause damage to organs through prolonged or repeated exposure if inhaled.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.

Full text of classifications [CLP/GHS] :

Acute Tox. 1, H330	ACUTE TOXICITY (inhalation) - Category 1
Acute Tox. 3, H301	ACUTE TOXICITY (oral) - Category 3
Acute Tox. 3, H311	ACUTE TOXICITY (dermal) - Category 3
Acute Tox. 4, H302	ACUTE TOXICITY (oral) - Category 4
Acute Tox. 4, H332	ACUTE TOXICITY (inhalation) - Category 4
Aquatic Acute 1, H400	SHORT-TERM (ACUTE) AQUATIC HAZARD - Category 1
Aquatic Chronic 1, H410	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 1
Aquatic Chronic 3, H412	LONG-TERM (CHRONIC) AQUATIC HAZARD - Category 3
Asp. Tox. 1, H304	ASPIRATION HAZARD - Category 1
Carc. 2, H351	CARCINOGENICITY - Category 2
Eye Dam. 1, H318	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 1
Eye Irrit. 2, H319	SERIOUS EYE DAMAGE/EYE IRRITATION - Category 2
Flam. Liq. 3, H226	FLAMMABLE LIQUIDS - Category 3
Muta. 2, H341	GERM CELL MUTAGENICITY - Category 2
Repr. 2, H361d	REPRODUCTIVE TOXICITY (Unborn child) - Category 2
Repr. 2, H361f	REPRODUCTIVE TOXICITY (Fertility) - Category 2
Skin Irrit. 2, H315	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1, H317	SKIN SENSITISATION - Category 1
Skin Sens. 1A, H317	SKIN SENSITISATION - Category 1A
Skin Sens. 1B, H317	SKIN SENSITISATION - Category 1B
STOT RE 1, H372	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE - Category 1
STOT RE 2, H373 (inhalation)	SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE (inhalation) - Category 2
STOT SE 3, H335	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Respiratory tract irritation) - Category 3
STOT SE 3, H336	SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE (Narcotic effects) - Category 3

Date of printing : 10/08/2017

Date of issue/ Date of revision : 10/08/2017

Date of previous issue : 23/05/2016

Version : 3

Notice to reader

SECTION 16: Other information

To the best of our knowledge, the information contained herein is accurate. However, neither the above-named supplier, nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein.
Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

TRIGONOX 249 VR

Version 1 Revision Date 19.06.2015 Print Date 20.10.2015 GB / EN

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name : TRIGONOX 249 VR

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

Use of the Substance/Mixture : Specific use(s): Curing agent

1.3 Details of the supplier of the safety data sheet

Company : Akzo Nobel Functional Chemicals B.V.
Stationsstraat 77
NL 3811 MH Amersfoort
Netherlands

Telephone : +31334676767
Telefax : +31334676100
E-mail address : RegulatoryAffairs@akzonobel.com

1.4 Emergency telephone number

Emergency telephone number : AkzoNobel: +31 57 06 79211

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)
Organic peroxides, D, H242, On basis of test data.
Acute toxicity, 4, H302, Calculation method
Acute toxicity, 4, H332, Calculation method
Skin corrosion, 1B, H314, Calculation method
Specific target organ toxicity - single exposure, 3, Respiratory system, H335, Calculation method
Specific target organ toxicity - repeated exposure, 2, H373, Calculation method
Chronic aquatic toxicity, 3, H412, Calculation method

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

Classification (67/548/EEC, 1999/45/EC)
Harmful, Xn, R20/22, R48/20/22
Oxidising, O, R 7
Corrosive, C, R34
Dangerous for the environment, R52/53

For the full text of the R-phrases mentioned in this Section, see Section 16.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Symbol(s) :

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.
		H335	May cause respiratory irritation.
		H373	May cause damage to organs through prolonged or repeated exposure.
		H412	Harmful to aquatic life with long lasting effects.

Precautionary statements	:		
		Prevention:	
		P220	Keep away from dirt, rust, chemicals in particular.
		P234	Keep only in original container.
		P260	Do not breathe mist, vapours or spray.
		P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
		Response:	
		P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Hazardous components which must be listed on the label:

Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4
Cumyl hydroperoxide	80-15-9

2.3 Other hazards

No further data available.

PBT and vPvB assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Hazardous substance

Chemical Name	PBT vPvB OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Classification (67/548/EEC)	Concentration [%]
Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane		1338-23-4 215-661-2 01-2119514691-43	Org. Perox. A; H240 Acute Tox. 4; H302 Skin Corr. 1B; H314	E; R 2 C; R34 O; R 7 Xn; R22	20 - 25
Cumyl hydroperoxide		80-15-9 201-254-7	Org. Perox. E; H242 Acute Tox. 4; H302 Acute Tox. 3; H331 Acute Tox. 4; H312 Skin Corr. 1B; H314 STOT RE 2; H373 Aquatic Chronic 2; H411	O; R 7 T; R23 C; R34 Xn; R21/22-R48/20/22 N; R51-R53	20 - 25
2-Phenylisopropanol		617-94-7 210-539-5	Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Irrit. 2; H319	Xn; R22 Xi; R36/38	1 - 3
Cumene		98-82-8 202-704-5	Flam. Liq. 3; H226 STOT SE 3; H335 Asp. Tox. 1; H304 Aquatic Chronic 2; H411	R10 Xn; R65 Xi; R37 N; R51-R53	0.25 - 1

Remarks : Methyl ethyl ketone peroxide and cumyl hydroperoxide 20-25% solution in dimethyl phthalate

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

For the full text of the R-phrases mentioned in this Section, see Section 16.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59).

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

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

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

In case of 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.

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

If swallowed : 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.

4.2 Most important symptoms and effects, both acute and delayed

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

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting / Specific hazards arising from the chemical : CAUTION: reignition may occur.
Supports combustion.
Water spray may be ineffective unless used by experienced firefighters.
Heating may cause decomposition with release of toxic fumes
Do not allow run-off from fire fighting to enter drains or water courses.

Combustion products : Fire will produce smoke containing hazardous combustion

products (see section 10).

5.3 Advice for firefighters

Special protective equipment for firefighters	:	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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.2 Environmental precautions

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

6.3 Methods and materials for containment and cleaning up

Methods for cleaning up / Methods for containment	:	Keep wetted with water. Soak up with inert absorbent material and dispose of as hazardous waste. Confinement must be avoided. Never return spills in original containers for re-use.

6.4 Reference to other sections

Additional advice	:	For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling	:	For personal protection see section 8. 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.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Prevent unauthorized access.
No smoking.
Electrical installations / working materials must comply with the technological safety standards.
Keep only in original container.
Store away from other materials.

Maximum storage temperature: : 25 °C

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

7.3 Specific end use(s)

Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
Dimethyl phthalate	131-11-3	TWA	5 mg/m3	2005-04-06	GB EH40	
		STEL	10 mg/m3	2005-04-06	GB EH40	
		TWA	5 mg/m3	2005-04-06	GB EH40	
		STEL	10 mg/m3	2005-04-06	GB EH40	
Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	1338-23-4	STEL	0.2 ppm 1.5 mg/m3	2005-04-06	GB EH40	
Cumene	98-82-8	TWA	20 ppm 100 mg/m3	2009-12-19	2000/39/EC	
	Further information	:	skin: Identifies the possibility of significant uptake through the skin Indicative			
		STEL	50 ppm 250 mg/m3	2009-12-19	2000/39/EC	
	Further information	:	skin: Identifies the possibility of significant uptake through the skin Indicative			
		TWA	25 ppm 125 mg/m3	2005-04-06	GB EH40	
	Further information	:	Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL	50 ppm 250 mg/m3	2005-04-06	GB EH40	
	Further information	:	Sk: Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic			

			toxicity.

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 9 mg/m3	2009-12-19		
	Further information	:				
		TWA	5 ppm 9.6 mg/m3	2005-04-06		
	Further information	:				
Acetic acid	64-19-7, 64-19-7	TWA	10 ppm 25 mg/m3	2009-12-19		
	Further information	:				
Propionic acid	79-09-4, 79-09-4	TWA	10 ppm 31 mg/m3	2009-12-19		
	Further information	:				
		STEL	20 ppm 62 mg/m3	2009-12-19		
	Further information	:				
		TWA	10 ppm 31 mg/m3	2005-04-06		
		STEL	15 ppm 46 mg/m3	2005-04-06		
Methyl ethyl ketone	78-93-3, 78-93-3	TWA	200 ppm 600 mg/m3	2009-12-19		
	Further information	:				
		STEL	300 ppm 900 mg/m3	2009-12-19		
	Further information	:				
		TWA	200 ppm 600 mg/m3	2005-04-06		
	Further information	:				
		STEL	300 ppm 899 mg/m3	2005-04-06		
	Further information	:				

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name	End Use	Exposure routes	Potential health effects	Value
Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	Consumers	Skin contact	Long-term systemic effects	0.54 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0.41 mg/m3
	Consumers	Ingestion	Long-term systemic effects	0.27 mg/kg
	Workers	Skin contact	Long-term systemic effects	1.08 mg/kg

	Workers	Inhalation	Long-term systemic effects	1.9 mg/m3
Cumyl hydroperoxide	Workers	Inhalation	Long-term systemic effects	6 mg/m3

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	Fresh water	0.0056 mg/l
	Intermittent water	0.056 mg/l
	Marine water	0.00056 mg/l
	Fresh water sediment	0.019 mg/kg dry weight
	Marine sediment	0.0019 mg/kg dry weight
	Sewage treatment plant	1.2 mg/l
	Soil	0.00231 mg/kg dry weight
Cumyl hydroperoxide	Fresh water	0.0031 mg/l
	Marine water	0.00031 mg/l
	Intermittent water	0.031 mg/l
	Sewage treatment plant	0.35 mg/l
	Fresh water sediment	0.023 mg/kg
	Marine sediment	0.0023 mg/kg
	Soil	0.0029 mg/kg

8.2 Exposure controls

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

Respiratory protection : In the case of vapour or aerosol formation use a respirator with an approved filter.
Filter A

Hand protection : butyl-rubber

Neoprene

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

Skin and body protection : Protective suit

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.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance

Form	:	liquid
Colour	:	red
Odour	:	Faint.
Odour Threshold	:	No data available

Safety data

pH	:	Weakly acidic
Melting point	:	No data available
Boiling point/boiling range	:	Decomposes below the boiling point.
Flash point	:	Above the SADT value No flash point was obtained, but the product may release flammable vapour.
Evaporation rate	:	No data available
Flammability (solid, gas)	:	
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Vapour pressure	:	not determined
Relative vapour density	:	No data available
Relative density	:	1.14 at 20 °C
Bulk density	:	Not applicable
Water solubility	:	at 20 °C partly miscible
Solubility in other solvents	:	20 °C Miscible with:, Phthalates
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition 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	:	24.9 mPa.s at 20 °C
Viscosity, kinematic	:	21.84 mm2/s at 20 °C
Explosive properties	:	Not explosive
Oxidizing properties	:	Not classified as oxidising.

9.2 Other information

Active Oxygen Content	:	8.3 - 8.6 %
Organic peroxides	:	43 - 49 %

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

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

10.4 Conditions to avoid

Conditions to avoid	:	Confinement must be avoided. Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid	:	Contact with incompatible materials will result in hazardous decomposition. For queries regarding the suitability of other materials please contact the supplier. Do not mix with peroxide accelerators, unless under controlled processing. Use only stainless steel 316, PP, polyethylene or glass-lined equipment. Acids and bases Iron Copper

Reducing agents
Heavy metals
Rust

10.6 Hazardous decomposition products

Hazardous decomposition products	:	Formic acid Acetic acid Propionic acid Methyl ethyl ketone Carbon oxides Methane Acetophenone 2-Phenylisopropanol
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.
Self-Accelerating decomposition temperature (SADT)	:	60 °C

SECTION 11: TOXICOLOGICAL INFORMATION

Product information:
Hazard Summary

Inhalation	:	Inhalation of aerosols may cause irritation to mucous membranes. Thermal decomposition can lead to release of irritating gases and vapours. Harmful if inhaled. May cause respiratory irritation.
Skin	:	Symptoms may be delayed. May be harmful in contact with skin. Causes severe skin burns.
Eyes	:	Causes serious eye damage.
Ingestion	:	Harmful if swallowed. Causes burns.

Toxicology Assessment

Further information	:	May cause damage to organs through prolonged or repeated exposure.

11.1 Information on toxicological effects

Test result

Acute oral toxicity	:	Acute toxicity estimate: 1,205 mg/kg Method: Calculation method
Acute inhalation toxicity	:	Acute toxicity estimate : 11.62 mg/l Exposure time: 4 h

Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method

Toxicology data for the components:
Toxicology Assessment
Cumyl hydroperoxide
CMR effects : Mutagenicity: Not mutagenic.

Further information : May cause damage to organs through prolonged or repeated exposure.

Test result
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): 17 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

Reproductive toxicity/Fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0, 25, 50, 75 milligram per kilogram
General Toxicity - Parent: 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

Cumyl hydroperoxide
Acute oral toxicity : LD50 Oral: 382 mg/kg
Species: Rat

Acute inhalation toxicity	:	LC50 : 1.370 mg/l Exposure time: 4 h Test atmosphere: dust/mist
Acute dermal toxicity	:	LD50: 1,200 - 1,520 mg/kg
Skin irritation	:	Species: Rabbit Result: Causes burns. Classification: Category 1B
Sensitisation	:	Result: Not sensitizing.
Germ cell mutagenicity		
Genotoxicity in vitro	:	Result: Evidence of genotoxic effects in vitro.
Genotoxicity in vivo	:	Result: No evidence of genotoxic effects in vivo.
		Exposure routes: Inhalation The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

2-Phenylisopropanol

Acute oral toxicity	:	LD50: 1,300 mg/kg Species: Rat Literature data.
Skin irritation	:	Classification: Irritating to skin. Literature data.
Eye irritation	:	Classification: Irritating to eyes. Literature data.

Cumene

Acute oral toxicity	:	LD50: > 2,000 mg/kg Species: Rat
Target Organ Systemic Toxicant - Single exposure	:	Exposure routes: Inhalation May cause respiratory irritation.
Aspiration toxicity	:	May be fatal if swallowed and enters airways.

SECTION 12: ECOLOGICAL INFORMATION

Product information:
Ecotoxicology Assessment

Additional ecological information	:	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Harmful to aquatic life with long lasting effects.

12.1 Toxicity

Components:
Ecotoxicology Assessment

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

Acute aquatic toxicity : Harmful to aquatic life.

Cumyl hydroperoxide

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

Test result

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

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 : LC50: 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

Cumyl hydroperoxide

Toxicity to fish : LC50: 3.9 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates : EC50: 18.84 mg/l
Exposure time: 48 h
Species: Daphnia (water flea)

Toxicity to algae : EC50: 3.1 mg/l
Exposure time: 72 h
Species: Phaeodactylum tricornutum - Algae

Toxicity to bacteria : NOEC: 50 mg/l

2-Phenylisopropanol

Toxicity to fish : LC50: Species: Fish
No data available

Cumene

Toxicity to daphnia and other aquatic invertebrates : EC50: > 1 - 10 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Literature data.

12.2 Persistence and degradability

Product information : No information available.

Components:
Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane
Biodegradability : Result: Readily biodegradable
Method: Closed Bottle test

Cumyl hydroperoxide
Biodegradability : Result: Not readily biodegradable.

Cumene
Biodegradability : Result: Not readily biodegradable.

12.3 Bioaccumulative potential

Product information : No information available.

Components:
Cumyl hydroperoxide
Bioaccumulation : Bioconcentration factor (BCF): < 1

Cumene
Bioaccumulation : No data available

12.4 Mobility in soil

Product information : No information available.

Components:
Cumene
Mobility : No data available

12.5 Results of PBT and vPvB assessment

Product information:
PBT and vPvB assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Components:
Cumyl hydroperoxide
PBT and vPvB assessment : Not classified as PBT or vPvB

Cumene
PBT and vPvB assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic)
This substance is not considered to be vPvB (very Persistent nor very Bioaccumulating)

12.6 Other adverse effects

Product information : No information available.

Components:
Cumene

Biochemical Oxygen : No data available

Demand (BOD)

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

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.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADR : UN 3105
RID : UN 3105
IMDG-Code : UN 3105
IATA-DGR : UN 3105

14.2 Proper shipping name

ADR : ORGANIC PEROXIDE TYPE D, LIQUID
(Methyl ethyl ketone peroxide, Cumyl hydroperoxide)
RID : ORGANIC PEROXIDE TYPE D, LIQUID
(Methyl ethyl ketone peroxide, Cumyl hydroperoxide)
IMDG-Code : ORGANIC PEROXIDE TYPE D, LIQUID
(Methyl ethyl ketone peroxide, Cumyl hydroperoxide)
IATA-DGR : Organic peroxide type D, liquid
(Methyl ethyl ketone peroxide, Cumyl hydroperoxide)

14.3 Transport hazard class

ADR : 5.2
RID : 5.2
IMDG-Code : 5.2
IATA-DGR : 5.2 (HEAT)

14.4 Packing group

ADR
Packing group : Not Assigned
Classification Code : P1
Labels : 5.2
Tunnel restriction code : (D)
RID
Packing group : Not Assigned
Classification Code : P1
Hazard Identification Number : 539
Labels : 5.2
IMDG-Code
Packing group : Not Assigned
Labels : 5.2

EmS Code : F-J, S-R

IATA-DGR

Packing instruction (cargo aircraft) : 570

Packing instruction (passenger aircraft) : 570

Packing group : Not Assigned

Labels : 5.2 (HEAT)

14.5 Environmental hazards

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG-Code

Marine pollutant : no

IATA-DGR

Environmentally hazardous : no

14.6 Special precautions for user

Not applicable

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

Not applicable for product as supplied.

SECTION 15: REGULATORY INFORMATION

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

Major Accident Hazard Legislation : ZEU_SEVES3
SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES
P6b
Quantity 1: 50 t
Quantity 2: 200 t

Water contaminating class (Germany) : WGK 2 water endangering

Notification status

CH INV : 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.

DSL : NO. This product contains the following components that are not on the Canadian DSL nor NDSL.

AICS : NO. Not in compliance with the inventory

NZIoC : NO. On the inventory, or in compliance with the inventory

ENCS : YES. On the inventory, or in compliance with the inventory

ISHL : NO. Not 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

For explanation of abbreviation see section 16.

Further information

This product is to be considered as a preparation according to EU-legislation.

15.2 Chemical Safety Assessment

Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	:	A Chemical Safety Assessment has been carried out for this substance.
Cumyl hydroperoxide	:	A Chemical Safety Assessment has been carried out for this substance.
2-Phenylisopropanol	:	A Chemical Safety Assessment is not required for this substance.
Cumene	:	No information available.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H226	:	Flammable liquid and vapour.
H240	:	Heating may cause an explosion.
H242	:	Heating may cause a fire.
H302	:	Harmful if swallowed.
H304	:	May be fatal if swallowed and enters airways.
H312	:	Harmful in contact with skin.
H314	:	Causes severe skin burns and eye damage.
H315	:	Causes skin irritation.
H319	:	Causes serious eye irritation.
H331	:	Toxic if inhaled.
H332	:	Harmful if inhaled.
H335	:	May cause respiratory irritation.
H373	:	May cause damage to organs through prolonged or repeated exposure.
H411	:	Toxic to aquatic life with long lasting effects.
H412	:	Harmful to aquatic life with long lasting effects.

Full text of R-phrases referred to under sections 2 and 3

R 2	Risk of explosion by shock, friction, fire or other sources of ignition.
R 7	May cause fire.
R10	Flammable.
R20/22	Harmful by inhalation and if swallowed.
R21/22	Harmful in contact with skin and if swallowed.
R22	Harmful if swallowed.
R23	Toxic by inhalation.
R34	Causes burns.
R36/38	Irritating to eyes and skin.
R37	Irritating to respiratory system.
R48/20/22	Harmful: danger of serious damage to health by prolonged exposure through inhalation and if swallowed.
R51	Toxic to aquatic organisms.
R52/53	Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
R53	May cause long-term adverse effects in the aquatic environment.
R65	Harmful: may cause lung damage if swallowed.

Explanations for possible abbreviations mentioned in section 2

PBT : PBT: Persistent, bioaccumulative and toxic.
vPvB : vPvB: Very persistent and very bioaccumulative.
OEL : OEL: Occupational exposure limit.

Notification status explanation

CH INV	Switzerland. New notified substances and declared preparations
TSCA	United States TSCA Inventory
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)

Further information

The information provided in this 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.