

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

- **1.1 Product identifier**
- **Trade name:** PEROXAN PB M-20
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application of the substance / the mixture**
Reaction initiator
For industrial use
- **1.3 Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:** PERGAN GmbH
Hilfsstoffe für industrielle Prozesse
Schlavenhorst 71
D-46395 Bocholt
Tel: +49 2871 9902-0
Fax: +49 2871 9902-50
- **Further information obtainable from:** Environment protection / Security of labour
Qualified person: E-mail: msds@pergan.com
- **1.4 Emergency telephone number:** - Tel: +49 2871 9902-0

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**

Flam. Liq. 3	H226 Flammable liquid and vapour.
Org. Perox. C	H242 Heating may cause a fire.
Acute Tox. 3	H331 Toxic if inhaled.
Skin Irrit. 2	H315 Causes skin irritation.
Skin Sens. 1	H317 May cause an allergic skin reaction.
Aquatic Acute 1	H400 Very toxic to aquatic life.
Aquatic Chronic 3	H412 Harmful to aquatic life with long lasting effects.
- **2.2 Label elements**
- **Labelling according to Regulation (EC) No 1272/2008** The product is classified and labelled according to the CLP regulation.
- **Hazard pictograms**

GHS02 GHS06 GHS09
- **Signal word** Danger
- **Hazard-determining components of labelling:** tert-butyl perbenzoate
pentane-2,4-dione
- **Hazard statements**

H226 Flammable liquid and vapour.
H242 Heating may cause a fire.
H331 Toxic if inhaled.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H410 Very toxic to aquatic life with long lasting effects.
- **Precautionary statements**

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234	Keep only in original packaging.
P243	Take action to prevent static discharges.
P264	Wash thoroughly after handling.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P403+P235	Store in a well-ventilated place. Keep cool.
P410	Protect from sunlight.
P411	Store at temperatures not exceeding +30°C.
P420	Store separately.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
- **2.3 Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.
- **vPvB:** The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

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· Determination of endocrine-disrupting properties

The product does not contain substances with endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

· 3.2 Mixtures

· **Description:** Mixture: consisting of the following components.

· Dangerous components:

CAS: 614-45-9 EINECS: 210-382-2 Reg-No.: 01-2119513317-46	tert-butyl perbenzoate Org. Perox. C, H242; Aquatic Acute 1, H400; Acute Tox. 4, H332; Skin Irrit. 2, H315; Skin Sens. 1, H317; Aquatic Chronic 3, H412	70-80%
CAS: 123-54-6 EINECS: 204-634-0 Index number: 606-029-00-0 Reg-No.: 01-2119458968-15	pentane-2,4-dione Flam. Liq. 3, H226; Acute Tox. 3, H311; Acute Tox. 3, H331; Acute Tox. 4, H302	10-25%

· **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

· 4.1 Description of first aid measures

· **General information:** Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.



Take care of personal protection for the first aider.

· After inhalation:

Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
Take affected persons into fresh air and keep quiet.

· After skin contact:

Immediately wash with water and soap and rinse thoroughly.
Immediately remove contaminated clothing.

· After eye contact:

Rinse opened eye for several minutes under running water.

· After swallowing:

If symptoms persist consult doctor.

· 4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

· 4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

SECTION 5: Firefighting measures

· 5.1 Extinguishing media

· **Suitable extinguishing agents:** CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· 5.2 Special hazards arising from the substance or mixture

Under certain fire conditions, traces of other toxic gases cannot be excluded.
Hydrocarbons, carbondioxide and -monoxid.

· 5.3 Advice for firefighters

· Protective equipment:

Mouth respiratory protective device.
Do not inhale explosion gases or combustion gases.

· Additional information

Cool endangered receptacles with water spray.
Self-protection first!

SECTION 6: Accidental release measures

· 6.1 Personal precautions, protective equipment and emergency procedures

Remove persons from danger area.
Keep away from ignition sources.
In case of further temperature should be cooled with waterspray from a safe distance.
Wear breathing apparatus with filter A during decomposition of materials.
Wear protective equipment. Keep unprotected persons away.

· 6.2 Environmental precautions:



Do not allow to enter sewers/ surface or ground water.

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- **6.3 Methods and material for containment and cleaning up:**
 - Dispose contaminated material as waste according to section 13.
 - Ensure adequate ventilation.
 - Large quantities should be diluted with suitable desensitisation agent to a concentration below 10 % before disposal.
 - Soak up with absorbant material (e. g. Vermiculit) and dispose of in accordance with government regulations.
- **6.4 Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.
 - In case of large spillage the environmental authority should be informed.


SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
 - Keep away from heat and direct sunlight.
 - Ensure good ventilation/exhaustion at the workplace.
 - Open and handle receptacle with care.
 - Prevent formation of aerosols.
 - Wear suitable respiratory protective device when decanting larger quantities without extractor facilities.
 - Handle with care. Avoid jolting, friction and impact.
 - Do not refill residue into storage receptacles.
 - Restrict the quantity stored at the work place.
 - Use only in well ventilated areas.
 - Before break and at the end of work hands should be thoroughly washed.
 - Only use tools made of suitable materials (e. g. polyethylene or stainless steel).
 - Keep away from dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).
 - While using do not eat, drink or smoke.
 - Do not generate flames or sparks.
 - Keep product and emptied container away from heat and sources of ignition.
 - Avoid shock and friction.
 - Take precautionary measures against static discharges.
- **Information about fire - and explosion protection:**
 - Protect from heat.
 - Protect against electrostatic charges.
 - Prevent impact and friction.
 - Use explosion-proof apparatus / fittings and spark-proof tools.
 - Fumes can combine with air to form an explosive mixture.



Do not smoke.

 - 
 Wear shoes with conductive soles.
 - Formation of flammable or explosive gas/air-mixtures is possible.



Avoid open flames, sparks, direct sunlight and other sources of ignition.

Keep ignition sources away - Do not smoke.
- **7.2 Conditions for safe storage, including any incompatibilities**
 - **Storage:** Pay attention to the special requirements of your local authorities for storing dangerous goods.
 - **Requirements to be met by storerooms and receptacles:**
 - Store only in the original receptacle.
 - Prevent any seepage into the ground.
 - Use only receptacles specifically permitted for this substance/product.
 - **Information about storage in one common storage facility:**
 - Do not store or park organic peroxide together with heavy metal compounds and amines.
 - Store away from foodstuffs, drinks and feeding stuffs.
 - **Further information about storage conditions:**
 - Keep container tightly sealed.
 - Protect from heat and direct sunlight.
 - Protect from contamination.
 - Store under lock and key and with access restricted to technical experts or their assistants only.
 - Storage in a collecting room is required.
 - **Recommended storage temperature (To maintain quality):** 0 +30 °C
 - **Storage class:** 5.2

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· **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

· 8.1 Control parameters

· **Ingredients with limit values that require monitoring at the workplace:**

123-54-6 pentane-2,4-dione

OEL (Ireland) Long-term value: 25 ppm

· **DNELs**

614-45-9 tert-butyl perbenzoate

Dermal DNEL Longterm System 17,5 mg/kg bw/day (Worker)

Inhalative DNEL Longterm System 24,7 mg/m³ (Worker)

123-54-6 pentane-2,4-dione

Dermal DNEL Longterm System 12 mg/kg bw/day (Worker)

Inhalative DNEL Longterm System 84 mg/m³ (Worker)

· **PNECs**

614-45-9 tert-butyl perbenzoate

PNEC Marinewater sed 0,028 mg/kg sed dw

PNEC Freshwater 0,01 mg/l (AF 10)

PNEC Freshwater sed 0,28 mg/kg sed dw

PNEC Soil 0,049 mg/kg soil dw

PNEC STP 0,6 mg/l (AF 10)

PNEC Marinewater 0,00101 mg/l (AF 100)

123-54-6 pentane-2,4-dione

PNEC Marinewater sed 0,191 mg/kg sed dw

PNEC Freshwater 0,2 mg/l (AF 50)

PNEC Freshwater sed 1,909 mg/kg sed dw

PNEC Soil 0,193 mg/kg soil dw (-)

PNEC STP 1,32 mg/l (AF 10)

PNEC Marinewater 0,02 mg/l (AF 500)

· **Additional information:** The lists valid during the making were used as basis.

· 8.2 Exposure controls

· **Appropriate engineering controls**

No further data; see section 7.

· **Individual protection measures, such as personal protective equipment**

· **General protective and hygienic measures:**

The usual precautionary measures are to be adhered to when handling chemicals.

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid close or long term contact with the skin.

Avoid contact with the eyes and skin.

Do not eat, drink, smoke or sniff while working.

Use skin protection cream for skin protection.

Be sure to clean skin thoroughly after work and before breaks.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.



Use suitable respiratory device when it exceed exposure limit and when insufficiently ventilated.

Filter A2

· **Hand protection**

Only use chemical-protective gloves with CE-labelling of category III.



Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Protective gloves

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Butyl rubber, BR

Fluorocarbon rubber (Viton)

Nitrile rubber, NBR

Neoprene

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· **Penetration time of glove material**

The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye/face protection**



Tightly sealed goggles

· **Body protection:**



Protective work clothing

* **SECTION 9: Physical and chemical properties**

· **9.1 Information on basic physical and chemical properties**

· **General Information**

· Colour:	Colourless
· Odour:	Characteristic
· Odour threshold:	Not determined.
· Melting point/freezing point:	Not applicable.
· Boiling point or initial boiling point and boiling range	Not applicable.
· Flammability	Not applicable.
· Lower and upper explosion limit	
· Lower:	Not determined.
· Upper:	Not determined.
· Flash point:	48 °C
· Decomposition temperature:	+60 °C (SADT)
· pH	Not determined.
· Viscosity:	
· Kinematic viscosity	Not determined.
· Dynamic:	Not determined.
· Solubility	
· water:	Undetermined.
· Partition coefficient n-octanol/water (log value)	not determined
· Vapour pressure:	Not determined.
· Density and/or relative density	
· Density at 20 °C:	1,03 g/cm ³
· Relative density	Not determined.
· Vapour density	Not determined.

· **9.2 Other information**

No further relevant information available.

· **Appearance:**

· **Form:** Fluid

· **Important information on protection of health and environment, and on safety.**

· Ignition temperature:	Product is not selfigniting.
· Explosive properties:	Risk of explosion by shock, friction, fire or other sources of ignition.
· Change in condition	
· Evaporation rate	Not determined.

· **Information with regard to physical hazard classes**

· Explosives	Void
· Flammable gases	Void
· Aerosols	Void
· Oxidising gases	Void
· Gases under pressure	Void
· Flammable liquids	Flammable liquid and vapour.
· Flammable solids	Void
· Self-reactive substances and mixtures	Void
· Pyrophoric liquids	Void
· Pyrophoric solids	Void
· Self-heating substances and mixtures	Void
· Substances and mixtures, which emit flammable gases in contact with water	Void
· Oxidising liquids	Void
· Oxidising solids	Void
· Organic peroxides	Heating may cause a fire.
· Corrosive to metals	Void
· Desensitised explosives	Void

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· Other safety characteristics	
· Active oxygen	6,34 - 6,59 %

SECTION 10: Stability and reactivity

· 10.1 Reactivity	No further relevant information available.
· 10.2 Chemical stability	
· Thermal decomposition / conditions to be avoided:	SADT (Self Accelerating Decomposition Temperature) is the lowest temperature at which self accelerating decomposition may occur with 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 decomposition at and above the temperature. Contact with incompatible substances can cause decomposition at or below the SADT. No decomposition if used and stored according to specifications. To avoid thermal decomposition do not overheat.
· 10.3 Possibility of hazardous reactions	Self-accelerating decomposition at SADT.
· 10.4 Conditions to avoid	No further relevant information available.
· 10.5 Incompatible materials:	Rapid decomposition by dirt, rust, chemicals in particular concentrated acids, alkalis and accelerators (e. g. heavy-metal compounds and amines).
· 10.6 Hazardous decomposition products:	Hydrocarbons, carbon dioxide and -monoxid. No hazardous decomposition products if used and stored according to specifications.
· Additional information:	Emergency procedures will vary depending on conditions. The customer should have an emergency response plan in place.

SECTION 11: Toxicological information

· 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

· Acute toxicity Toxic if inhaled.

· LD/LC50 values relevant for classification:

614-45-9 tert-butyl perbenzoate

Oral	LD50	4.838 mg/kg (rattus)
Dermal	LD50	3.817 mg/kg (rattus)
Inhalative	LC100 4h	4,9 mg/l (rattus)
	LC0 / 4h	1,01 mg/l (rattus)

123-54-6 pentane-2,4-dione

Oral	LD50	575 mg/kg (rattus)
Dermal	LD50	790 mg/kg (rattus)
Inhalative	LC50 / 4h	5,1 mg/l (rattus)

· Skin corrosion/irritation	Causes skin irritation.
· Serious eye damage/irritation	Based on available data, the classification criteria are not met.
· Respiratory or skin sensitisation	May cause an allergic skin reaction.
· Germ cell mutagenicity	Based on available data, the classification criteria are not met.
· Carcinogenicity	Based on available data, the classification criteria are not met.
· Reproductive toxicity	Based on available data, the classification criteria are not met.
· STOT-single exposure	Based on available data, the classification criteria are not met.
· STOT-repeated exposure	Based on available data, the classification criteria are not met.
· Aspiration hazard	Based on available data, the classification criteria are not met.
· 11.2 Information on other hazards	

· Endocrine disrupting properties

None of the ingredients is listed.

SECTION 12: Ecological information

· 12.1 Toxicity

· Aquatic toxicity:

123-54-6 pentane-2,4-dione

LC50 / 96h	72 mg/l (oncorhynchus mykiss)
EC50 / 48h	75 mg/l (daphnia)

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12.2 Persistence and degradability

Degree of elimination:

Classification:

614-45-9 tert-butyl perbenzoate

Degradation (Readily biodegradable) (OECD 301 D)

123-54-6 pentane-2,4-dione

Degradation (Readily biodegradable) (OECD 301 C)

12.3 Bioaccumulative potential

Partition coefficient: nOctanol/water: [Log Kow]

614-45-9 tert-butyl perbenzoate

3 (25°C)

123-54-6 pentane-2,4-dione

0,68 (20°C)

12.4 Mobility in soil

No further relevant information available.

12.5 Results of PBT and vPvB assessment

PBT:

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

vPvB:

The substances in the mixture do not meet the PBT/vPvB criteria according to REACH, annex XIII.

12.6 Endocrine disrupting properties

The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

No further relevant information available.

Remark:

Very toxic for fish

Additional ecological information:

General notes:

Also poisonous for fish and plankton in water bodies.

Very toxic for aquatic organisms

Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even small quantities leak into the ground.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation



After diluting with a suitable desensitisation agent to 10 %, the solution must be supplied to a special treatment (e. g. thermal utilization) under observance of all official regulations.

Must not be disposed together with household garbage. Do not allow product to reach sewage system.

Waste disposal key:

Please contact your hazardous waste disposers to assign the right EWC-(European waste catalog)-number.

Uncleaned packaging:

Recommendation:

This material and its container must be disposed of as hazardous waste.

SECTION 14: Transport information

14.1 UN number or ID number

ADR, IMDG, IATA

UN3103

14.2 UN proper shipping name

ADR

UN3103 ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE), ENVIRONMENTALLY HAZARDOUS ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE), MARINE POLLUTANT ORGANIC PEROXIDE TYPE C, LIQUID (tert-BUTYL PEROXYBENZOATE)

IMDG

IATA

14.3 Transport hazard class(es)

ADR



Class

5.2 (P1) Organic peroxides.

Label



5.2

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· IMDG 	
· Class · Label	5.2 Organic peroxides. 5.2
· IATA 	
· Class · Label	5.2 Organic peroxides. 5.2
· 14.4 Packing group · ADR, IMDG, IATA	Void
· 14.5 Environmental hazards: · Marine pollutant: · Special marking (ADR):	Product contains environmentally hazardous substances: tert-BUTYL PEROXYBENZOATE Yes Symbol (fish and tree) Symbol (fish and tree)
· 14.6 Special precautions for user · Hazard identification number (Kemler code): · Stowage Category · Stowage Code · Segregation Code	Warning: Organic peroxides. - D SW1 Protected from sources of heat. SG35 Stow "separated from" SGG1-acids SG36 Stow "separated from" SGG18-alkalis.
· 14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
· Transport/Additional information:	
· ADR · Limited quantities (LQ) · Excepted quantities (EQ) · Transport category · Tunnel restriction code	25 ml Code: E0 Not permitted as Excepted Quantity 1 D
· RID / GGVSEB:	like ADR
· IMDG · Limited quantities (LQ) · Excepted quantities (EQ)	25 ml Code: E0 Not permitted as Excepted Quantity

* SECTION 15: Regulatory information

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

- **Directive 2012/18/EU**
- **Named dangerous substances**
 - **ANNEX I** None of the ingredients is listed.
- **Seveso category**
 - H2 ACUTE TOXIC
 - P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES
 - E1 Hazardous to the Aquatic Environment

· **Qualifying quantity (tonnes) for the application of lower-tier requirements** 50 t

· **Qualifying quantity (tonnes) for the application of upper-tier requirements** 200 t

· **REGULATION (EC) No 1907/2006 ANNEX XVII** Conditions of restriction: 3

· **DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II**

None of the ingredients is listed.

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· **REGULATION (EU) 2019/1148**

· **Annex I - RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))**

None of the ingredients is listed.

· **Annex II - REPORTABLE EXPLOSIVES PRECURSORS**

None of the ingredients is listed.

· **Regulation (EC) No 273/2004 on drug precursors**

None of the ingredients is listed.

· **Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors**

None of the ingredients is listed.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Relevant phrases**

H226 Flammable liquid and vapour.
H242 Heating may cause a fire.
H302 Harmful if swallowed.
H311 Toxic in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H331 Toxic if inhaled.
H332 Harmful if inhaled.
H400 Very toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

· **Department issuing SDS:**

Environment protection / Security of labour

· **Contact:**

Tel: +49 2871 9902-0

E-mail: mail@pergan.com

· **Version number of previous version:**

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· **Abbreviations and acronyms:**

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 3: Flammable liquids – Category 3
Org. Perox. C: Organic peroxides – Type C/D
Acute Tox. 3: Acute toxicity – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Skin Sens. 1: Skin sensitisation – Category 1
Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

· *** Data compared to the previous version altered.**