

SAFETY DATA SHEET

TBPEHC



Version 3.0 Revision Date: 2023/12/19 SDS Number: 600000000002 Date of last issue: 2023/11/22
Date of first issue: 2017/05/02

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TBPEHC

Other means of identification : None

Recommended use of the chemical and restrictions on use

Recommended use : polymerisation initiators

Manufacturer or supplier's details

Company : United Initiators GmbH

Address : Dr.-Gustav-Adolph-Str. 3
82049 Pullach

Telephone : +49 / 89 / 74422 – 0

Emergency telephone number : +49 / 89 / 74422 – 0 (24 h)

E-mail address : contact@united-in.com

2. HAZARDS IDENTIFICATION

GHS Classification

Organic peroxides : Type D

Skin corrosion/irritation : Category 3

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H242 Heating may cause a fire.
H316 Causes mild skin irritation.

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Precautionary statements : H400 Very toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Prevention:
P210 Keep away from heat/ sparks/ open flames/ hot surfaces.
No smoking.
P220 Keep/Store away from clothing/ strong acids, bases,
heavy metal salts and other reducing substances /combustible
materials.
P234 Keep only in original container.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P332 + P313 If skin irritation occurs: Get medical advice/ atten-
tion.
P391 Collect spillage.

Storage:
P410 Protect from sunlight.
P411 + P235 Store at temperatures not exceeding < 20 °C/ <
68 °F. Keep cool.
P420 Store away from other materials.

Disposal:
P501 Dispose of contents/ container to an approved waste
disposal plant.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

Substance name : tert-Butyl peroxy-2-ethylhexylcarbonate

CAS-No. : 34443-12-4

Synonyms : None

Components

Hazardous ingredients	CAS-No.	Concentration (% w/w)
tert-Butyl peroxy-2-ethylhexylcarbonate	34443-12-4	<= 100

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4. FIRST AID MEASURES

General advice : Take off contaminated clothing and shoes immediately.
Never give anything by mouth to an unconscious person.
If unconscious, place in recovery position and seek medical advice.
Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.

First aid measures for different exposure routes

If inhaled : Administer oxygen if breathing is difficult or cyanosis is observed.
If breathed in, move person into fresh air.
If not breathing, give artificial respiration.
If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of skin contact : If symptoms persist, call a physician.
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If on skin, rinse well with water.
If on clothes, remove clothes.

In case of eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Rinse mouth thoroughly with water.
Keep respiratory tract clear.
If symptoms persist, call a physician.

Most important symptoms and effects, both acute and delayed : Causes mild skin irritation.

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing

Notes to physician : Treat symptomatically and supportively.

5. FIREFIGHTING MEASURES

Suitable extinguishing media : Water spray jet

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- Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during fire-fighting : Risk of explosion if heated under confinement.
Possible emission of gaseous decomposition products may lead to a dangerous pressure build-up.
Avoid confinement.
Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapours which may auto-ignite.
The product burns violently.
Flash back possible over considerable distance.
Do not allow run-off from fire fighting to enter drains or water courses.
Vapours may form explosive mixtures with air.
The product will float on water and can be reignited on surface water.
Cool closed containers exposed to fire with water spray.
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use a water spray to cool fully closed 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.
- Do not use a solid water stream as it may scatter and spread fire.
Remove undamaged containers from fire area if it is safe to do so.
Use water spray to cool unopened containers.
- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.
Use personal protective equipment.

6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Follow safe handling advice and personal protective equipment recommendations.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Use personal protective equipment.
Remove all sources of ignition.
Never return spills in original containers for re-use.
Treat recovered material as described in the section "Disposal"

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- considerations".
- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.
- Methods and materials for containment and cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.
Clear spills immediately.
Suppress (knock down) gases/vapours/mists with a water spray jet.
To clean the floor and all objects contaminated by this material, use plenty of water.
Soak up with inert absorbent material.
Isolate waste and do not reuse.
Non-sparking tools should be used.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
-

7. HANDLING AND STORAGE

Handling

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).
Keep away from heat and sources of ignition.
Use only explosion-proof equipment.
Keep away from open flames, hot surfaces and sources of ignition.
Keep away from combustible material.
- Advice on safe handling : Open drum carefully as content may be under pressure.
Protect from contamination.
Do not swallow.
Do not breathe vapours/dust.
Avoid contact with skin and eyes.
Avoid formation of aerosol.
Take precautionary measures against static discharges.
Never return any product to the container from which it was originally removed.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid confinement.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Smoking, eating and drinking should be prohibited in the application area.

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Wash thoroughly after handling.
For personal protection see section 8.

Storage

- Conditions for safe storage : Store in original container.
Keep containers tightly closed in a cool, well-ventilated place.
Store in cool place.
Keep in a well-ventilated place.
Contamination may result in dangerous pressure increases - closed containers may rupture.
Observe label precautions.
Store in accordance with the particular national regulations.
Avoid impurities (e.g. rust, dust, ash), risk of decomposition.
Electrical installations / working materials must comply with the technological safety standards.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Materials to avoid : Keep away from combustible materials.
Keep away from strong acids, bases, heavy metal salts and other reducing substances.
- Recommended storage temperature : < 20 °C
- Further information on storage stability : Stable under recommended storage conditions.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Biological occupational exposure limits

Contains no substances with biological exposure indices.

Engineering measures : Minimize workplace exposure concentrations.

Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

Hand protection
Material : Nitrile rubber

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Break through time : 240 min
Glove thickness : 0.2 mm

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.40 mm

Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0.47 mm

Remarks : The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove. Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Eye protection : Ensure that eyewash stations and safety showers are close to the workstation location.
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.
Tightly fitting safety goggles
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.
Wear as appropriate:
Flame retardant antistatic protective clothing.

Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures : Avoid contact with skin, eyes and clothing.
Keep away from food and drink.
When using do not eat or drink.
When using do not smoke.
Wash hands before breaks and immediately after handling the product.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour : colourless

Odour : very faint, ester-like

Odour Threshold : No data available

pH : substance/mixture is non-soluble (in water)

Melting point/freezing point : < -30 °C

Initial boiling point and boiling range : Decomposition: Decomposes below the boiling point.

Flash point : 100 °C
(1,013 hPa)
Method: ISO 3679, closed cup

Evaporation rate : No data available

Flammability (solid, gas) : Not applicable

Flammability (liquids) : Organic peroxide

Self-ignition : The substance or mixture is not classified as pyrophoric.

Upper explosion limit / Upper flammability limit : Upper explosion limit not determined

Lower explosion limit / Lower flammability limit : Lower explosion limit not determined

Vapour pressure : < 0.01 hPa (25 °C)

Relative vapour density : not determined

Relative density : 0.927 (20 °C)

Density : 0.927 g/cm³ (20 °C)

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Solubility(ies)
Water solubility : 5.39 mg/l practically insoluble (20 °C)
Method: OECD Test Guideline 123
GLP: yes

Partition coefficient: n-
octanol/water : log Pow: 5.2 (25 °C)
Method: OECD Test Guideline 123

Auto-ignition temperature : not determined

Self-Accelerating decomposi-
tion temperature (SADT) : 60 °C
Method: UN-Test H.4
SADT-Self Accelerating Decomposition Temperature. Lowest
temperature at which the tested package size will undergo a
self-accelerating decomposition reaction.

Viscosity
Viscosity, dynamic : 6.19 mPa.s (20 °C)

Viscosity, kinematic : not determined

Explosive properties : Not explosive In use, may form flammable/explosive vapour-
air mixture.

Oxidizing properties : The substance or mixture is not classified as oxidizing.
Organic peroxide

Self-heating substances : The substance or mixture is not classified as self heating.

Refractive index : 1.428 (20 °C)

10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.
Heating may cause a fire or explosion.

Chemical stability : Stable under recommended storage conditions.
No decomposition if stored normally.

Possibility of hazardous reac-
tions : Vapours may form explosive mixture with air.

Conditions to avoid : Protect from contamination.
Contact with incompatible substances can cause decomposi-
tion at or below SADT.

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Heat, flames and sparks.
Avoid confinement.

Incompatible materials : Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

Hazardous decomposition products : Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

11. TOXICOLOGICAL INFORMATION

Symptoms of Overexposure : None known.

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD0 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD0 (Rabbit): > 2,000 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Causes mild skin irritation.

Product:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Mild skin irritation

Remarks : May cause skin irritation and/or dermatitis.

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Species : Rabbit

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Method : OECD Test Guideline 404
Result : Mild skin irritation

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

Remarks : Vapours may cause irritation to the eyes, respiratory system and the skin.

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Species : Rabbit
Result : No eye irritation
Method : OECD Test Guideline 405

Respiratory or skin sensitisation

Skin sensitisation

Based on available data, the classification criteria are not met.

Respiratory sensitisation

Not classified due to lack of data.

Product:

Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Species : Guinea pig
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.

Chronic toxicity

Germ cell mutagenicity

Not classified due to lack of data.

Product:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: positive

Method: OECD Test Guideline 476

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Genotoxicity in vivo : Result: positive
Species: Mouse
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 483
Result: negative

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: positive

Method: OECD Test Guideline 476
Result: positive

Genotoxicity in vivo : Species: Mouse
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 483
Result: negative

Carcinogenicity

Not classified due to lack of data.

Product:

Remarks : This information is not available.

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Remarks : This information is not available.

Reproductive toxicity

Not classified due to lack of data.

Product:

Effects on fertility : Remarks: No data available

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Effects on fertility : Remarks: No data available

STOT - single exposure

Not classified due to lack of data.

STOT - repeated exposure

Not classified due to lack of data.

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Repeated dose toxicity

Product:

Species : Rat
NOAEL : 150 mg/kg
Application Route : Ingestion
Exposure time : 28 d
Method : OECD Test Guideline 407

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Species : Rat
NOAEL : 150 mg/kg
Application Route : Ingestion
Exposure time : 28 d
Method : OECD Test Guideline 407

Aspiration toxicity

Not classified due to lack of data.

Product:

No data available

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

No data available

Further information

Product:

Remarks : No data available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Product:

M-Factor (Acute aquatic toxicity) : 1

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

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- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
- Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.214 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
- NOEC (Pseudokirchneriella subcapitata (green algae)): 0.109 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
- M-Factor (Acute aquatic toxicity) : 1
- Toxicity to microorganisms : EC50 (Bacteria): > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Persistence and degradability

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Biodegradability : Result: rapidly biodegradable
Method: OECD Test Guideline 301D

Bioaccumulative potential

Components:

tert-Butyl peroxy-2-ethylhexylcarbonate:

Partition coefficient: n-octanol/water : log Pow: 5.2 (25 °C)
Method: OECD Test Guideline 123

Mobility in soil

No data available

Other adverse effects

Product:

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

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13. DISPOSAL CONSIDERATIONS

Disposal methods

- Waste from residues : Dispose of wastes in an approved waste disposal facility. 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.
- Contaminated packaging : Dispose of in accordance with local regulations. Clean container with water. Dispose of contents/ container to an approved waste disposal plant. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.
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14. TRANSPORT INFORMATION

International Regulations

UNRTDG

- UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (tert-BUTYL PEROXY-2-ETHYLHEXYLCARBONATE)
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2
Environmentally hazardous : no

IATA-DGR

- UN/ID No. : UN 3105
Proper shipping name : Organic peroxide type D, liquid (tert-Butyl peroxy-2-ethylhexylcarbonate)
Class : 5.2
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat
Packing instruction (cargo aircraft) : 570
Packing instruction (passenger aircraft) : 570

IMDG-Code

- UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (tert-BUTYL PEROXY-2-ETHYLHEXYLCARBONATE)
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2
EmS Code : F-J, S-R
Marine pollutant : yes
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Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION

National regulatory information

Gefahrgruppe nach TRGS 741: Ib (German regulatory requirements)
Regulations on Occupational Safety and Health Facilities
Standards for the Storage, Cleanup, Handling and Disposal of Industrial Waste
Regulations on Labelling and Hazard Communication of Hazardous Chemicals
Rules on Road Traffic Safety
Establishment Standards and Safety Control Regulations for Manufacturing, Storing, Processing
Public Hazardous Substances and Flammable Pressurized Gases Places: Quantity subject to control

The components of this product are reported in the following inventories:

TCSI (TW)	:	On the inventory, or in compliance with the inventory
TSCA (US)	:	All substances listed as active on the TSCA inventory
AIC (AU)	:	All components are listed on the inventory, regulatory obligations/restrictions apply
DSL (CA)	:	All components of this product are on the Canadian DSL
ENCS (JP)	:	On the inventory, or in compliance with the inventory
ISHL (JP)	:	On the inventory, or in compliance with the inventory
KECI (KR)	:	On the inventory, or in compliance with the inventory
IECSC (CN)	:	On the inventory, or in compliance with the inventory

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16. OTHER INFORMATION

Further information

- Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>
- Revision Date : 2023/12/19
- Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification.
These safety instructions also apply to empty packaging which may still contain product residues.
The hazards on the label also apply to residues in the container.
- Date format : yyyy/mm/dd

Full text of other abbreviations

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

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recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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.

TW / EN