

Safety Data Sheet E-4597

according to the Hazardous Products Regulation (February 11, 2015)

Date of issue: 10-15-1989 Revision date: 07-28-2023 Supersedes: 01-01-2021 Version: 1.1

SECTION 1: Identification

1.1. Product identifier

Product form : Substance
Substance name : Ethyl chloride
CAS No : 75-00-3
Formula : C2H5Cl

Other means of identification : Chelene, chloroethane, chloryl anesthetic, halocarbon 160, hydrochloric ether, kelene,

monochloroethane, muriatic ether, narcotile, refrigerant gas R160

Product group : Core Products

1.2. Recommended use and restrictions on use

Recommended uses and restrictions : Industrial use; Use as directed.

1.3. Supplier

Linde Canada inc. 500 — 5015 Spectrum Way Mississauga - Canada L4W 0E4 T 1-905-803-1600 - F 1-905-803-1682 www.lindecanada.ca

1.4. Emergency telephone number

Emergency number : 1-800-363-0042

Call emergency number 24 hours a day only for spills, leaks, fire, exposure, or accidents

involving this product.

For routine information, contact your supplier or Linde sales representative.

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture

GHS-CA classification

Flammable gases, Category 1 H220
Gases under pressure: Liquefied gas H280
Carcinogenicity, Category 2 H351
Hazardous to the aquatic environment — Chronic Hazard, Category 3 H412

2.2. GHS Label elements, including precautionary statements

GHS-CA labelling

Hazard pictograms







GHS02

Signal word : DANGER

Hazard statements : EXTREMELY FLAMMABLE GAS

CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED

SUSPECTED OF CAUSING CANCER

HARMFUL TO AQUATIC LIFE WITH LONG LASTING EFFECTS

MAY CAUSE FROSTBITE.

MAY FORM EXPLOSIVE MIXTURES WITH AIR.

Precautionary statements : Do not handle until all safety precautions have been read and understood

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No

smoking.

Use and store only outdoors or in a well-ventilated area.

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Avoid release to the environment.

Wear protective gloves, protective clothing, eye protection, respiratory protection, and/or face protection.

IF exposed or concerned: Get medical advice/attention

LEAKING GAS FIRE: Do not extinguish, unless leak can be stopped safely.

In case of leakage, eliminate all ignition sources

Store locked up

Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

Protect from sunlight when ambient temperature exceeds 52°C (125°F).

Use a back flow preventive device in the piping. Close valve after each use and when empty. Use only with equipment rated for cylinder pressure.

Do not open valve until connected to equipment prepared for use.

Approach suspected leak area with caution.

Open valve slowly.

2.3. Other hazards

No additional information available

Unknown acute toxicity (GHS CA)

Not applicable

SECTION 3: Composition/information on ingredients

Substances

Name	CAS No.	% (Vol.)	Common Name (synonyms)
Ethyl chloride (Main constituent)	(CAS No) 75-00-3	100	Chlorethyl / Chloroethane / Ethane, chloro- / Monochloroethane / Chloroethane, 1- / Ethylchloride / 1- Chloroethane

Mixtures

Not applicable

SECTION 4: First-aid measures

Description of first aid measures

First-aid measures after inhalation

Remove to fresh air and keep at rest in a position comfortable for breathing. If not breathing, give artificial respiration. If breathing is difficult, trained personnel should give oxygen. Call a physician.

First-aid measures after skin contact

For liquid spillage - flush with water for at least 15 minutes, The liquid may cause frostbite. For exposure to liquid, immediately warm frostbite area with warm water not to exceed 105°F (41°C). Water temperature should be tolerable to normal skin. Maintain skin warming for at least 15 minutes or until normal coloring and sensation have returned to the affected area. In case of massive exposure, remove clothing while showering with warm water. Seek medical evaluation and treatment as soon as possible.

First-aid measures after eye contact Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and

away from the eyeballs to ensure that all surfaces are flushed thoroughly. Contact an

ophthalmologist immediately.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

Most important symptoms and effects (acute and delayed)

Symptoms/injuries : No additional information available Most Important Symptoms/Effects : Asphyxiant in high concentrations.

Immediate medical attention and special treatment, if necessary

Other medical advice or treatment : This material may be a cardiac sensitizer; avoid the use of epinephrine.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

: Carbon dioxide, Dry chemical, Water spray or fog. Use extinguishing media appropriate for Suitable extinguishing media

surrounding fire.

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5.2. Unsuitable extinguishing media

No additional information available

5.3. Specific hazards arising from the hazardous product

Fire hazard : EXTREMELY FLAMMABLE GAS.

Explosion hazard : EXTREMELY FLAMMABLE GAS. Forms explosive mixtures with air and oxidizing agents.

Reactivity : Special hazards caused by the material, its products of combustion or resulting gases:

PHOSGENE.

Reactivity in case of fire : No reactivity hazard other than the effects described in sub-sections below.

5.4. Special protective equipment and precautions for fire-fighters

Firefighting instructions : DANGER! Flammable, liquefied gas.

FORMS EXPLOSIVE MIXTURES WITH AIR

Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart

L—Fire Protection.

Protection during firefighting : DANGER! FLAMMABLE, HIGH PRESSURE GAS..

Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire

fighters.

Other information : Containers are equipped with a pressure relief device. (Exceptions may exist where

authorized.).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures

: DANGER: Flammable, liquefied gas. FORMS EXPLOSIVE MIXTURES WITH AIR. Immediately evacuate all personnel from danger area. Use self-contained breathing apparatus where needed. Remove all sources of ignition if safe to do so. Reduce vapors with fog or fine water spray, taking care not to spread liquid with water. Shut off flow if safe to do so. Ventilate area or move container to a well-ventilated area. Flammable vapors may spread from leak and could explode if reignited by sparks or flames. Explosive atmospheres may linger. Before entering area, especially confined areas, check atmosphere with an appropriate device. If venting or leaking gas catches fire, do not extinguish flames. Flammable vapors may spread from leak, creating an explosive reignition hazard. Vapors can be ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharge, or other ignition sources at locations distant from product handling point. Explosive atmospheres may linger. Before entering an area, especially a confined area, check the atmosphere with an appropriate device. Ensure adequate air ventilation. Evacuate area. Monitor concentration of released product. Try to stop release.

Personal Precautions, Protective Equipment and Emergency Procedures

General measures: Ensure adequate ventilation. Personal Precautions, Protective Equipment and Emergency Procedures: EVACUATE ALL PERSONNEL FROM AFFECTED AREA. Use appropriate protective equipment. If leak is on user's equipment, be certain to purge piping before attempting repairs. If leak is on a container or container valve contact the closest Linde Canada location.

6.2. Methods and materials for containment and cleaning up

For containment : Try to stop release if safe to do so.

Methods for cleaning up : Dispose of contents/container in accordance with local/regional/national/international

regulations. Contact supplier for any special requirements.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling

: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use only non-sparking tools. Use only explosion-proof equipment.

Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g, wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions

Store only where temperature will not exceed 52 °C (125 °F). Post "No Smoking/No Open Flames" signs in storage and use areas. There must be no sources of ignition. Separate packages and protect against potential fire and/or explosion damage following appropriate codes and requirements (e.g.: CSA, TSSA, or NFPA Codes), or according to the provincial requirements determined by the Authority Having Jurisdiction (AHJ). Always secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand when the container is not in use. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods. For other precautions in using this product, see section 16.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 52 °C (125 °F). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Ethyl chloride (75-00-3)		
USA - ACGIH	ACGIH OEL TWA [ppm]	100 ppm
USA - OSHA	OSHA PEL TWA [1]	2600 mg/m ³
USA - OSHA	OSHA PEL TWA [2]	1000 ppm
Canada (Quebec)	VEMP (OEL TWA)	2640 mg/m³
Canada (Quebec)	VEMP (OEL TWA) [ppm]	1000 ppm
Alberta	OEL TWA	264 mg/m³
Alberta	OEL TWA [ppm]	100 ppm
British Columbia	OEL TWA [ppm]	100 ppm
Manitoba	OEL TWA [ppm]	100 ppm
New Brunswick	OEL TWA	264 mg/m³
New Brunswick	OEL TWA [ppm]	100 ppm
New Foundland & Labrador	OEL TWA [ppm]	100 ppm

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Ethyl chloride (75-00-3)		
Nova Scotia	OEL TWA [ppm]	100 ppm
Nunavut	OEL STEL [ppm]	125 ppm
Nunavut	OEL TWA [ppm]	100 ppm
Northwest Territories	OEL STEL [ppm]	125 ppm
Northwest Territories	OEL TWA [ppm]	100 ppm
Ontario	OEL TWA [ppm]	100 ppm
Prince Edward Island	OEL TWA [ppm]	100 ppm
Québec	VEMP (OEL TWA)	2640 mg/m³
Québec	VEMP (OEL TWA) [ppm]	1000 ppm
Saskatchewan	OEL STEL [ppm]	125 ppm
Saskatchewan	OEL TWA [ppm]	100 ppm
Yukon	OEL STEL	3250 mg/m³
Yukon	OEL STEL [ppm]	1250 ppm
Yukon	OEL TWA	2600 mg/m³
Yukon	OEL TWA [ppm]	1000 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls

: Use an explosion-proof local exhaust system. Local exhaust and general ventilation must be adequate to meet exposure standards. MECHANICAL (GENERAL): Inadequate - Use only in a closed system. Use explosion proof equipment and lighting. Alarm detectors should be used when toxic gases may be released. Product to be handled in a closed system and under strictly controlled conditions. Preferably use only permanent leak-tight installations (e.g. welded pipes). Ensure exposure is below occupational exposure limits (where available). Provide adequate general and local exhaust ventilation.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment

: Gloves. Face shield. Safety glasses.







Hand protection

Eye protection

Skin and body protection

Respiratory protection

Thermal hazard protection Other information : Neoprene rubber (HNBR). Wear work gloves when handling containers. Wear heavy rubber gloves where contact with product may occur.

: Wear safety glasses with side shields. Wear safety glasses when handling cylinders; vapor-proof goggles and a face shield during cylinder changeout or whenever contact with product is possible. Select eye protection in accordance with OSHA 29 CFR 1910.133. Safety eye wear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists or dusts. Select in accordance with the current CSA standard Z94.3, "Industrial Eye and Face Protection", and any provincial regulations, local bylaws or guidelines.

: Wear metatarsal shoes and work gloves for cylinder handling, and protective clothing where needed. Wear appropriate chemical gloves during cylinder changeout or wherever contact with product is possible.

: Keep self contained breathing apparatus readily available for emergency use. Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems. Respiratory protection: Use air supplied respirator when working in confined space or where local exhaust or ventilation does not keep exposure below OEL (if applicable). Select in accordance with provincial regulations, local bylaws or guidelines. Respirators should also be approved by NIOSH and MSHA. For emergencies or instances with unknown exposure levels, use a self-contained breathing apparatus (SCBA).

: Wear cold insulating gloves when transfilling or breaking transfer connections.

: Other protection: Safety shoes for general handling at customer sites. Metatarsal shoes and cuffless trousers for cylinder handling at packaging and filling plants. Select in accordance with the current CSA standard Z195, "Protective Foot Wear", and any provincial regulations, local bylaws or guidelines. For working with flammable and oxidizing materials, consider the use of flame resistant anti-static safety clothing.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

(a) Physical state : Gas
(b) Colour : Colourless.

(c) Odour : Pungent. ether-like.
Odour threshold : No data available
(d) Melting point : -138 °C (-216.94 °F)
Freezing point : No data available
(e) Boiling point : 12.3 °C (54.14 °F)
(f) Flammability : Flammable

(g) Flammability (solid, gas) : 3.8 – 15.4 vol %

(h) Flash point : -50 (-50 – -43) °C (-58°F, -45°F) TCC and TOC, respectively

(i) Auto-ignition temperature : 519 °C (966 °F)
(j) Decomposition temperature : No data available
(k) pH : Not applicable.
(l) Viscosity, kinematic : Not applicable.

(m) Solubility : Water: No data available

(n) Partition coefficient – n-octanol/water [log : 1.43

Pow/log Kow]

(o) Vapour pressure : 1.34 bar (19.5 psia) (at 20°C (68°F))

(p) Density

Relative gas density : 2.23 (air = 1) (at 21.1 °C (70 °F))

(r) Particle characteristics : No data available (s) Molecular mass : 64.5 g/mol (t) Critical temperature : 187.2 °C (369.0 °F)

(t) Critical temperature : 187.2 °C (369.0 °F) (u) Critical pressure : 52.6 bar (764.2 psia)

(v) Oxidizing properties : None.

(w) Relative evaporation rate (butylacetate=1)Relative evaporation rate (ether=1)No data availableNot applicable.

9.2. Other information

Gas group : Liquefied gas

Additional information : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below

ground level.

SECTION 10: Stability and reactivity

Reactivity : Special hazards caused by the material, its products of combustion or resulting gases:

PHOSGENE.

Chemical stability : Stable under normal conditions.

Possibility of hazardous reactions : May occur.

Conditions to avoid : Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

Incompatible materials : Water. Oxidizing agents. Sodium. Potassium. Calcium. Aluminium. Zinc. Magnesium.

Hazardous decomposition products : Phosgene. Hydrochloric acid.

SECTION 11: Toxicological information

11.1 Likely routes of exposure : Inhalation

11.2 Symptoms related to the physical. : No additional information available

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chemical, and toxicological characteristics

11.3 Delayed and immediate effects and chronic effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified.
Skin corrosion/irritation : Not classified
pH: Not applicable.

Serious eye damage/irritation : Not classified

pH: Not applicable.

Respiratory or skin sensitization : Not classified Germ cell mutagenicity : Not classified

Carcinogenicity : SUSPECTED OF CAUSING CANCER.

IARC group
 Reproductive toxicity
 Specific target organ toxicity (single exposure)
 Specific target organ toxicity (repeated)
 Not classified
 Not classified

exposure)

Aspiration hazard : Not classified

11.4 Toxicity

Ethyl chloride (\f)75-00-3	
LC50 inhalation rat (mg/l)	152 g/m³ (Exposure time: 2 h)
LC50 inhalation rat (ppm)	85747 ppm/1h
ATE CA (Gases)	42873.5 ppmv/4h
ATE CA (vapours)	152 mg/l/4h
ATF CA (dust.mist)	152 mg/l/4h

SECTION 12: Ecological information	
12.1. Toxicity	
Ecology - general :	HARMFUL TO AQUATIC LIFE WITH LONG LASTING EFFECTS.
Ethyl chloride (75-00-3)	
EC50 - Crustacea [1]	58 mg/l (Exposure time: 48 h - Species: Daphnia magna)
12.2. Persistence and degradability	
Ethyl chloride (75-00-3)	
Persistence and degradability	Not readily biodegradable.
12.3. Bioaccumulative potential	
Ethyl chloride (75-00-3)	
Log Pow	1.43
Log Kow	Not applicable.
Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.

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12.4. Mobility in soil

Ethyl chloride (75-00-3)		
Mobility in soil	No data available.	
Log Pow	1.43	
Log Kow	Not applicable.	
Ecology - soil	Because of its high volatility, the product is unlikely to cause ground or water pollution.	

12.5. Other adverse effects

Effect on the ozone layer : None.

Effect on global warming : No known effects from this product.

SECTION 13: Disposal considerations

Regional legislation (waste)

: U.S. - RCRA (Resource Conservation Recovery Act) - Basis for Listing - Appendix VII. U.S. - RCRA (Resource Conservation Recovery Act) - Constituents for Detection Monitoring. U.S. - RCRA (Resource Conservation Recovery Act) - List for Hazardous Constituents. U.S. - RCRA (Resource Conservation Recovery Act) - Part 268 Appendix III - Halogenated Organic Compounds (HOCs). U.S. - RCRA (Resource Conservation Recovery Act) - Phase 4 LDR Rule - Universal Treatment Standards. U.S. - RCRA (Resource Conservation Recovery Act) - TSD Facilities Ground Water Monitoring.

Product/Packaging disposal recommendations

Do not attempt to dispose of residual or unused quantities. Return container to supplier. Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.

SECTION 14: Transport information

14.1. Basic shipping description

In accordance with TDG

TDG

UN-No. (TDG) : UN1037

TDG Primary Hazard Classes : 2.1 - Class 2.1 - Flammable Gases

Proper shipping name : ETHYL CHLORIDE

ERAP Index : 3 000 Explosive Limit and Limited Quantity Index : 0

Passenger Carrying Road Vehicle or Passenger : Forbidden

Carrying Railway Vehicle Index

14.2. Air and sea transport

IMDG

UN-No. (IMDG) : 1037

Proper Shipping Name (IMDG) : ETHYL CHLORIDE

Class (IMDG) : 2 - Gases MFAG-No : 115

IATA

UN-No. (IATA) : 1037
Proper Shipping Name (IATA) : Ethyl chloride
Class (IATA) : 2 - Gases

SECTION 15: Regulatory information

15.1. National regulations

Ethyl chloride (75-00-3)

Listed on the Canadian DSL (Domestic Substances List)

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15.2. International regulations

Ethyl chloride (75-00-3)

Listed on the AICS (Australian Inventory of Chemical Substances)

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Japanese ISHL (Industrial Safety and Health Law)

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

Japanese Poisonous and Deleterious Substances Control Law

Listed on INSQ (Mexican National Inventory of Chemical Substances)

SECTION 16: Other information

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Indication of changes:

Training advice : Ensure operators understand the flammability hazard.

Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Linde Canada asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Linde Canada Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Linde Canada Inc, it is the user's obligation to determine the conditions of safe use of the product. Linde Canada Inc, SDSs are furnished on sale or delivery by Linde Canada Inc, or the independent distributors and suppliers who package and sell our products. To obtain current SDSs for these products, contact your Linde sales representative, local distributor, or supplier, or download from www.lindecanada.ca.

NFPA health hazard

 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

NFPA instability

 : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 2 Moderate Hazard - Temporary or minor injury may occur

Flammability

: 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

Physical

: 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

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This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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