

PE410Version 3.0
Document no. 130000144965Revision Date 2021/09/08
Issue Date 2023/07/14

This SDS adheres to the standards and regulatory requirements of China and may not meet the regulatory requirements in other countries.

Section 1 - Chemical and Enterprise Identification**Product name** : PE410**Product name in English** : PE410**Recommended use of the chemical and restriction on use**Recommended use : For industrial use only.
Paste for electronic industry

Restrictions on use : Do not use product for anything outside of the above specified uses.

Manufacturer, importer, supplierCompany : Celanese (Shanghai) International Trading Co., Ltd
Street address : 4560 Jinke Road, Zhangjiang, Pudong Shanghai, China 201210

E-mail address : HazCom@celanese.com

Emergency telephone number : CHEMTREC International: +1-703-527 3887, +86 532 8388-9090 (China, 24h)**Date of first preparation** : 2018/10/22**Section 2 - Hazard Identification****GHS Hazard Category**

Serious eye damage/eye irritation : Category 2A

Aspiration hazard (Short-term (acute)) : Category 2
Category 1aquatic hazard (Long-term (chronic)) : Category 1
aquatic hazard

Endpoints which are not classified, cannot be classified or are not applicable are not shown.

Label content

Pictogram :



Signal word : Warning

Hazardous warnings : May be harmful if swallowed and enters airways.

PE410

Version 3.0

Revision Date 2021/09/08

Document no. 130000144965

Issue Date 2023/07/14

Causes serious eye irritation.
Very toxic to aquatic life with long lasting effects.

Precautionary
statements

: **Preventive Measures:**
Wash skin thoroughly after handling.
Avoid release to the environment.
Wear eye protection/ face protection.

Accident Response:
IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Do NOT induce vomiting.
If eye irritation persists: Get medical advice/ attention.
Collect spillage.

Safe Storage:
Store locked up.

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

Main Symptom After Contact

No information available.

Section 3 - Ingredients/Composition Information

Chemical nature : Mixture

Components

Chemical name	CAS-No.	Concentration
Silver powder	7440-22-4	40 - 50%
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol	112-50-5	30 - 40%
2-(2-Butoxyethoxy)ethanol	112-34-5	10 - 20%

Section 4 - First-aid Measures

Inhalation : If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention.

Skin contact : Wash off with soap and water. Get medical attention if irritation develops and persists. Wash contaminated clothing before re-use.

Eye contact : Immediately flush eyes for at least 15 minutes. Get medical attention.

Ingestion : If swallowed Rinse mouth with water. Call a physician or poison control centre immediately. DO NOT induce vomiting unless directed to do so by a physician or poison control center.

Most important symptoms/effects, acute and delayed : No information available.

Protection of first-aiders : No information available.

PE410

Version 3.0
Document no. 130000144965

Revision Date 2021/09/08
Issue Date 2023/07/14

Notes to physician : No information available.

Section 5 - Fire-fighting Measures

- Suitable extinguishing media** : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray, Dry chemical, Carbon dioxide (CO₂)
- Specific hazards** : Hazardous decomposition products formed under fire conditions. (see also section 10) Avoid breathing decomposition products.
- Special protective equipment for firefighters** : Exposure to decomposition products may be a hazard to health. Wear self-contained breathing apparatus for firefighting if necessary.
- Specific extinguishing methods** : No information available.
- Further information** : Evacuate personnel to safe areas. Stop spill/release if it can be done with minimal risk. Do not allow run-off from fire fighting to enter drains or water courses.

Section 6 - Leak Emergency Treatment

- Protective measures, devices and emergency treatment procedure for workers** : Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wear suitable protective equipment.
- Environmental precautions** : Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Clean contaminated floors and objects thoroughly while observing environmental regulations.
- Methods and materials for containment and cleaning up** : Contain spill. Soak up with inert absorbent material. Collect and contain contaminated absorbent and dike material for disposal. Keep in suitable, closed containers for disposal. Ventilate the area. Clean contaminated surface thoroughly.
- Prevention of secondary hazards** : No information available.
- Additional advice** : Dispose of in accordance with local regulations.

Section 7 - Operation Handling and Storage**Operation Handling**

- Technical measures/Precautions** : Avoid inhalation, ingestion and contact with skin and eyes. Do not use in areas without adequate ventilation. Keep container closed when not in use. Take care to avoid waste and spillage when weighing, loading and mixing the product.

PE410

Version 3.0
Document no. 130000144965

Revision Date 2021/09/08
Issue Date 2023/07/14

Precautions for safe handling : Avoid formation of dust and aerosols. Keep away from heat and sources of ignition.

Storage

Suitable storage conditions : Store in original container. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from sources of ignition - No smoking. Do not store or consume food, drink or tobacco in areas where they may become contaminated with this material. Keep container closed when not in use. Do not reuse empty container.

Storage period: Stable under normal conditions.

Section 8 - Exposure Control and Personal Protection**Control parameters**

Applicable occupational exposure limits are listed below.

Silver powder		
TWA	0.1 mg/m ³ (Dust and fume)	ACGIH (2013-03-01)
2-(2-Butoxyethoxy)ethanol		
TWA	10 ppm (Inhalable fraction and vapor)	ACGIH (2013-03-01)

Biological occupational exposure limits

No biological exposure limit values are applicable.

Engineering controls : Local exhaust or a laboratory hood should be used when handling the materials. Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Respiratory protection : Provide adequate ventilation. No personal respiratory protective equipment normally required. Where there is potential for airborne exposures in excess of applicable limits, wear approved respiratory protection with dust/mist cartridge. When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Consult the respirator manufacturer to determine the appropriate type of equipment for a given application. Observe respirator use limitations specified by the manufacturer. Persons performing maintenance or repairs on exhaust system equipment (e.g. ducts) may need to use respirators and protective clothing to prevent exposure to any accumulated residues.

Hand protection : Material: Impervious gloves
Gloves must be inspected prior to use., Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough., The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other., The exact break through time can be obtained from the protective glove producer and this has to be observed., Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such

PE410Version 3.0
Document no. 130000144965Revision Date 2021/09/08
Issue Date 2023/07/14

- as the danger of cuts, abrasion, and the contact time.
- Eye protection** : Wear safety glasses with side shields.
- Skin protection** : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.
Lightweight protective clothing
Safety shoes
- Hygiene measures** : Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Contaminated work clothing should not be allowed out of the workplace. Remove contaminated clothing and protective equipment before entering eating areas. Remove and wash contaminated clothing before re-use.

Section 9 - Physical and Chemical Properties**Appearance (Physical state, form, colour, etc.)**

- Physical state : liquid
Form : viscous liquid
Colour : dark brown

Odour : mild solvent-like

Odour Threshold : No information available.

pH : No information available.

Melting point/freezing point

No information available.

Boiling point, initial boiling point and boiling range

No information available.

Flash point : 122 °C
Method: closed cup

Evaporation rate : No information available.

Flammability (solid, gas) : No information available.

Upper/lower flammability or explosive limits

- Upper explosion limit : No information available.
Lower explosion limit : No information available.

Vapour pressure : No information available.

Vapour density : No information available.

Density
Density : 1.7 g/cm³

PE410

Version 3.0
Document no. 130000144965

Revision Date 2021/09/08
Issue Date 2023/07/14

Solubility(ies)

Water solubility : insoluble

Partition coefficient: n-octanol/water

: No information available.

Auto-ignition temperature

No information available.

Decomposition temperature

: No information available.

Viscosity

Viscosity, kinematic : No information available.

Molecular weight

: No information available.

Oxidizing properties

: No information available.

Section 10 - Stability and Reactivity**Reactivity**

: No information available.

Chemical stability

: Stable at normal temperatures and storage conditions.

Possibility of hazardous reactions

: Polymerization will not occur.

Conditions to avoid

: None reasonably foreseeable.

Materials to avoid

: Acids, bases and strong oxidizing agents

Hazardous decomposition products

: No decomposition if stored and applied as directed.

Under fire conditions:

Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke)., Metal oxides

Section 11 - Toxicological Information**Acute toxicity**

Oral

Silver powder : LD50/Mouse: > 5,000 mg/kg
The substance or mixture has no acute oral toxicity

2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : LD50/Rat: 10,610 mg/kg
Method: OECD Test Guideline 401
The substance or mixture has no acute oral toxicity

2-(2-Butoxyethoxy)ethanol : LD50/Mouse: 2,410 mg/kg
Method: OECD Test Guideline 401
Target Organs: Central nervous system
narcosis

Inhalation

PE410

Version 3.0

Revision Date 2021/09/08

Document no. 130000144965

Issue Date 2023/07/14

2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : LC50/4 h/Rat(vapour): > 50 mg/l
 The substance or mixture has no acute inhalation toxicity
 2-(2-Butoxyethoxy)ethanol : An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Dermal

Silver powder : LD50/Guinea pig: > 10 mg/kg
 2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : LD50/Rabbit: 3,540 mg/kg
 Information given is based on data obtained from similar substances.
 2-(2-Butoxyethoxy)ethanol : LD50/Rabbit: 2,764 mg/kg
 Method: OECD Test Guideline 402

Skin corrosion/irritation

Silver powder : Species: Rabbit
 Result: No skin irritation
 Classification: Not classified as irritant
 Information given is based on data obtained from similar substances.
 2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Species: Rabbit
 Result: No skin irritation
 Classification: No skin irritation
 Method: OECD Test Guideline 404
 Minimal effects that do not meet the threshold for classification.
 Information given is based on data obtained from similar substances.
 2-(2-Butoxyethoxy)ethanol : Species: Rabbit
 Result: No skin irritation
 Classification: Not classified as irritant
 Method: OECD Test Guideline 404

Serious eye damage/eye irritation

Silver powder : Species: Rabbit
 Result: No eye irritation
 Classification: Not classified as irritant
 Information given is based on data obtained from similar substances.
 Species: Guinea pig
 Result: No eye irritation
 Classification: Not classified as irritant
 2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Species: Rabbit
 Result: Slight or no eye irritation
 Classification: No eye irritation
 Method: OECD Test Guideline 405
 Minimal effects that do not meet the threshold for classification.
 Information given is based on data obtained from similar substances.
 2-(2-Butoxyethoxy)ethanol : Species: Rabbit
 Result: Eye irritation
 Classification: Irritating to eyes.
 Method: OECD Test Guideline 405

Respiratory or skin sensitisation

2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Species: Guinea pig
 Result: Does not cause skin sensitisation.
 Classification: Does not cause skin sensitisation.
 Method: OECD Test Guideline 406
 Information given is based on data obtained from similar substances.

PE410

Version 3.0
Document no. 130000144965

Revision Date 2021/09/08
Issue Date 2023/07/14

2-(2-Butoxyethoxy)ethanol : Species: Mouse
Result: Does not cause respiratory sensitisation.
Classification: Does not cause respiratory sensitisation.

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

Germ cell mutagenicity

Silver powder : no data available
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Information given is based on data obtained from similar substances.
2-(2-Butoxyethoxy)ethanol : Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Animal testing did not show any mutagenic effects.

Carcinogenicity

Silver powder : no data available
2-(2-Butoxyethoxy)ethanol : Not classifiable as a human carcinogen.

Reproductive toxicity

Silver powder : Reproductive toxicity: no data available
Teratogenicity: no data available
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Reproductive toxicity: No toxicity to reproduction
Animal testing showed effects on reproduction at levels equal to or above those causing parental toxicity.
No effects on or via lactation
Information given is based on data obtained from similar substances.
Teratogenicity: Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.
Information given is based on data obtained from similar substances.
2-(2-Butoxyethoxy)ethanol : Reproductive toxicity: No toxicity to reproduction
Animal testing showed no reproductive toxicity.
Teratogenicity: Animal testing showed no developmental toxicity.

Specific Target Organ Toxicity

Specific target organ toxicity - single exposure

2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : The substance or mixture is not classified as specific target organ toxicant, single exposure.
2-(2-Butoxyethoxy)ethanol : Target Organs: Central nervous system
The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

Specific target organ toxicity - repeated exposure

Silver powder : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

PE410

Version 3.0
Document no. 130000144965

Revision Date 2021/09/08
Issue Date 2023/07/14

Ethoxyethoxy)ethoxy)ethanol	toxicant, repeated exposure.
2-(2-Butoxyethoxy)ethanol	: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Aspiration hazard	
Silver powder	: No aspiration toxicity classification
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol	: The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.
2-(2-Butoxyethoxy)ethanol	: The substance or mixture causes concern owing to the assumption that it causes a human aspiration toxicity hazard.
Other	
Silver powder	: Repeated dose toxicity: Oral/Rat 28 d altered blood chemistry, Liver effects Oral/Rat 90 d altered blood chemistry, Kidney effects Inhalation/Rat 90 d Altered respiratory rate
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol	: Repeated dose toxicity: Ingestion/Rat 30 d NOAEL: 750 mg/kg LOAEL: 3,300 mg/kg Method: OECD Test Guideline 407 No toxicological effects warranting significant target organ toxicity classification were seen below the recommended guidance values for classification.
2-(2-Butoxyethoxy)ethanol	: Repeated dose toxicity: Dermal/Rat Skin irritation Oral/Rat Spleen effects, Organ weight changes, Liver effects, Kidney effects Inhalation/Rat Liver effects, lung effects

Section 12 - Ecological Information**Ecotoxicity effects**

Acute and prolonged toxicity to fish

Silver powder	: no data available
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol	: LC50/96 h/Pimephales promelas (fathead minnow): > 10,000 mg/l
2-(2-Butoxyethoxy)ethanol	: LC50/96 h/Lepomis macrochirus (Bluegill sunfish): 1,300 mg/l Method: OECD Test Guideline 203

Toxicity to aquatic plants

Silver powder	: EC50/96 h/Pseudokirchneriella subcapitata (green algae): 0.19 mg/l
2-(2-(2-Ethoxyethoxy)ethoxy)ethanol	: EC50/72 h/Desmodesmus subspicatus (green algae): > 500 mg/l Information given is based on data obtained from similar substances.

PE410

Version 3.0

Revision Date 2021/09/08

Document no. 130000144965

Issue Date 2023/07/14

2-(2-Butoxyethoxy)ethanol : NOEC/72 h/Desmodesmus subspicatus (green algae): 62.5 mg/l
 Information given is based on data obtained from similar substances.
 ErC50/96 h/Desmodesmus subspicatus (green algae): > 100 mg/l
 Method: OECD Test Guideline 201
 NOEC/96 h/Desmodesmus subspicatus (green algae): > 100 mg/l
 Method: OECD Test Guideline 201

Acute toxicity to aquatic invertebrates

Silver powder : EC50/96 h/Daphnia magna (Water flea): 0.1 mg/l
 LC50/48 h/Daphnia pulex (Water flea): 0.04 mg/l
 2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : EC50/48 h/Daphnia magna (Water flea): > 10,000 mg/l
 2-(2-Butoxyethoxy)ethanol : EC50/48 h/Daphnia magna (Water flea): > 100 mg/l
 Method: Directive 67/548/EEC, Annex V, C.2.

Persistence and degradability

Silver powder : Not readily biodegradable. Information given is based on data obtained from similar substances.
 2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Result: Biodegradable
 2-(2-Butoxyethoxy)ethanol : Exposure time: 28 d
 Biodegradation: 85 %
 Readily biodegradable.

Bioaccumulation

2-(2-(2-Ethoxyethoxy)ethoxy)ethanol : Bioaccumulation is unlikely.
 2-(2-Butoxyethoxy)ethanol : Bioaccumulation is unlikely.

Mobility in soil

No information available.

Other adverse effects

No information available.

Section 13 - Waste Disposal

Waste disposal methods : If recycling is not practicable, dispose of in compliance with local regulations. Never place unused product down any indoor or out door drain. Do not reuse empty container. Contaminated/not cleaned containers should be treated/handled like product waste. Dispose of container properly. Refer to applicable Local, State/Provincial, and Federal Regulations, as well as industry Standards.

Contaminated packaging : Dispose of in accordance with local regulations.

Section 14 - Transport Information**China Dangerous Goods Regulation**

UN number : 3082
 Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
 (Silver)
 Class : 9

SAFETY DATA SHEET



PE410

Version 3.0
Document no. 130000144965

Revision Date 2021/09/08
Issue Date 2023/07/14

Packing group : III

IMDG

UN number : 3082
UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
(Silver)
Transport hazard class : 9
Packing group : III
Marine pollutant : yes

IATA

UN number : 3082
UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Silver)
(Silver)
Transport hazard class : 9
Packing group : III
Matters needing attention for transportation : Not applicable

Section 15 - Regulatory Information

Regulation on the Safety Management of Hazardous Chemicals
Production Safety Law of the People's Republic of China
Law of the People's Republic of China on Prevention and Treatment of Occupational Disease
Environmental Protection Law of the People's Republic of China
Law of the People's Republic of China on the Prevention and Control of Atmospheric Pollution
Marine Environment Protection Law of the People's Republic of China
Fire Protection Law of the People's Republic of China
Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes
Occupational exposure limits for hazardous agents in the workplace Part 1 Chemical hazardous agents (GBZ2.1)
Occupational exposure limits for hazardous agents in the workplace Part 2 Physical agents (GBZ2.2)
General rule for classification and hazard communication of chemicals (GB13690)
Lists of Dangerous Goods (GB12268)
Dangerous goods classification (GB6944)
Common dangerous chemical storage rules (GB15603)
Packaging Symbols of Dangerous Goods (GB190)
National Hazardous Waste Inventory

New chemical registration information

Registration/Receipt No.	Uses of new chemical substance	Environmental and health hazard	Environmental risk control measures	Environmental management requirements
B1A321211835	45a - Magnetic materials (excluding storage media), piezoelectric materials,	Refer to SDS Section 2	Not applicable	Not applicable

PE410Version 3.0
Document no. 130000144965Revision Date 2021/09/08
Issue Date 2023/07/14

	conducting materials and superconducting materials			
--	--	--	--	--

Section 16 - Other Information**References**

SDS Number: 130000144965

Revision Date/VersionDate of first preparation : 2018/10/22
Revision Date : 2021/09/08
Version : 3.0

Significant change from previous version is denoted with a double bar.

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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The above information relates only to the specific material(s) designated herein and may not be valid for such material(s) used in combination with any other materials or in any process or if the material is altered or processed, unless specified in the text.