

**PE831**Version 4.0  
Document no. 130000149827Revision Date 2021/03/02  
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** : PE831**Product name in English** : PE831**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, supplier**Company : 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** : 2018/05/14**Section 2 - Hazard Identification****GHS Hazard Category**Flammable liquids : Category 4  
Acute toxicity (Oral) : Category 5  
Skin corrosion/irritation : Category 2  
Serious eye damage/eye irritation : Category 2A  
Short-term (acute) aquatic hazard : Category 1  
Long-term (chronic) aquatic hazard : Category 1

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

**Label content**

Pictogram :



Signal word : Warning

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- Hazardous warnings** : Combustible liquid.  
May be harmful if swallowed.  
Causes skin irritation.  
Causes serious eye irritation.  
Very toxic to aquatic life with long lasting effects.
- Precautionary statements** : **Preventive Measures:**  
Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.  
Wash skin thoroughly after handling.  
Avoid release to the environment.  
Wear protective gloves/ eye protection/ face protection.  
**Accident Response:**  
IF ON SKIN: Wash with plenty of water.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Call a POISON CENTER/ doctor if you feel unwell.  
If skin irritation occurs: Get medical advice/ attention.  
If eye irritation persists: Get medical advice/ attention.  
Take off contaminated clothing and wash it before reuse.  
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  
Collect spillage.  
**Safe Storage:**  
Store in a well-ventilated place. Keep cool.  
**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	50 - 60%
2-Butoxyethanol	111-76-2	30 - 40%

**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.

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<b>Ingestion</b>	:	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.
<b>Most important symptoms/effects, acute and delayed</b>	:	No information available.
<b>Protection of first-aiders</b>	:	No information available.
<b>Notes to physician</b>	:	No information available.

**Section 5 - Fire-fighting Measures**

<b>Suitable extinguishing media</b>	:	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Water spray, Dry chemical, Carbon dioxide (CO <sub>2</sub> )
<b>Specific hazards</b>	:	Hazardous decomposition products formed under fire conditions. (see also section 10) Avoid breathing decomposition products.
<b>Special protective equipment for firefighters</b>	:	Exposure to decomposition products may be a hazard to health. Wear self-contained breathing apparatus for firefighting if necessary.
<b>Specific extinguishing methods</b>	:	No information available.
<b>Further information</b>	:	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**

<b>Protective measures, devices and emergency treatment procedure for workers</b>	:	Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. Wear suitable protective equipment.
<b>Environmental precautions</b>	:	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.
<b>Methods and materials for containment and cleaning up</b>	:	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.
<b>Prevention of secondary hazards</b>	:	No information available.
<b>Additional advice</b>	:	Dispose of in accordance with local regulations.

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**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.

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 <sup>3</sup> (Dust and fume)	ACGIH (2013-03-01)
2-Butoxyethanol		
PC-TWA	97 mg/m <sup>3</sup>	CN OEL (2019-08-27)
TWA	20 ppm	ACGIH (2013-03-01)

**Biological occupational exposure limits**

Applicable biological exposure limit values are listed below.

2-Butoxyethanol		
End of shift (As soon as possible after exposure ceases)	200 mg/g Creatinine	ACGIH BEI (2010-03-01)

**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**

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- 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 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 : silver

**Odour** : 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**

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No information available.

**Flash point** : 67 °C  
Method: Setaflash closed cup - SCC**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 : 1.92 g/cm<sup>3</sup>**Solubility(ies)**  
Water solubility : (20 °C)  
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

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**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/Rat: > 2,000 mg/kg  
Method: OECD Test Guideline 401  
The substance or mixture has no acute oral toxicity

2-Butoxyethanol : Acute toxicity estimate: 1,200 mg/kg  
Method: Expert judgement  
Bloody urine

## Inhalation

Silver powder : LC50/4 h/Rat(dust/mist): > 5.16 mg/l  
Method: OECD Test Guideline 436  
The substance or mixture has no acute inhalation toxicity

2-Butoxyethanol : LC50/4 h/Guinea pig(vapour)  
The substance or mixture has no acute inhalation toxicity  
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/Rat: > 2,000 mg/kg  
Method: OECD Test Guideline 402  
The substance or mixture has no acute dermal toxicity  
Information given is based on data obtained from similar substances.

2-Butoxyethanol : LD50/Guinea pig: > 2,000 mg/kg  
Method: OECD Test Guideline 402  
The substance or mixture has no acute dermal toxicity

**Skin corrosion/irritation**

Silver powder : Species: Rabbit  
Result: No skin irritation  
Classification: No skin irritation  
Method: OECD Test Guideline 404

2-Butoxyethanol : Species: Rabbit  
Result: Severe skin irritation  
Classification: Irritating to skin.  
Method: Directive 67/548/EEC, Annex V, B.4.

**Serious eye damage/eye irritation**

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

2-Butoxyethanol : Species: Rabbit  
Result: Irritation to eyes, reversing after 7 to 21 days  
Classification: Irritating to eyes.  
Method: OECD Test Guideline 405

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**Respiratory or skin sensitisation**

- Silver powder : 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.
- 2-Butoxyethanol : Species: Guinea pig  
Result: Does not cause skin sensitisation.  
Classification: Does not cause skin sensitisation.  
Method: OECD Test Guideline 406
- Species: Not tested on animals  
Result: Does not cause respiratory sensitisation.  
Classification: Does not cause respiratory sensitisation.  
Not expected to cause sensitization based on expert review of the properties of the substance.

**Germ cell mutagenicity**

- Silver powder : Weight of evidence does not support classification as a germ cell mutagen. Overall weight of evidence indicates that the substance is not mutagenic. Information given is based on data obtained from similar substances.
- 2-Butoxyethanol : Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

**Carcinogenicity**

- Silver powder : Weight of evidence does not support classification as a carcinogen  
Overall weight of evidence indicates that the substance is not carcinogenic.
- 2-Butoxyethanol : Not classifiable as a human carcinogen.  
Tumors were observed in laboratory animals, yet are not considered relevant to humans.

**Reproductive toxicity**

- Silver powder : Teratogenicity: Animal testing showed no developmental toxicity.  
Information given is based on data obtained from similar substances.
- 2-Butoxyethanol : Reproductive toxicity: Weight of evidence does not support classification for reproductive toxicity  
Animal testing showed effects on reproduction at levels equal to or above those causing parental toxicity.  
Teratogenicity: Animal testing showed no developmental toxicity.

**Specific Target Organ Toxicity**

## Specific target organ toxicity - single exposure

- Silver powder : The substance or mixture is not classified as specific target organ toxicant, single exposure.
- 2-Butoxyethanol : The substance or mixture is not classified as specific target organ toxicant, single exposure.

## Specific target organ toxicity - repeated exposure

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- Silver powder : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
- 2-Butoxyethanol : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
- Aspiration hazard**
- Silver powder : No aspiration toxicity classification
- 2-Butoxyethanol : No aspiration toxicity classification
- Other**
- Silver powder : Repeated dose toxicity:  
Ingestion/Rat 30 d  
NOAEL: 150 mg/kg  
No toxicologically significant effects were found., Information given is based on data obtained from similar substances.
- 2-Butoxyethanol : Repeated dose toxicity:  
Inhalation/multiple species 90 d vapour  
Method: OECD Test Guideline 413  
No toxicological effects warranting significant target organ toxicity classification were seen below the recommended guidance values for classification.

**Section 12 - Ecological Information****Ecotoxicity effects**

## Acute and prolonged toxicity to fish

- Silver powder : LC50/96 h/Fish (unspecified species): 0.107 mg/l  
Method: OECD Test Guideline 203  
Information given is based on data obtained from similar substances.
- 2-Butoxyethanol : LC50/96 h/Oncorhynchus mykiss (rainbow trout): 1,474 mg/l  
Method: OECD Test Guideline 203

## Toxicity to aquatic plants

- Silver powder : EC50/96 h/Pseudokirchneriella subcapitata (green algae): 0.19 mg/l  
Information given is based on data obtained from similar substances.  
NOEC/14 d/Algae: 0.0012 mg/l  
Information given is based on data obtained from similar substances.
- 2-Butoxyethanol : EC50/72 h/Pseudokirchneriella subcapitata (green algae): 1,840 mg/l  
Method: OECD Test Guideline 201  
NOEC/72 h/Pseudokirchneriella subcapitata (green algae): 286 mg/l  
Method: OECD Test Guideline 201

## Acute toxicity to aquatic invertebrates

- Silver powder : EC50/48 h/Ceriodaphnia dubia (water flea): 0.16 mg/l  
Information given is based on data obtained from similar substances.
- 2-Butoxyethanol : EC50/48 h/Daphnia magna (Water flea): 1,800 mg/l  
Method: OECD Test Guideline 202

## Chronic toxicity to fish

- Silver powder : NOEC/32 d/Oncorhynchus mykiss (rainbow trout): 0.0012 mg/l

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2-Butoxyethanol	:	Information given is based on data obtained from similar substances. NOEC/21 d/Danio rerio (zebra fish): > 100 mg/l Method: OECD Test Guideline 204
Chronic toxicity to aquatic Invertebrates Silver powder	:	NOEC/21 d/Daphnia magna (Water flea): 0.00327 mg/l Information given is based on data obtained from similar substances.
2-Butoxyethanol	:	NOEC/21 d/Daphnia magna (Water flea): 100 mg/l Method: OECD Test Guideline 211
<b>Persistence and degradability</b>		
Silver powder	:	Result: Not biodegradable
2-Butoxyethanol	:	Result: Biodegradable
<b>Bioaccumulation</b>		
2-Butoxyethanol	:	Bioaccumulation is unlikely.
<b>Mobility in soil</b>		
No information available.		
<b>Other adverse effects</b>		
No information available.		

**Section 13 - Waste Disposal**

<b>Waste disposal methods</b>	:	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.
<b>Contaminated packaging</b>	:	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
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

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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

**Section 16 - Other Information****References**

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

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