

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Document no. 130000036752

Revision Date 2019/05/15

Issue Date 2023/07/13

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 : MD204(PE318)

Product name in English : MD204(PE318)

Other names : R&D Conductor

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 : 2019/05/15

Section 2 - Hazard Identification

GHS Hazard Category

Flammable liquids : Category 4

Short-term (acute) : Category 1

aquatic 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 : Combustible liquid.
Very toxic to aquatic life with long lasting effects.

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Document no. 130000036752

Revision Date 2019/05/15

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Precautionary
statements

: **Preventive Measures:**

Keep away from heat/sparks/open flames/hot surfaces. No smoking.

Avoid release to the environment.

Wear protective gloves/ eye protection/ face protection.

Accident Response:

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	60 - 70%
(2-Methoxymethylethoxy)propanol	34590-94-8	10 - 20%
2-(2-Ethoxyethoxy)ethyl acetate	112-15-2	1 - 10%

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.

Notes to physician

: No information available.

Section 5 - Fire-fighting Measures

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Revision Date 2019/05/15

Document no. 130000036752

Issue Date 2023/07/13

- | | | |
|--|---|---|
| Suitable extinguishing media | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Water spray, Dry chemical, Carbon dioxide (CO ₂) |
| 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. |
| 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 |
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SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Document no. 130000036752

Revision Date 2019/05/15

Issue Date 2023/07/13

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/m3 (Dust and fume)	ACGIH (2013-03-01)
(2-Methoxymethylethoxy)propanol		
PC-TWA	600 mg/m3	GBZ 2.1-2007 (2002-04-08)
PC-STEL	900 mg/m3	GBZ 2.1-2007 (2002-04-08)
TWA	100 ppm	ACGIH (2013-03-01)
STEL	150 ppm	ACGIH (2013-03-01)

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

Biological occupational exposure limits : No information available.

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 as the danger of cuts, abrasion, and the contact time.

Eye protection : Wear safety glasses with side shields.

MD204(PE318)

Version 2.0

Revision Date 2019/05/15

Document no. 130000036752

Issue Date 2023/07/13

- 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 : paste
Colour : grey, to, 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

No information available.

Flash point : 75 °C
estimated

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

No information available.

Solubility(ies)

- Water solubility : (20 °C)
insoluble

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Document no. 130000036752

Revision Date 2019/05/15

Issue Date 2023/07/13

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/Rat: > 2,000 mg/kg
Method: OECD Test Guideline 401
The substance or mixture has no acute oral toxicity
- (2-Methoxymethylethoxy)propanol : LD50/Rat: > 5,000 mg/kg
Method: OECD Test Guideline 401
The substance or mixture has no acute oral toxicity
- 2-(2-Ethoxyethoxy)ethyl acetate : LD50/Rat: 11,000 mg/kg
The substance or mixture has no acute oral toxicity

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-Methoxymethylethoxy)propanol : LC50/4 h/Rat(vapour)

SAFETY DATA SHEET

**MD204(PE318)**

Version 2.0

Revision Date 2019/05/15

Document no. 130000036752

Issue Date 2023/07/13

	Method: OECD Test Guideline 403 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.
2-(2-Ethoxyethoxy)ethyl acetate	: LC50/4 h/Rat(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-Methoxymethylethoxy)propanol	: LD50/Rabbit: 9,510 mg/kg Method: OECD Test Guideline 402 The substance or mixture has no acute dermal toxicity Skin effects
2-(2-Ethoxyethoxy)ethyl acetate	: LD50/Rabbit: 15,300 mg/kg 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-Methoxymethylethoxy)propanol	: Species: Rabbit Result: No skin irritation Classification: No skin irritation Method: OECD Test Guideline 404
2-(2-Ethoxyethoxy)ethyl acetate	: 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.
Serious eye damage/eye irritation	
Silver powder	: Species: Rabbit Result: No eye irritation Classification: No eye irritation Method: OECD Test Guideline 405
(2-Methoxymethylethoxy)propanol	: Species: human Result: Slight or no eye irritation Classification: No eye irritation Minimal effects that do not meet the threshold for classification.
2-(2-Ethoxyethoxy)ethyl acetate	: Species: Rabbit Result: Irritation to eyes, reversing within 7 days Classification: Mild eye irritation
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

MD204(PE318)

Version 2.0

Revision Date 2019/05/15

Document no. 130000036752

Issue Date 2023/07/13

(2-Methoxymethylethoxy)propanol : Information given is based on data obtained from similar substances.
Species: human
Result: Does not cause skin sensitisation.
Classification: Does not cause skin sensitisation.

2-(2-Ethoxyethoxy)ethyl acetate : 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 : 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-Methoxymethylethoxy)propanol : Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Animal testing did not show any mutagenic effects.

2-(2-Ethoxyethoxy)ethyl acetate : 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-Methoxymethylethoxy)propanol : Animal testing did not show any carcinogenic effects.
Information given is based on data obtained from similar substances.

Reproductive toxicity

Silver powder : Teratogenicity: Animal testing showed no developmental toxicity.
Information given is based on data obtained from similar substances.

(2-Methoxymethylethoxy)propanol : Reproductive toxicity: No toxicity to reproduction
Animal testing showed no reproductive toxicity.
No effects on or via lactation
Information given is based on data obtained from similar substances.
Teratogenicity: Animal testing showed no developmental toxicity.

2-(2-Ethoxyethoxy)ethyl acetate : Reproductive toxicity: No toxicity to reproduction
Animal testing showed no reproductive toxicity.
No effects on or via lactation
Information given is based on data obtained from similar substances.
Teratogenicity: Animal testing showed no developmental toxicity.
Information given is based on data obtained from similar substances.

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-Methoxymethylethoxy)propanol : The substance or mixture is not classified as specific target organ toxicant, single exposure.

2-(2-Ethoxyethoxy)ethyl acetate : The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ toxicity - repeated exposure

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Document no. 130000036752

Revision Date 2019/05/15

Issue Date 2023/07/13

Silver powder : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

(2-Methoxymethylethoxy)propanol : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

2-(2-Ethoxyethoxy)ethyl acetate : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Silver powder : No aspiration toxicity classification

(2-Methoxymethylethoxy)propanol : No aspiration toxicity classification

2-(2-Ethoxyethoxy)ethyl acetate : 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-Methoxymethylethoxy)propanol : Repeated dose toxicity:
Ingestion/Rat 28 d
NOAEL: 1,000 mg/kg
No toxicologically significant effects were found.
Inhalation/Rat 90 d vapour
Method: OECD Test Guideline 413
No toxicologically significant effects were found.
Skin contact/Rabbit 90 d
NOAEL: 2,850 mg/kg
Method: OECD Test Guideline 411
No toxicologically significant effects were found.

2-(2-Ethoxyethoxy)ethyl acetate : Repeated dose toxicity:
Ingestion/Rat 90 d
NOAEL: 250 mg/kg
Method: OECD Test Guideline 408
No toxicologically significant effects were found., Information given is based on data obtained from similar substances.
Inhalation/Rat 28 d dust/mist
NOAEL: 1.1 mg/l
LOAEL: > 1.1 mg/l
No toxicologically significant effects were found., Information given is based on data obtained from similar substances.

Section 12 - Ecological Information

Ecotoxicity effects

Acute and prolonged toxicity to fish

Silver powder : LC50/96 h/Fish (unspecified species): 0.107 mg/l

SAFETY DATA SHEET

**MD204(PE318)**

Version 2.0

Revision Date 2019/05/15

Document no. 130000036752

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	Method: OECD Test Guideline 203 Information given is based on data obtained from similar substances.
(2-Methoxymethylethoxy)propanol	: LC50/96 h/Poecilia reticulata (guppy): > 1,000 mg/l Method: OECD Test Guideline 203
2-(2-Ethoxyethoxy)ethyl acetate	: LC50/96 h/Danio rerio (zebra fish): > 100 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-Methoxymethylethoxy)propanol	: EC50/96 h/Pseudokirchneriella subcapitata (green algae): > 969 mg/l Method: OECD Test Guideline 201 NOEC/96 h/Pseudokirchneriella subcapitata (green algae): 969 mg/l Method: OECD Test Guideline 201
2-(2-Ethoxyethoxy)ethyl acetate	: EC50/72 h/Algae: 110.2 mg/l Method: OECD Test Guideline 201 NOEC/72 h/Pseudokirchneriella subcapitata (green algae): 300 mg/l Method: ISO 8692 Information given is based on data obtained from similar substances.
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-Methoxymethylethoxy)propanol	: EC50/48 h/Daphnia magna (Water flea) Method: OECD Test Guideline 202 Aquatic toxicity is unlikely due to low solubility.
2-(2-Ethoxyethoxy)ethyl acetate	: LC50/48 h/Daphnia magna (Water flea): 143 mg/l
Chronic toxicity to fish	
Silver powder	: NOEC/32 d/Oncorhynchus mykiss (rainbow trout): 0.0012 mg/l Information given is based on data obtained from similar substances.
2-(2-Ethoxyethoxy)ethyl acetate	: NOEC/28 d/Fish (unspecified species): 28.64 mg/l
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-(2-Ethoxyethoxy)ethyl acetate	: NOEC/21 d/Daphnia magna (Water flea): 102 mg/l
Persistence and degradability	
Silver powder	: Result: Not biodegradable
(2-Methoxymethylethoxy)propanol	: Result: Biodegradable Readily biodegradable.
2-(2-Ethoxyethoxy)ethyl acetate	: Result: Biodegradable
Bioaccumulation	
2-(2-Ethoxyethoxy)ethyl acetate	: Bioaccumulation is unlikely.
Mobility in soil	
No information available.	
Other adverse effects	

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Document no. 130000036752

Revision Date 2019/05/15

Issue Date 2023/07/13

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
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)
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

SAFETY DATA SHEET



MD204(PE318)

Version 2.0

Revision Date 2019/05/15

Document no. 130000036752

Issue Date 2023/07/13

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

SDS Number: 130000036752

Revision Date/Version

Date of first preparation	:	2019/05/15
Revision Date	:	2019/05/15
Version	:	2.0

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

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