MD235 (PE733)

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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 : MD235 (PE733)

Product name in English : MD235 (PE733)

Other names : DuPont Confidential

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

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Date of first preparation : 2019/05/10

Section 2 - Hazard Identification

GHS Hazard Category

Flammable liquids : Category 4
Endpoints which are not classified, cannot be classified or are not applicable are not shown.

Label content

Pictogram : not required

Signal word : Warning

Hazardous warnings : Combustible liquid.

Precautionary statements : **Preventive Measures:**
Keep away from heat/sparks/open flames/hot surfaces. No smoking.
Wear protective gloves/ eye protection/ face protection.
Accident Response:
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
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
Titanium dioxide	13463-67-7	40 - 50%
(2-Methoxymethylethoxy)propanol	34590-94-8	30 - 40%
Boron nitride	10043-11-5	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

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.
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.

Titanium dioxide		
PC-TWA	8 mg/m3 (Total dust)	GBZ 2.1-2007 (2007-04-27)
TWA (Titanium dioxide)	10 mg/m3	ACGIH (2014-03-01)
(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.

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 : white

Odour : slight

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 : 85 °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
No information available.

Solubility(ies)
Water solubility : immiscible

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).

Section 11 - Toxicological Information

Acute toxicity

Oral

Titanium dioxide : LD50/Rat: > 5,000 mg/kg
Method: OECD Test Guideline 425
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

Inhalation

Titanium dioxide : LC50/4 h/Rat(dust/mist): > 6.82 mg/l

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

Boron nitride : LC50/4 h/Rat(dust/mist): > 5.3 mg/l
Method: OECD Test Guideline 403

Dermal

Titanium dioxide : LD50/Rabbit: > 10,000 mg/kg

(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

Skin corrosion/irritation

Titanium dioxide	:	Species: Rabbit Result: No skin irritation Classification: Not classified as irritant Method: OECD Test Guideline 404
(2-Methoxymethylethoxy)propanol	:	Species: Rabbit Result: No skin irritation Classification: No skin irritation Method: OECD Test Guideline 404
Boron nitride	:	Species: Rabbit Result: No skin irritation Classification: Not classified as irritant Method: OECD Test Guideline 404

Serious eye damage/eye irritation

Titanium dioxide	:	Species: Rabbit Result: No eye irritation Classification: Not classified as irritant 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.
Boron nitride	:	Species: Rabbit Result: No eye irritation Classification: Not classified as irritant Method: OECD Test Guideline 405

Respiratory or skin sensitisation

Titanium dioxide	:	Species: Guinea pig Result: Does not cause skin sensitisation. Classification: Does not cause skin sensitisation. Method: OECD Test Guideline 406 Species: Mouse Result: Does not cause respiratory sensitisation. Classification: Does not cause respiratory sensitisation.
(2-Methoxymethylethoxy)propanol	:	Species: human Result: Does not cause skin sensitisation. Classification: Does not cause skin sensitisation.
Boron nitride	:	Species: Guinea pig Result: Does not cause skin sensitisation. Classification: Does not cause skin sensitisation. Method: OECD Test Guideline 406

Germ cell mutagenicity

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

Boron nitride : Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Carcinogenicity

Titanium dioxide : Not classifiable as a human 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

Titanium dioxide : Reproductive toxicity: Animal testing showed no reproductive toxicity.
Teratogenicity: Animal testing showed no developmental toxicity.

(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.

Specific Target Organ Toxicity

Specific target organ toxicity - single exposure

Titanium dioxide : 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.

Boron nitride : Likely route of exposure: Oral, Inhalation, Skin contact
The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ toxicity - repeated exposure

Titanium dioxide : 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.

Aspiration hazard

Titanium dioxide : No aspiration toxicity classification

(2-Methoxymethylethoxy)propanol : No aspiration toxicity classification

Boron nitride : No aspiration toxicity classification

Other

Titanium dioxide : Repeated dose toxicity:
Oral/Rat
NOAEL: 1,000 mg/kg
Method: OECD Test Guideline 408
No toxicologically significant effects were found.

(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.

Section 12 - Ecological Information

Ecotoxicity effects

Acute and prolonged toxicity to fish

Titanium dioxide	:	LC50/96 h/Pimephales promelas (fathead minnow): > 1,000 mg/l
(2-Methoxymethylethoxy)propanol	:	LC50/96 h/Poecilia reticulata (guppy): > 1,000 mg/l Method: OECD Test Guideline 203
Boron nitride	:	LC50/96 h/Oncorhynchus mykiss (rainbow trout) Method: OECD Test Guideline 203 Aquatic toxicity is unlikely due to low solubility.

Toxicity to aquatic plants

Titanium dioxide	:	ErC50/72 h/Pseudokirchneriella subcapitata (green algae): > 100 mg/l Method: see user defined free text NOEC/72 h/Algae: 5,600 mg/l Method: see user defined free text
(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

Acute toxicity to aquatic invertebrates

Titanium dioxide	:	EC50/48 h/Daphnia magna (Water flea): > 100 mg/l Method: OECD Test Guideline 202
(2-Methoxymethylethoxy)propanol	:	EC50/48 h/Daphnia magna (Water flea) Method: OECD Test Guideline 202 Aquatic toxicity is unlikely due to low solubility.
Boron nitride	:	EC50/48 h/Daphnia magna (Water flea) Method: OECD Test Guideline 202 Aquatic toxicity is unlikely due to low solubility.

Persistence and degradability

(2-Methoxymethylethoxy)propanol	:	Result: Biodegradable Readily biodegradable.

Bioaccumulation

Boron nitride	:	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

Not classified as dangerous in the meaning of transport regulations.

China Dangerous Goods Regulation

UN number	:	Not applicable
Proper shipping name	:	Not applicable
Class	:	Not applicable
Packing group	:	Not applicable

IMDG

UN number	:	Not applicable
UN proper shipping name	:	Not applicable
Transport hazard class	:	Not applicable
Packing group	:	Not applicable
Marine pollutant	:	Not applicable

IATA

UN number	:	Not applicable
UN proper shipping name	:	Not applicable
Transport hazard class	:	Not applicable
Packing group	:	Not applicable

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)

Section 16 - Other Information

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

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