



## Safety Data Sheet

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<b>Issue Date:</b>	03/09/15	<b>Supersedes Date:</b>	08/26/13

### Product identifier

3M™ Wind Blade Protection Coating W4600 Gray (RAL 7035)

### ID Number(s):

GR-2001-4223-4

### Recommended use

Coating

### Supplier's details

<b>MANUFACTURER:</b>	3M
<b>DIVISION:</b>	Renewable Energy Division
<b>ADDRESS:</b>	3M Center, St. Paul, MN 55144-1000, USA
<b>Telephone:</b>	1-888-3M HELPS (1-888-364-3577)

### Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

**This product is a kit or a multipart product which consists of multiple, independently packaged components. A Safety Data Sheet (SDS), Article Information Sheet (AIS), or Article Information Letter (AIL) for each of these components is included. Please do not separate the component documents from this cover page. The document numbers for components of this product are:**

29-5529-2, 29-4711-7

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<b>Document Group:</b>	29-5529-2	<b>Version Number:</b>	5.00
<b>Issue Date:</b>	10/08/14	<b>Supersedes Date:</b>	08/26/13

### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Wind Blade Protection Coating W4600 Part A

#### Product Identification Numbers

GR-2001-3480-1

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Coating

#### 1.3. Supplier's details

<b>MANUFACTURER:</b>	3M
<b>DIVISION:</b>	Renewable Energy Division
<b>ADDRESS:</b>	3M Center, St. Paul, MN 55144-1000, USA
<b>Telephone:</b>	1-888-3M HELPS (1-888-364-3577)

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Respiratory Sensitizer: Category 1A.

Skin Sensitizer: Category 1A.

#### 2.2. Label elements

##### Signal word

Danger

##### Symbols

Health Hazard |

##### Pictograms

**Hazard Statements**

May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.

**Precautionary Statements****Prevention:**

Avoid breathing dust/fume/gas/mist/vapors/spray.  
In case of inadequate ventilation wear respiratory protection.  
Wear protective gloves.  
Contaminated work clothing must not be allowed out of the workplace.

**Response:**

IF INHALED: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.  
If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.  
IF ON SKIN: Wash with plenty of soap and water.  
If skin irritation or rash occurs: Get medical advice/attention.  
Wash contaminated clothing before reuse.

**Disposal:**

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

**2.3. Hazards not otherwise classified**

Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

## SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
POLYISOCYANATE BASED ON HDI	9048-90-2	> 95
HEXAMETHYLENE DIISOCYANATE	822-06-0	< 0.5 Trade Secret *

\*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

## SECTION 4: First aid measures

**4.1. Description of first aid measures****Inhalation:**

Remove person to fresh air. If you feel unwell, get medical attention.

**Skin Contact:**

Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

**Eye Contact:**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If Swallowed:**

Rinse mouth. If you feel unwell, get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed**

See Section 11.1. Information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

## **SECTION 5: Fire-fighting measures**

**5.1. Suitable extinguishing media**

In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

**5.2. Special hazards arising from the substance or mixture**

Closed containers exposed to heat from fire may build pressure and explode.

**5.3. Special protective actions for fire-fighters**

No special protective actions for fire-fighters are anticipated.

## **SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Warning! A motor could be an ignition source and could cause flammable gases or vapors in the spill area to burn or explode. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**6.2. Environmental precautions**

Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

**6.3. Methods and material for containment and cleaning up**

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a container approved for transportation by appropriate authorities, but do not seal the container for 48 hours to avoid pressure build-up. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Dispose of collected material as soon as possible.

## **SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

For industrial or professional use only. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

**7.2. Conditions for safe storage including any incompatibilities**

Keep container tightly closed to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from strong bases.

## **SECTION 8: Exposure controls/personal protection**

## 8.1. Control parameters

### Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
FREE ISOCYANATES	822-06-0	Manufacturer determined	TWA:0.005 ppm;STEL:0.02 ppm	
HEXAMETHYLENE DIISOCYANATE	822-06-0	ACGIH	TWA:0.005 ppm	
HEXAMETHYLENE DIISOCYANATE	822-06-0	CMRG	CEIL:0.02 ppm	

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

## 8.2. Exposure controls

### 8.2.1. Engineering controls

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

### 8.2.2. Personal protective equipment (PPE)

#### Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Safety Glasses with side shields

#### Skin/hand protection

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Butyl Rubber  
Fluoroelastomer

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron – Butyl rubber

#### Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

General Physical Form:	Liquid
Odor, Color, Grade:	Viscous, colorless liquid with a pungent odor.
Odor threshold	No Data Available
pH	Not Applicable
Melting point	Not Applicable
Boiling Point	> 356 °F [@ 760 mmHg]
Flash Point	>=482 °F [Test Method: Closed Cup]
Evaporation rate	No Data Available
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	0.9 %
Flammable Limits(UEL)	9.5 %
Vapor Pressure	15.8 mmHg [@ 20 °C]
Vapor Density	<=1 [Ref Std: AIR=1]
Density	1.09 g/ml
Specific Gravity	1.09 [Ref Std: WATER=1]
Solubility in Water	Nil [Details: Reacts slowly with water to liberate CO2 gas]
Solubility- non-water	No Data Available
Partition coefficient: n-octanol/ water	No Data Available
Autoignition temperature	415 °C
Decomposition temperature	No Data Available
Viscosity	Approximately
Volatile Organic Compounds	<=20 g/l [Test Method: tested per EPA method 24] [Details: as used, when reacted with part B]

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

### 10.2. Chemical stability

Stable.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization may occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials

Water  
Amines  
Strong bases  
Alcohols  
Alkali and alkaline earth metals

### 10.6. Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
Carbon monoxide	Oxidation, heat or reaction
Carbon dioxide	Oxidation, heat or reaction
Hydrogen Cyanide	Oxidation, heat or reaction

Oxides of Nitrogen

Oxidation, heat or reaction

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

### 11.1. Information on Toxicological effects

#### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

#### Inhalation:

May be harmful if inhaled. Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Allergic Respiratory Reaction: Signs/symptoms may include difficulty breathing, wheezing, cough, and tightness of chest.

#### Skin Contact:

May be harmful in contact with skin.

Contact with the skin during product use is not expected to result in significant irritation. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

#### Eye Contact:

Contact with the eyes during product use is not expected to result in significant irritation.

#### Ingestion:

No health effects are expected.

#### Additional Information:

Persons previously sensitized to isocyanates may develop a cross-sensitization reaction to other isocyanates.

#### Toxicological Data

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

#### Acute Toxicity

Name	Route	Species	Value
POLYISOCYANATE BASED ON HDI	Dermal	Rat	LD50 > 2,000 mg/kg
POLYISOCYANATE BASED ON HDI	Ingestion	Rat	LD50 > 5,000 mg/kg
HEXAMETHYLENE DIISOCYANATE	Dermal	Rabbit	LD50 570 mg/kg
HEXAMETHYLENE DIISOCYANATE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.12 mg/l
HEXAMETHYLENE DIISOCYANATE	Ingestion	Rat	LD50 710 mg/kg

ATE = acute toxicity estimate

#### Skin Corrosion/Irritation

Name	Species	Value
HEXAMETHYLENE DIISOCYANATE	Rabbit	Corrosive

#### Serious Eye Damage/Irritation



Name	Species	Value
HEXAMETHYLENE DIISOCYANATE	Rabbit	Corrosive

**Skin Sensitization**

Name	Species	Value
HEXAMETHYLENE DIISOCYANATE	Multiple animal species	Sensitizing

**Respiratory Sensitization**

Name	Species	Value
HEXAMETHYLENE DIISOCYANATE	Human and animal	Sensitizing

**Germ Cell Mutagenicity**

Name	Route	Value
HEXAMETHYLENE DIISOCYANATE	In Vitro	Not mutagenic
HEXAMETHYLENE DIISOCYANATE	In vivo	Not mutagenic

**Carcinogenicity**

Name	Route	Species	Value
HEXAMETHYLENE DIISOCYANATE	Inhalation	Rat	Not carcinogenic

**Reproductive Toxicity****Reproductive and/or Developmental Effects**

Name	Route	Value	Species	Test Result	Exposure Duration
HEXAMETHYLENE DIISOCYANATE	Inhalation	Not toxic to female reproduction	Rat	NOAEL 0.002 mg/l	7 weeks
HEXAMETHYLENE DIISOCYANATE	Inhalation	Not toxic to development	Rat	NOAEL 0.002 mg/l	7 weeks
HEXAMETHYLENE DIISOCYANATE	Inhalation	Some positive male reproductive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.014 mg/l	4 weeks

**Target Organ(s)****Specific Target Organ Toxicity - single exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
HEXAMETHYLENE DIISOCYANATE	Inhalation	respiratory irritation	May cause respiratory irritation	Human and animal	NOAEL Not available	
HEXAMETHYLENE DIISOCYANATE	Inhalation	blood	Some positive data exist, but the data are not sufficient for classification	Human	NOAEL Not available	occupational exposure

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
HEXAMETHYLENE DIISOCYANATE	Inhalation	liver   kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.002 mg/l	3 weeks
HEXAMETHYLENE DIISOCYANATE	Inhalation	endocrine system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.0014 mg/l	4 weeks
HEXAMETHYLENE DIISOCYANATE	Inhalation	blood	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.0012 mg/l	2 years
HEXAMETHYLENE DIISOCYANATE	Inhalation	nervous system	All data are negative	Rat	NOAEL 0.002 mg/l	7 weeks

HEXAMETHYLENE DIISOCYANATE	Inhalation	heart	All data are negative	Rat	NOAEL 0.001 mg/l	90 days
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**Aspiration Hazard**

Name	Value
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Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

**SECTION 12: Ecological information****Ecotoxicological information**

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

**Chemical fate information**

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

**SECTION 13: Disposal considerations****13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. As a disposal alternative, utilize an acceptable permitted waste disposal facility. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

**EPA Hazardous Waste Number (RCRA):** Not regulated

**SECTION 14: Transport Information**

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

**SECTION 15: Regulatory information****15.1. US Federal Regulations**

Contact 3M for more information.

**311/312 Hazard Categories:**

Fire Hazard - No    Pressure Hazard - No    Reactivity Hazard - Yes    Immediate Hazard - Yes    Delayed Hazard - No

**15.2. State Regulations**

Contact 3M for more information.

**15.3. Chemical Inventories**

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

#### 15.4. International Regulations

Contact 3M for more information.

**This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.**

### SECTION 16: Other information

#### NFPA Hazard Classification

**Health: 2 Flammability: 1 Instability: 1 Special Hazards: None**

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

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**Supersedes Date:** 08/26/13

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<b>Document Group:</b>	29-4711-7	<b>Version Number:</b>	7.00
<b>Issue Date:</b>	05/28/15	<b>Supersedes Date:</b>	08/26/13

### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Wind Blade Protection Coating W4600 Gray (RAL 7035) Part B

#### Product Identification Numbers

GR-2001-3479-3, GW-0000-1053-8

#### 1.2. Recommended use and restrictions on use

##### Recommended use

Coating

#### 1.3. Supplier's details

<b>MANUFACTURER:</b>	3M
<b>DIVISION:</b>	Renewable Energy Division
<b>ADDRESS:</b>	3M Center, St. Paul, MN 55144-1000, USA
<b>Telephone:</b>	1-888-3M HELPS (1-888-364-3577)

#### 1.4. Emergency telephone number

1-800-364-3577 or (651) 737-6501 (24 hours)

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Skin Sensitizer: Category 1A.

#### 2.2. Label elements

##### Signal word

Warning

##### Symbols

Exclamation mark |

##### Pictograms



**Hazard Statements**

May cause an allergic skin reaction.

**Precautionary Statements****Prevention:**

Avoid breathing dust/fume/gas/mist/vapors/spray.

Wear protective gloves.

Contaminated work clothing must not be allowed out of the workplace.

**Response:**

IF ON SKIN: Wash with plenty of soap and water.

If skin irritation or rash occurs: Get medical advice/attention.

Wash contaminated clothing before reuse.

**Disposal:**

Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

**2.3. Hazards not otherwise classified**

None.

42% of the mixture consists of ingredients of unknown acute oral toxicity.

**SECTION 3: Composition/information on ingredients**

<b>Ingredient</b>	<b>C.A.S. No.</b>	<b>% by Wt</b>
POLYURETHANE POLYOL (NJTSRN 04499600-7366)	Trade Secret*	30 - 60
TITANIUM DIOXIDE	13463-67-7	15 - 40
1,4-BUTANEDIOL	110-63-4	5 - 10
INORGANIC FILLER (NJTSRN 04499600-7365)	Trade Secret*	3 - 7
HYDROPHOBIC FUMED SILICA	68909-20-6	3 - 7
2,4-PENTANEDIONE	123-54-6	1 - 5
UV Absorber	104810-48-2	< 2
POLYMERIC BENZOTRIAZOLE	104810-47-1	< 2
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	41556-26-7	0.1 - 1.5 Trade Secret *
Modified Urea (NJTSRN 04499600-7367)	Trade Secret*	0.1 - 1.5
DIMETHYL SULFOXIDE	67-68-5	0.1 - 1 Trade Secret *
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	82919-37-7	0.1 - 1 Trade Secret *

NJTS or NJTSRN: New Jersey Trade Secret Registry Number.

\*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

**SECTION 4: First aid measures****4.1. Description of first aid measures****Inhalation:**

Remove person to fresh air. If you feel unwell, get medical attention.

**Skin Contact:**

Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

**Eye Contact:**

Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

**If Swallowed:**

Rinse mouth. If you feel unwell, get medical attention.

**4.2. Most important symptoms and effects, both acute and delayed**

See Section 11.1. Information on toxicological effects.

**4.3. Indication of any immediate medical attention and special treatment required**

Not applicable

## SECTION 5: Fire-fighting measures

**5.1. Suitable extinguishing media**

In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

**5.2. Special hazards arising from the substance or mixture**

None inherent in this product.

**5.3. Special protective actions for fire-fighters**

No special protective actions for fire-fighters are anticipated.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**

Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

**6.2. Environmental precautions**

Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

**6.3. Methods and material for containment and cleaning up**

Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Remember, adding an absorbent material does not remove a physical, health, or environmental hazard. Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and SDS. Seal the container. Dispose of collected material as soon as possible.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**

For industrial or professional use only. Avoid breathing dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before

reuse.

## 7.2. Conditions for safe storage including any incompatibilities

Store away from acids. Store away from strong bases.

# SECTION 8: Exposure controls/personal protection

## 8.1. Control parameters

### Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
2,4-PENTANEDIONE	123-54-6	ACGIH	TWA:25 ppm	Skin Notation
2,4-PENTANEDIONE	123-54-6	Manufacturer determined	TWA:20 ppm	Skin Notation
TITANIUM DIOXIDE	13463-67-7	ACGIH	TWA:10 mg/m3	A4: Not class. as human carcin
TITANIUM DIOXIDE	13463-67-7	CMRG	TWA(as respirable dust):5 mg/m3	
TITANIUM DIOXIDE	13463-67-7	OSHA	TWA(as total dust):15 mg/m3	
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	41556-26-7	CMRG	TWA:1 mg/m3	
DIMETHYL SULFOXIDE	67-68-5	AIHA	TWA:250 ppm	
SILICA, AMORPHOUS	68909-20-6	OSHA	TWA concentration:0.8 mg/m3;TWA:20 millions of particles/cu. ft.	
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	82919-37-7	CMRG	TWA:1 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

OSHA : United States Department of Labor - Occupational Safety and Health Administration

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

## 8.2. Exposure controls

### 8.2.1. Engineering controls

Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment.

### 8.2.2. Personal protective equipment (PPE)

#### Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

Safety Glasses with side shields

#### Skin/hand protection

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions.

Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended: Butyl Rubber

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron – Butyl rubber

#### Respiratory protection

None required.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

General Physical Form:	Liquid
Odor, Color, Grade:	Thick gray liquid
Odor threshold	No Data Available
pH	Not Applicable
Melting point	Not Applicable
Boiling Point	>=446 °F
Flash Point	>=201 °F [Test Method: Closed Cup]
Evaporation rate	No Data Available
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	1.9 %
Flammable Limits(UEL)	13.2 %
Vapor Pressure	<=0.08 mmHg [@ 20 °C]
Vapor Density	<=1 [Ref Std: AIR=1]
Density	1.46 g/ml
Specific Gravity	1.46 [Ref Std: WATER=1]
Solubility in Water	Negligible
Solubility- non-water	No Data Available
Partition coefficient: n-octanol/ water	No Data Available
Autoignition temperature	>=245 °C
Decomposition temperature	No Data Available
Viscosity	No Data Available
Volatile Organic Compounds	<=20 g/l [Test Method: tested per EPA method 24] [Details: as used, when reacted with part A]

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

### 10.2. Chemical stability

Stable.

### 10.3. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials



Strong acids  
Strong bases

#### 10.6. Hazardous decomposition products

##### Substance

Carbon monoxide  
Carbon dioxide  
Oxides of Nitrogen

##### Condition

Oxidation, heat or reaction  
Oxidation, heat or reaction  
Oxidation, heat or reaction

## SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

#### 11.1. Information on Toxicological effects

##### Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

##### **Inhalation:**

Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

##### **Skin Contact:**

Contact with the skin during product use is not expected to result in significant irritation. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

##### **Eye Contact:**

Contact with the eyes during product use is not expected to result in significant irritation.

##### **Ingestion:**

No known health effects.

##### **Carcinogenicity:**

<u>Ingredient</u>	<u>CAS No.</u>	<u>Class Description</u>	<u>Regulation</u>
TITANIUM DIOXIDE	13463-67-7	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

#### Toxicological Data

If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

##### Acute Toxicity

<u>Name</u>	<u>Route</u>	<u>Species</u>	<u>Value</u>
TITANIUM DIOXIDE	Dermal	Rabbit	LD50 > 10,000 mg/kg
TITANIUM DIOXIDE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.82 mg/l
TITANIUM DIOXIDE	Ingestion	Rat	LD50 > 10,000 mg/kg
1,4-BUTANEDIOL	Dermal	Rat	LD50 > 5,000 mg/kg
1,4-BUTANEDIOL	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.1 mg/l

1,4-BUTANEDIOL	Ingestion	Rat	LD50 1,500 mg/kg
HYDROPHOBIC FUMED SILICA	Dermal	Rabbit	LD50 > 5,000 mg/kg
HYDROPHOBIC FUMED SILICA	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
HYDROPHOBIC FUMED SILICA	Ingestion	Rat	LD50 > 5,110 mg/kg
2,4-PENTANEDIONE	Dermal	Rabbit	LD50 790 mg/kg
2,4-PENTANEDIONE	Inhalation-Vapor (4 hours)	Rat	LC50 5.1 mg/l
2,4-PENTANEDIONE	Ingestion	Rat	LD50 570 mg/kg
POLYMERIC BENZOTRIAZOLE	Dermal	Rat	LD50 > 2,000 mg/kg
POLYMERIC BENZOTRIAZOLE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.8 mg/l
POLYMERIC BENZOTRIAZOLE	Ingestion	Rat	LD50 > 5,000 mg/kg
UV Absorber	Dermal	Rat	LD50 > 2,000 mg/kg
UV Absorber	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.8 mg/l
UV Absorber	Ingestion	Rat	LD50 > 5,000 mg/kg
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	Ingestion	Rat	LD50 3,125 mg/kg
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	Ingestion	Rat	LD50 3,125 mg/kg

ATE = acute toxicity estimate

#### Skin Corrosion/Irritation

Name	Species	Value
TITANIUM DIOXIDE	Rabbit	No significant irritation
1,4-BUTANEDIOL	Rabbit	No significant irritation
HYDROPHOBIC FUMED SILICA	Rabbit	No significant irritation
POLYMERIC BENZOTRIAZOLE	Rabbit	No significant irritation
UV Absorber	Rabbit	No significant irritation
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	Rabbit	No significant irritation
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	Rabbit	No significant irritation

#### Serious Eye Damage/Irritation

Name	Species	Value
TITANIUM DIOXIDE	Rabbit	No significant irritation
1,4-BUTANEDIOL	Rabbit	Mild irritant
HYDROPHOBIC FUMED SILICA	Rabbit	No significant irritation
POLYMERIC BENZOTRIAZOLE	Rabbit	No significant irritation
UV Absorber	Rabbit	No significant irritation
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	Rabbit	No significant irritation
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	Rabbit	No significant irritation

#### Skin Sensitization

Name	Species	Value
TITANIUM DIOXIDE	Human and animal	Not sensitizing
1,4-BUTANEDIOL	Human and animal	Not sensitizing
HYDROPHOBIC FUMED SILICA	Human and animal	Not sensitizing
POLYMERIC BENZOTRIAZOLE	Guinea pig	Sensitizing
UV Absorber	Guinea pig	Sensitizing
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	Guinea pig	Sensitizing
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	Guinea	Sensitizing

pig

**Respiratory Sensitization**

For the component/components, either no data are currently available or the data are not sufficient for classification.

**Germ Cell Mutagenicity**

Name	Route	Value
TITANIUM DIOXIDE	In Vitro	Not mutagenic
TITANIUM DIOXIDE	In vivo	Not mutagenic
1,4-BUTANEDIOL	In Vitro	Not mutagenic
HYDROPHOBIC FUMED SILICA	In Vitro	Not mutagenic
BIS(1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL) SEBACATE	In Vitro	Not mutagenic
METHYL 1,2,2,6,6-PENTAMETHYL-4-PIPERIDINYL SEBACATE	In Vitro	Not mutagenic

**Carcinogenicity**

Name	Route	Species	Value
TITANIUM DIOXIDE	Ingestion	Multiple animal species	Not carcinogenic
TITANIUM DIOXIDE	Inhalation	Rat	Carcinogenic
HYDROPHOBIC FUMED SILICA	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification

**Reproductive Toxicity****Reproductive and/or Developmental Effects**

Name	Route	Value	Species	Test Result	Exposure Duration
1,4-BUTANEDIOL	Ingestion	Some positive developmental data exist, but the data are not sufficient for classification	Mouse	NOAEL 600 mg/kg/day	during organogenesis
HYDROPHOBIC FUMED SILICA	Ingestion	Not toxic to female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
HYDROPHOBIC FUMED SILICA	Ingestion	Not toxic to male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
HYDROPHOBIC FUMED SILICA	Ingestion	Not toxic to development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis

**Target Organ(s)****Specific Target Organ Toxicity - single exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
1,4-BUTANEDIOL	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Rat	LOAEL 4.6 mg/l	4 hours
1,4-BUTANEDIOL	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Multiple animal species	NOAEL Not available	not available
1,4-BUTANEDIOL	Ingestion	central nervous system depression	May cause drowsiness or dizziness	Human	NOAEL Not available	

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
TITANIUM DIOXIDE	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.010 mg/l	2 years
TITANIUM DIOXIDE	Inhalation	pulmonary fibrosis	All data are negative	Human	NOAEL Not available	occupational exposure
1,4-BUTANEDIOL	Inhalation	heart   blood   liver   immune system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 5.2 mg/l	2 weeks

1,4-BUTANEDIOL	Inhalation	nervous system   kidney and/or bladder	All data are negative	Rat	NOAEL 0.5 mg/l	4 months
1,4-BUTANEDIOL	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 500 mg/kg/day	28 days
HYDROPHOBIC FUMED SILICA	Inhalation	respiratory system   silicosis	All data are negative	Human	NOAEL Not available	occupational exposure

**Aspiration Hazard**

For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

**SECTION 12: Ecological information****Ecotoxicological information**

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

**Chemical fate information**

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

**SECTION 13: Disposal considerations****13.1. Disposal methods**

Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of completely cured (or polymerized) material in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

**SECTION 14: Transport Information**

For Transport Information, please visit <http://3M.com/Transportinfo> or call 1-800-364-3577 or 651-737-6501.

**SECTION 15: Regulatory information****15.1. US Federal Regulations**

Contact 3M for more information.

**311/312 Hazard Categories:**

Fire Hazard - No   Pressure Hazard - No   Reactivity Hazard - No   Immediate Hazard - Yes   Delayed Hazard - No

This material contains a chemical which requires export notification under TSCA Section 12[b]:

<u>Ingredient (Category if applicable)</u>	<u>C.A.S. No</u>	<u>Regulation</u>	<u>Status</u>
2,4-PENTANEDIONE	123-54-6	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Proposed

This material contains a chemical subject to a proposed EPA Significant New Use Rule (TSCA Section 5)

<u>Ingredient (Category if applicable)</u>	<u>C.A.S. No</u>	<u>Reference</u>
2,4-PENTANEDIONE	123-54-6	proposed SNUR

## 15.2. State Regulations

Contact 3M for more information.

## 15.3. Chemical Inventories

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Japan Chemical Substance Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA.

Contact 3M for more information.

## 15.4. International Regulations

Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

## SECTION 16: Other information

### NFPA Hazard Classification

Health: 2 Flammability: 1 Instability: 0 Special Hazards: None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

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