



Safety Data Sheet

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SECTION 1: Identification

1.1. Product identifier

3M™ Wind Blade Protection Coating W4601 part B

Product Identification Numbers

41-9502-0062-0, 70-0067-9415-3, UU-0030-1389-1, UU-0030-9264-8

1.2. Recommended use and restrictions on use

Recommended use

Coating, Do not allow release to water during use, clean-up and disposal.

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Renewable Energy Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	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

Serious Eye Damage/Irritation: Category 2A.
Reproductive Toxicity: Category 1B.
Carcinogenicity: Category 2.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements

Signal word

Danger

Symbols

Exclamation mark | Health Hazard |

Pictograms



Hazard Statements

Causes serious eye irritation.
 May cause drowsiness or dizziness.
 May damage fertility or the unborn child.
 Suspected of causing cancer.

Precautionary Statements

Prevention:

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Avoid breathing dust/fume/gas/mist/vapors/spray.
 Use only outdoors or in a well-ventilated area.
 Wear protective gloves and eye/face protection.
 Wash thoroughly after handling.

Response:

IF INHALED: Remove person to fresh air and keep comfortable for breathing.
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 If eye irritation persists: Get medical advice/attention.
 IF exposed or concerned: Get medical advice/attention.

Storage:

Store in a well-ventilated place. Keep container tightly closed.
 Store locked up.

Disposal:

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

2.3. Hazards not otherwise classified

None.

6% of the mixture consists of ingredients of unknown acute oral toxicity.
 6% of the mixture consists of ingredients of unknown acute dermal toxicity.
 34% of the mixture consists of ingredients of unknown acute inhalation toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Titanium Dioxide	13463-67-7	30 - 60 Trade Secret *
1,4-BUTANEDIOL	110-63-4	10 - 30 Trade Secret *
Zeolites	1318-02-1	10 - 30
2,4-PENTANEDIONE	123-54-6	1 - 5 Trade Secret *
BASIC POLYURETHANE OLIGOMER	Trade Secret*	1 - 5
Light Stabilizer	129757-67-1	1 - 5
Fluorinated Sulfonamide Alcohol	Trade Secret*	1 - 5
Modified Urea Dispersion Aid (NJTSRN 800963-5136)	Trade Secret*	1 - 5
Alumina Trihydrate	21645-51-2	0.5 - 1.5

N-ETHYLPYRROLIDONE	2687-91-4	0.1 - 1.5 Trade Secret *
.BETA.-HYDROXYISOBUTANOL	2163-42-0	0.1 - 1.5

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:

Wash with soap and water. If you feel unwell, get medical attention.

Eye Contact:

Immediately flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. 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. No release to 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

Do not handle until all safety precautions have been read and understood. Do not breathe 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. Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities

Store in a well-ventilated place. Keep container tightly closed.

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
2,4-PENTANEDIONE	123-54-6	Manufacturer determined	TWA:20 ppm	SKIN
Light Stabilizer	129757-67-1	CMRG	TWA:2.5 mg/m3	
Aluminum, insoluble compounds	1318-02-1	ACGIH	TWA(respirable fraction):1 mg/m3	A4: Not class. as human carcin
Titanium Dioxide	13463-67-7	OSHA	TWA(as total dust):15 mg/m3	
Titanium Dioxide	13463-67-7	CMRG	TWA(as respirable dust):5 mg/m3	
Titanium Dioxide	13463-67-7	ACGIH	TWA:10 mg/m3	A4: Not class. as human carcin
Aluminum, insoluble compounds	21645-51-2	ACGIH	TWA(respirable fraction):1 mg/m3	A4: Not class. as human carcin

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:

Indirect Vented Goggles

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: Nitrile 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
Specific Physical Form:	Thixotropic liquid
Odor, Color, Grade:	Faint odour, Grey, N/A
Odor threshold	<i>No Data Available</i>
pH	<i>Not Applicable</i>
Melting point	<i>No Data Available</i>
Boiling Point	<i>No Data Available</i>
Flash Point	≥212 °F [<i>Test Method: Closed Cup</i>]
Evaporation rate	<i>Not Applicable</i>
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	<i>Not Applicable</i>
Flammable Limits(UEL)	<i>Not Applicable</i>
Vapor Pressure	<i>No Data Available</i>
Vapor Density	<i>No Data Available</i>
Density	1.500 g/cm ³
Specific Gravity	1.500
Solubility In Water	<i>No Data Available</i>
Solubility- non-water	Nil
Partition coefficient: n-octanol/ water	<i>No Data Available</i>
Autoignition temperature	<i>No Data Available</i>
Decomposition temperature	<i>No Data Available</i>
Viscosity	500 - 6,000 mPa-s

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

Not determined

10.5. Incompatible materials

None known.

10.6. Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
None known.	

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.

May cause additional health effects (see below).

Skin Contact:

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

Eye Contact:

Severe Eye Irritation: Signs/symptoms may include significant redness, swelling, pain, tearing, cloudy appearance of the cornea, and impaired vision.

Ingestion:

May be harmful if swallowed.

Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause additional health effects (see below).

Additional Health Effects:

Single exposure may cause target organ effects:

Central Nervous System (CNS) Depression: Signs/symptoms may include headache, dizziness, drowsiness, incoordination, nausea, slowed reaction time, slurred speech, giddiness, and unconsciousness.

Reproductive/Developmental Toxicity:

Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:

Contains a chemical or chemicals which can cause cancer.

<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>
Overall product	Dermal		No data available; calculated ATE > 5,000 mg/kg
Overall product	Inhalation-Vapor(4 hr)		No data available; calculated ATE > 50 mg/l
Overall product	Ingestion		No data available; calculated ATE 2,000 - 5,000 mg/kg
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
Zeolites	Dermal	Rabbit	LD50 > 2,000 mg/kg
Zeolites	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 4.57 mg/l
Zeolites	Ingestion	Rat	LD50 > 5,000 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
Light Stabilizer	Dermal	Rat	LD50 > 2,000 mg/kg
Light Stabilizer	Ingestion	Rat	LD50 > 2,000 mg/kg
Fluorinated Sulfonamide Alcohol	Dermal	Professional judgement	LD50 Not available
Fluorinated Sulfonamide Alcohol	Ingestion	Rat	LD50 > 2,000 mg/kg
Alumina Trihydrate	Dermal		LD50 estimated to be > 5,000 mg/kg
Alumina Trihydrate	Ingestion	Rat	LD50 > 5,000 mg/kg
N-ETHYLPYRROLIDONE	Dermal	Rat	LD50 > 2,000 mg/kg
N-ETHYLPYRROLIDONE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.1 mg/l
N-ETHYLPYRROLIDONE	Ingestion	Rat	LD50 3,200 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

<u>Name</u>	<u>Species</u>	<u>Value</u>
Titanium Dioxide	Rabbit	No significant irritation
1,4-BUTANEDIOL	Rabbit	No significant irritation
Zeolites	Rabbit	No significant irritation
Fluorinated Sulfonamide Alcohol	Rabbit	No significant irritation

Alumina Trihydrate	Rabbit	No significant irritation
N-ETHYLPYRROLIDONE	Rabbit	Minimal irritation

Serious Eye Damage/Irritation

Name	Species	Value
Titanium Dioxide	Rabbit	No significant irritation
1,4-BUTANEDIOL	Rabbit	Mild irritant
Zeolites	Rabbit	Mild irritant
Fluorinated Sulfonamide Alcohol	Rabbit	No significant irritation
Alumina Trihydrate	Rabbit	No significant irritation
N-ETHYLPYRROLIDONE	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Titanium Dioxide	Human and animal	Not sensitizing
1,4-BUTANEDIOL	Human and animal	Not sensitizing
Fluorinated Sulfonamide Alcohol	Guinea pig	Not sensitizing
Alumina Trihydrate	Guinea pig	Not sensitizing
N-ETHYLPYRROLIDONE	Mouse	Not sensitizing

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
Fluorinated Sulfonamide Alcohol	In Vitro	Not mutagenic
N-ETHYLPYRROLIDONE	In Vitro	Not mutagenic
N-ETHYLPYRROLIDONE	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
Titanium Dioxide	Ingestion	Multiple animal species	Not carcinogenic
Titanium Dioxide	Inhalation	Rat	Carcinogenic
Alumina Trihydrate	Not Specified	Multiple animal species	Not carcinogenic

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
Alumina Trihydrate	Ingestion	Not toxic to development	Rat	NOAEL 768 mg/kg/day	during organogenesis
N-ETHYLPYRROLIDONE	Inhalation	Not toxic to female reproduction	Rat	NOAEL 0.2 mg/l	13 weeks

N-ETHYLPYRROLIDONE	Ingestion	Some positive male reproductive data exist, but the data are not sufficient for classification	Rat	NOAEL 300 mg/kg/day	3 months
N-ETHYLPYRROLIDONE	Dermal	Some positive developmental data exist, but the data are not sufficient for classification	Rat	NOAEL 400 mg/kg/day	during gestation
N-ETHYLPYRROLIDONE	Ingestion	Toxic to development	Rabbit	NOAEL 60 mg/kg/day	during gestation

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	
N-ETHYLPYRROLIDONE	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	similar health hazards	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 0.01 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
N-ETHYLPYRROLIDONE	Inhalation	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.2 mg/l	13 weeks
N-ETHYLPYRROLIDONE	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 0.06 mg/l	13 weeks
N-ETHYLPYRROLIDONE	Inhalation	heart skin endocrine system bone, teeth, nails, and/or hair hematopoietic system immune system muscles nervous system eyes kidney and/or bladder vascular system	All data are negative	Rat	NOAEL 0.2 mg/l	13 weeks
N-ETHYLPYRROLIDONE	Ingestion	nervous system	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 100 mg/kg/day	3 months
N-ETHYLPYRROLIDONE	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 1,000 mg/kg/day	3 months
N-ETHYLPYRROLIDONE	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for	Rat	NOAEL 100 mg/kg/day	3 months

			classification			
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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.

Do not release to water. 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

This material contains one or more substances that are subject to a TSCA Consent Order. Contact 3M for more information.

311/312 Hazard Categories:

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

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>
Fluorinated Sulfonamide Alcohol	Trade Secret	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Applicable
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 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 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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Reason for Reissue

Conversion to GHS format SDS.

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