Safety Data Sheet

Document Group:	37-3417-5	**Version Number:**	11.01
Issue Date:	05/03/21	**Supercedes Date:**	10/28/20

Product identifier
3M™ Wind Blade Protection Coating W4602

ID Number(s):

41-0006-0185-0, 80-6116-1936-4, 80-6116-2813-4

4010042696, 7100169178, 7100178103

Recommended use
Coating, Leading edge protection for wind turbine blades

Supplier's details

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

37-2646-0, 37-2643-7

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Safety Data Sheet

Document Group:	37-2646-0	**Version Number:**	15.00
Issue Date:	08/16/21	**Supercedes Date:**	05/19/21

SECTION 1: Identification

1.1. Product identifier
3M™ Wind Blade Protection Coating W4602 Part B

Product Identification Numbers
LC-H000-0301-0, 41-0006-0176-9, 80-0002-1541-0, 80-0002-1543-6
4010042694, 7100181848, 7100181864

1.2. Recommended use and restrictions on use

Recommended use
Coating, Leading edge protection coating for wind turbine blades

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Electrical Markets 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
Skin Sensitizer: Category 1B.
Reproductive Toxicity: Category 2.
Specific Target Organ Toxicity (repeated exposure): Category 2.

2.2. Label elements
Signal word
Warning

Symbols
Exclamation mark | Health Hazard |

Pictograms

Hazard Statements
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.

May cause damage to organs through prolonged or repeated exposure:
kidney/urinary tract |

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe 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.
IF exposed or concerned: Get medical advice/attention.

Storage:
Store locked up.

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

27% of the mixture consists of ingredients of unknown acute oral toxicity.
27% of the mixture consists of ingredients of unknown acute dermal toxicity.
27% 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 - 40 Trade Secret *
Fluorinated Polyurethane Prepolymer	Trade Secret*	15 - 30 Trade Secret *
1,4-Butanediol	110-63-4	< 20 Trade Secret *
Zeolites	1318-02-1	7 - 15 Trade Secret *
2,4-Pentanedione	123-54-6	1 - 5 Trade Secret *
4-Morpholinecarboxaldehyde	4394-85-8	1 - 5 Trade Secret *
Alumina Trihydrate	21645-51-2	1 - 5 Trade Secret *
C.I. Pigment Brown 29	12737-27-8	1 - 5 Trade Secret *
Fluorinated Sulfonamide Alcohol	34455-00-0	1 - 5 Trade Secret *
UV Inhibitor	129757-67-1	1 - 5 Trade Secret *
Modified Urea	Trade Secret*	1 - 5 Trade Secret *
Proprietary Polymer	Trade Secret*	1 - 5 Trade Secret *
C.I. Pigment Brown 24	68186-90-3	0.1 - 1 Trade Secret *

Trimethylolpropane	77-99-6	< 0.5 Trade Secret *
Hexamethylene diisocyanate	822-06-0	< 0.1 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:
No need for first aid is anticipated.

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

4.2. Most important symptoms and effects, both acute and delayed
No critical symptoms or effects. 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.

Hazardous Decomposition or By-Products

Substance	Condition
Chlorine	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Chloride	During Combustion
Hydrogen Fluoride	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Sulfur	During Combustion
Toxic Vapor, Gas, Particulate	During Combustion

5.3. Special protective actions for fire-fighters
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

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. Seal the container. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

Refer to Section 15 for additional information

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. Contaminated work clothing should not be allowed out of the workplace. Avoid release to the environment. Wash contaminated clothing before reuse. Use personal protective equipment (gloves, respirators, etc.) as required.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

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	Danger of cutaneous absorption
CHROMIUM (II) COMPOUNDS	12737-27-8	OSHA	TWA(as Cr):0.5 mg/m3	
CHROMIUM (III) COMPOUNDS	12737-27-8	ACGIH	TWA(as Cr(III), inhalable fraction):0.003 mg/m3;TWA(as Cr):0.5 mg/m3	A4: Not class. as human carcin
CHROMIUM (III) COMPOUNDS	12737-27-8	OSHA	TWA(as Cr):0.5 mg/m3	
Chromium, insoluble salts	12737-27-8	OSHA	TWA(as Cr):1 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	ACGIH	TWA:10 mg/m3	A4: Not class. as human carcin
Titanium Dioxide	13463-67-7	OSHA	TWA(as total dust):15 mg/m3	
Aluminum, insoluble compounds	21645-51-2	ACGIH	TWA(respirable fraction):1 mg/m3	A4: Not class. as human carcin
DUST, INERT OR NUISANCE	21645-51-2	OSHA	TWA(as total dust):15 mg/m3;TWA(as total dust):50	

			millions of particles/cu. ft.(15 mg/m3);TWA(respirable fraction):5 mg/m3;TWA(respirable fraction):15 millions of particles/cu. ft.(5 mg/m3)	
ANTIMONY COMPOUNDS	68186-90-3	ACGIH	TWA(as Sb):0.5 mg/m3	
ANTIMONY COMPOUNDS	68186-90-3	OSHA	TWA(as Sb):0.5 mg/m3	
CHROMIUM (III) COMPOUNDS	68186-90-3	ACGIH	TWA(as Cr(III), inhalable fraction):0.003 mg/m3;TWA(as Cr):0.5 mg/m3	A4: Not class. as human carcin
CHROMIUM (III) COMPOUNDS	68186-90-3	OSHA	TWA(as Cr):0.5 mg/m3	
Chromium, insoluble salts	68186-90-3	OSHA	TWA(as Cr):1 mg/m3	
Hexamethylene diisocyanate	822-06-0	ACGIH	TWA:0.005 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:
Full Face Shield
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: 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
Apron - polymer laminate

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

Appearance

Physical state	Liquid
Color	Gray

Specific Physical Form:	Thixotropic liquid
Odor	Faint Odor
Odor threshold	*No Data Available*
pH	*No Data Available*
Melting point	*No Data Available*
Boiling Point	*No Data Available*
Flash Point	>=212 ºF [*Test Method:*Closed Cup]
Evaporation rate	*Not Applicable*
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	*No Data Available*
Vapor Density	*No Data Available*
Density	1.500 g/cm3
Specific Gravity	1.500 [*Ref Std:*WATER=1]
Solubility In Water	*No Data Available*
Solubility- non-water	Nil
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*No Data Available*
Decomposition temperature	*No Data Available*
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

Substance	**Condition**
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

Extreme heat arising from situations such as misuse or equipment failure can generate hydrogen fluoride as a decomposition product.

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:
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:
May be harmful if swallowed.
May cause additional health effects (see below).

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects:
Kidney/Bladder Effects: Signs/symptoms may include changes in urine production, abdominal or lower back pain, increased protein in urine, increased blood urea nitrogen (BUN), blood in urine, and painful urination.

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:

Ingredient	CAS No.	Class Description	Regulation
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

Name	Route	Species	Value
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 ATE2,000 - 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
UV Inhibitor	Dermal	Rat	LD50 > 2,000 mg/kg
UV Inhibitor	Ingestion	Rat	LD50 > 2,000 mg/kg
4-Morpholinecarboxaldehyde	Dermal	Rabbit	LD50 > 18,400 mg/kg
4-Morpholinecarboxaldehyde	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 5.3 mg/l
4-Morpholinecarboxaldehyde	Ingestion	Rat	LD50 > 7,360 mg/kg
Fluorinated Sulfonamide Alcohol	Dermal	Rat	LD50 > 2,000 mg/kg
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
Trimethylolpropane	Dermal	Rabbit	LD50 > 10,000 mg/kg
Trimethylolpropane	Ingestion	Rat	LD50 > 5,000 mg/kg
Hexamethylene diisocyanate	Dermal	Rat	LD50 > 7,000 mg/kg
Hexamethylene diisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.124 mg/l
Hexamethylene diisocyanate	Inhalation-Vapor (4 hours)	Rat	LC50 0.124 mg/l
Hexamethylene diisocyanate	Ingestion	Rat	LD50 710 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
Zeolites	Rabbit	No significant irritation
UV Inhibitor	Rabbit	No significant irritation
4-Morpholinecarboxaldehyde	Rabbit	No significant irritation
Fluorinated Sulfonamide Alcohol	Rabbit	No significant irritation
Alumina Trihydrate	Rabbit	No significant irritation
Trimethylolpropane	Rabbit	No significant irritation
Hexamethylene diisocyanate	Rabbit	Corrosive

Serious Eye Damage/Irritation

Name	Species	Value
Titanium Dioxide	Rabbit	No significant irritation

1,4-Butanediol	Rabbit	Mild irritant
Zeolites	Rabbit	Mild irritant
UV Inhibitor	Rabbit	No significant irritation
4-Morpholinecarboxaldehyde	Rabbit	No significant irritation
Fluorinated Sulfonamide Alcohol	Rabbit	No significant irritation
Alumina Trihydrate	Rabbit	No significant irritation
Trimethylolpropane	Rabbit	No significant irritation
Hexamethylene diisocyanate	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
Titanium Dioxide	Human and animal	Not classified
1,4-Butanediol	Human and animal	Not classified
UV Inhibitor	Guinea pig	Not classified
4-Morpholinecarboxaldehyde	Mouse	Sensitizing
Fluorinated Sulfonamide Alcohol	Guinea pig	Not classified
Alumina Trihydrate	Guinea pig	Not classified
Trimethylolpropane	Mouse	Not classified
Hexamethylene diisocyanate	Multiple animal species	Sensitizing

Respiratory Sensitization

Name	Species	Value
Hexamethylene diisocyanate	Human and animal	Sensitizing

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
UV Inhibitor	In Vitro	Not mutagenic
UV Inhibitor	In vivo	Not mutagenic
4-Morpholinecarboxaldehyde	In Vitro	Not mutagenic
Fluorinated Sulfonamide Alcohol	In Vitro	Not mutagenic
Trimethylolpropane	In Vitro	Not mutagenic
Hexamethylene diisocyanate	In Vitro	Not mutagenic
Hexamethylene diisocyanate	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
Hexamethylene diisocyanate	Inhalation	Rat	Not carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
1,4-Butanediol	Ingestion	Not classified for development	Mouse	NOAEL 600 mg/kg/day	during organogenesis
UV Inhibitor	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	during gestation
4-Morpholinecarboxaldehyde	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating into lactation
4-Morpholinecarboxaldehyde	Inhalation	Not classified for female reproduction	Rat	NOAEL 1 mg/l	90 days
4-Morpholinecarboxaldehyde	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	28 days
4-Morpholinecarboxaldehyde	Inhalation	Not classified for male reproduction	Rat	NOAEL 1 mg/l	90 days
4-Morpholinecarboxaldehyde	Ingestion	Not classified for development	Rat	NOAEL 300 mg/kg/day	during gestation
Fluorinated Sulfonamide Alcohol	Ingestion	Not classified for female reproduction	Rat	NOAEL 300 mg/kg/day	premating into lactation
Fluorinated Sulfonamide Alcohol	Ingestion	Not classified for development	Rat	NOAEL 300 mg/kg/day	premating into lactation
Fluorinated Sulfonamide Alcohol	Ingestion	Not classified for male reproduction	Rat	NOAEL 300 mg/kg/day	28 days
Alumina Trihydrate	Ingestion	Not classified for development	Rat	NOAEL 768 mg/kg/day	during organogenesis
Trimethylolpropane	Ingestion	Toxic to female reproduction	Rat	NOAEL 2200 ppm in drinking water	2 generation
Trimethylolpropane	Ingestion	Toxic to male reproduction	Rat	NOAEL 2200 ppm in drinking water	2 generation
Trimethylolpropane	Ingestion	Toxic to development	Rat	LOAEL 740 ppm in drinking water	2 generation
Hexamethylene diisocyanate	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	Not classified for male reproduction	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
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	
4-Morpholinecarboxaldehyde	Inhalation	respiratory irritation	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL Not available	
Hexamethylene diisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	Human and animal	NOAEL Not available	
Hexamethylene diisocyanate	Inhalation	blood	Not classified	Human	NOAEL Not available	occupational exposure

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	Not classified	Human	NOAEL Not available	occupational exposure
1,4-Butanediol	Inhalation	heart | blood | liver | immune system	Not classified	Rat	NOAEL 5.2 mg/l	2 weeks
1,4-Butanediol	Inhalation	nervous system | kidney and/or bladder	Not classified	Rat	NOAEL 0.5 mg/l	4 months
1,4-Butanediol	Ingestion	liver	Not classified	Rat	NOAEL 500 mg/kg/day	28 days
UV Inhibitor	Ingestion	liver | nervous system | respiratory system | heart | endocrine system | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | immune system | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
4-Morpholinecarboxaldehyde	Inhalation	respiratory system	Not classified	Rat	LOAEL 0.1 mg/l	90 days
4-Morpholinecarboxaldehyde	Inhalation	heart | skin | endocrine system | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | liver | immune system | muscles | nervous system | eyes | kidney and/or bladder | vascular system	Not classified	Rat	NOAEL 1 mg/l	90 days
4-Morpholinecarboxaldehyde	Ingestion	heart | endocrine system | gastrointestinal tract | hematopoietic system | liver | immune system | nervous system | eyes | kidney and/or bladder | respiratory system	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Fluorinated Sulfonamide Alcohol	Ingestion	kidney and/or bladder	May cause damage to organs though prolonged or repeated exposure	Rat	NOAEL 100 mg/kg/day	28 days
Fluorinated Sulfonamide Alcohol	Ingestion	hematopoietic system | liver | immune system | heart | endocrine system | gastrointestinal tract | bone, teeth, nails, and/or hair | blood | muscles | nervous system | vascular system	Not classified	Rat	NOAEL 300 mg/kg/day	28 days
Trimethylolpropane	Inhalation	heart | gastrointestinal tract	Not classified	Rat	NOAEL 0.02 mg/l	15 days

		| hematopoietic system | liver | immune system | kidney and/or bladder | respiratory system				
Trimethylolpropane	Inhalation	endocrine system	Not classified		NOAEL 0.02 mg/l	15 days
Trimethylolpropane	Ingestion	hematopoietic system | liver | kidney and/or bladder | heart | skin | endocrine system | bone, teeth, nails, and/or hair | immune system | muscles | nervous system | respiratory system	Not classified	Rat	NOAEL 667 mg/kg/day	90 days
Hexamethylene diisocyanate	Inhalation	liver | kidney and/or bladder	Not classified	Rat	NOAEL 0.002 mg/l	3 weeks
Hexamethylene diisocyanate	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.0014 mg/l	4 weeks
Hexamethylene diisocyanate	Inhalation	blood	Not classified	Rat	NOAEL 0.0012 mg/l	2 years
Hexamethylene diisocyanate	Inhalation	nervous system	Not classified	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	heart	Not classified	Rat	NOAEL 0.001 mg/l	90 days

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 waste product in a permitted industrial waste facility. If no other disposal options are available, waste product that has been completely cured or polymerized may be placed in a landfill properly designed for industrial waste. 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): D007 (Chromium)

Refer to Section 15 for additional information

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.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Not applicable

Health Hazards
Reproductive toxicity
Respiratory or Skin Sensitization
Specific target organ toxicity (single or repeated exposure)

Section 313 Toxic Chemicals subject to the reporting requirements of that section and 40 CFR part 372 (EPCRA):

Ingredient	C.A.S. No	% by Wt
C.I. Pigment Brown 29 (CHROMIUM (III) COMPOUNDS)	12737-27-8	Trade Secret 1 - 5
C.I. Pigment Brown 24 (CHROMIUM (III) COMPOUNDS)	68186-90-3	Trade Secret 0.1 - 1

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

Ingredient (Category if applicable)	C.A.S. No	Regulation	Status
2,4-Pentanedione	123-54-6	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Proposed
Fluorinated Sulfonamide Alcohol	34455-00-0	Toxic Substances Control Act (TSCA) 5 SNUR or Consent Order Chemicals	Applicable

Additional TSCA Information

Components	CAS No	Additional Information
Fluorinated Polyurethane Prepolymer	Trade Secret	Allowed use(s): Component of protective coating.
Fluorinated Sulfonamide Alcohol	34455-00-0	Fluorinated sulfonamide alcohol. PMN Number P-09-0485. **Any predictable or purposeful release to water, or any waste stream from manufacturing, processing, and use containing this substance is strictly prohibited.**

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. One or more of the components in this material is not listed on the TSCA inventory, but is approved for specific commercial use(s) under a US EPA low volume exemption.

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: 3 **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.

The NFPA Health code of 3 is due to emergency situations where the material may thermally decompose and release Hydrogen Fluoride. During normal use conditions, please reference Section 2 and Section 11 of the SDS for additional health hazard information.

Document Group:	37-2646-0	**Version Number:**	15.00
Issue Date:	08/16/21	**Supercedes Date:**	05/19/21

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued. 3M MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE. User is responsible for determining whether the 3M product is fit for a particular purpose and suitable for user's method of use or application. Given the variety of factors that can affect the use and application of a 3M product, some of which are uniquely within the user's knowledge and control, it is essential that the user evaluate the 3M product to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

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Safety Data Sheet

Document Group:	37-2643-7	**Version Number:**	8.00
Issue Date:	10/28/20	**Supercedes Date:**	06/02/20

SECTION 1: Identification

1.1. Product identifier
3M™ Wind Blade Protection Coating W4602 Part A

Product Identification Numbers
LC-H000-0300-0, 80-0002-1539-4, 80-0002-1542-8
7100181734, 7100181735

1.2. Recommended use and restrictions on use

Recommended use
Coating, Leading edge protection for wind turbine blades

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Electrical Markets 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
Acute Toxicity (inhalation): Category 4.
Respiratory Sensitizer: Category 1A.
Skin Sensitizer: Category 1A.
Specific Target Organ Toxicity (single exposure): Category 3.

2.2. Label elements
Signal word
Danger

Symbols
Exclamation mark | Health Hazard |

Pictograms

Hazard Statements
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Harmful if inhaled.
May cause respiratory irritation.

Precautionary Statements

Prevention:
Avoid breathing dust/fume/gas/mist/vapors/spray.
Use only outdoors or in a well-ventilated area.
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: 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.
Call a POISON CENTER or doctor/physician if you feel unwell.

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.

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

1% of the mixture consists of ingredients of unknown acute oral toxicity.
1% of the mixture consists of ingredients of unknown acute dermal toxicity.
2% of the mixture consists of ingredients of unknown acute inhalation toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Tert-Butyl Acetate	540-88-5	< 1.5 Trade Secret *
Components Below Reportable Levels	Trade Secret*	< 1.5
DL-Alpha-Tocopherol	10191-41-0	< 0.5 Trade Secret *
Hexamethylene diisocyanate	822-06-0	< 0.5 Trade Secret *
Aliphatic polyisocyanate	9048-90-2	> 95 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
None inherent in this product.

Hazardous Decomposition or By-Products

Substance	Condition
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Cyanide	During Combustion
Oxides of Nitrogen	During Combustion

5.3. Special protective actions for fire-fighters
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

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. Pour isocyanate decontaminant solution (90% water, 8% concentrated ammonia, 2% detergent) on spill and allow to react for 10 minutes. Or pour water on spill and allow to react for more than 30 minutes. Cover with absorbent material. 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 in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
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 in a well-ventilated place. Keep container tightly closed to prevent contamination with water or air. If contamination is suspected, do not reseal container. Store away from amines.

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
Tert-Butyl Acetate	540-88-5	ACGIH	TWA:50 ppm;STEL:150 ppm	
Tert-Butyl Acetate	540-88-5	OSHA	TWA:950 mg/m3(200 ppm)	
Hexamethylene diisocyanate	822-06-0	ACGIH	TWA:0.005 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:
Full Face Shield
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. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.
Gloves made from the following material(s) are recommended: Polymer laminate

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 - polymer laminate

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

Appearance	
Physical state	Liquid
Color	Colorless
Specific Physical Form:	Viscous liquid
Odor	Slight Odor
Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point	>=-24 ºC
Boiling Point	>=180 ºC
Flash Point	>=212 ºF [*Test Method:*Closed Cup]
Evaporation rate	*Not Applicable*
Flammability (solid, gas)	Not Applicable
Flammable Limits(LEL)	*Not Applicable*
Flammable Limits(UEL)	*Not Applicable*
Vapor Pressure	21 mbar [@ 21 ºC]
Vapor Density	*No Data Available*
Density	1.090 g/cm3
Specific Gravity	1.090 [*Ref Std:*WATER=1]
Solubility In Water	*Not Applicable*
Solubility- non-water	Slight (less than 10%)
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	415 ºC
Decomposition temperature	*No Data Available*
Viscosity	4,000 mPa-s [@ 23 ºC]
Percent volatile	*No Data Available*

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
Alcohols
Amines
Water

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

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:
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.

May cause additional health effects (see below).

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 known health effects.

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
Overall product	Dermal		No data available; calculated ATE2,000 - 5,000 mg/kg
Overall product	Inhalation-Dust/Mist(4 hr)		No data available; calculated ATE1 - 5 mg/l
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
Aliphatic polyisocyanate	Dermal	Rat	LD50 > 2,000 mg/kg
Aliphatic polyisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 = 0.39 mg/l
Aliphatic polyisocyanate	Ingestion	Rat	LD50 > 5,000 mg/kg
Tert-Butyl Acetate	Dermal	Rabbit	LD50 > 2,000 mg/kg
Tert-Butyl Acetate	Inhalation-Vapor (4 hours)	Rat	LC50 14.9 mg/l
Tert-Butyl Acetate	Ingestion	Rat	LD50 4,500 mg/kg
Hexamethylene diisocyanate	Dermal	Rat	LD50 > 7,000 mg/kg
Hexamethylene diisocyanate	Inhalation-Dust/Mist (4 hours)	Rat	LC50 0.124 mg/l
Hexamethylene diisocyanate	Inhalation-Vapor (4 hours)	Rat	LC50 0.124 mg/l
Hexamethylene diisocyanate	Ingestion	Rat	LD50 710 mg/kg
DL-Alpha-Tocopherol	Dermal	Rat	LD50 > 3,000 mg/kg
DL-Alpha-Tocopherol	Ingestion	Rat	LD50 > 4,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Tert-Butyl Acetate	Rabbit	No significant irritation
Hexamethylene diisocyanate	Rabbit	Corrosive
DL-Alpha-Tocopherol	Rabbit	Minimal irritation

Serious Eye Damage/Irritation

Name	Species	Value
Tert-Butyl Acetate	Rabbit	Mild irritant
Hexamethylene diisocyanate	Rabbit	Corrosive
DL-Alpha-Tocopherol	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
Aliphatic polyisocyanate	Mouse	Sensitizing
Tert-Butyl Acetate	Guinea pig	Not classified
Hexamethylene diisocyanate	Multiple animal species	Sensitizing
DL-Alpha-Tocopherol	Mouse	Sensitizing

Respiratory Sensitization

Name	Species	Value
Hexamethylene diisocyanate	Human and animal	Sensitizing

Germ Cell Mutagenicity

Name	Route	Value
Tert-Butyl Acetate	In Vitro	Not mutagenic
Tert-Butyl Acetate	In vivo	Not mutagenic
Hexamethylene diisocyanate	In Vitro	Not mutagenic
Hexamethylene diisocyanate	In vivo	Not mutagenic
DL-Alpha-Tocopherol	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
Tert-Butyl Acetate	Inhalation	Not classified for female reproduction	Rat	NOAEL 7.6 mg/l	premating into lactation
Tert-Butyl Acetate	Inhalation	Not classified for male reproduction	Rat	NOAEL 7.6 mg/l	109 days
Tert-Butyl Acetate	Inhalation	Not classified for development	Rat	NOAEL 7.6 mg/l	premating into lactation
Tert-Butyl Acetate	Ingestion	Not classified for development	Rat	NOAEL 400 mg/kg/day	during gestation
Hexamethylene diisocyanate	Inhalation	Not classified for female reproduction	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	Not classified for development	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	Not classified for male reproduction	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
Aliphatic polyisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	Not available	NOAEL NA	
Tert-Butyl Acetate	Inhalation	central nervous system depression	May cause drowsiness or dizziness	Rat	NOAEL not available	
Tert-Butyl Acetate	Inhalation	respiratory irritation	May cause respiratory irritation	Rat	NOAEL not available	
Hexamethylene diisocyanate	Inhalation	respiratory irritation	May cause respiratory irritation	Human and animal	NOAEL Not available	
Hexamethylene diisocyanate	Inhalation	blood	Not classified	Human	NOAEL Not available	occupational exposure

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Tert-Butyl Acetate	Inhalation	endocrine system | liver	Not classified	Rat	NOAEL 7.6 mg/l	13 weeks
Tert-Butyl Acetate	Inhalation	kidney and/or bladder	Not classified	Rat	NOAEL 0.5 mg/l	13 weeks

Tert-Butyl Acetate	Inhalation	heart | skin | gastrointestinal tract | bone, teeth, nails, and/or hair | hematopoietic system | immune system | muscles | nervous system | eyes | respiratory system | vascular system	Not classified	Rat	NOAEL 7.6 mg/l	13 weeks
Hexamethylene diisocyanate	Inhalation	liver | kidney and/or bladder	Not classified	Rat	NOAEL 0.002 mg/l	3 weeks
Hexamethylene diisocyanate	Inhalation	endocrine system	Not classified	Rat	NOAEL 0.0014 mg/l	4 weeks
Hexamethylene diisocyanate	Inhalation	blood	Not classified	Rat	NOAEL 0.0012 mg/l	2 years
Hexamethylene diisocyanate	Inhalation	nervous system	Not classified	Rat	NOAEL 0.002 mg/l	7 weeks
Hexamethylene diisocyanate	Inhalation	heart	Not classified	Rat	NOAEL 0.001 mg/l	90 days

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. If no other disposal options are available, waste product that has been completely cured or polymerized may be placed in a landfill properly designed for industrial waste. 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.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Not applicable

Health Hazards
Acute toxicity
Respiratory or Skin Sensitization
Specific target organ toxicity (single or repeated exposure)

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 Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

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. All required components of this product are listed on the active portion of the TSCA Inventory.

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: 3 **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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