



Safety Data Sheet

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This Safety Data Sheet has been prepared in accordance with the Preparation of Safety Data Sheets for Hazardous Chemicals Code of Practice (Safe Work Australia, December 2011)

SECTION 1: Identification

1.1. Product identifier

3M™ Dyneon™ Fluoroelastomer FC 2176

Product Identification Numbers

98-0211-0358-9

1.2. Recommended use and restrictions on use

Recommended use

Fluoroelastomer

For Industrial or Professional use only.

1.3. Supplier's details

Address:	3M Australia - Building A, 1 Rivett Road, North Ryde NSW 2113
Telephone:	136 136
E Mail:	productinfo.au@mmm.com
Website:	www.3m.com.au

1.4. Emergency telephone number

EMERGENCY: 1800 097 146 (Australia only)

SECTION 2: Hazard identification

This product is classified as a hazardous chemical according to the Model Work Health and Safety Regulations, 2011, in accordance with applicable State and Territory legislation.

Refer to Section 14 of this Safety Data Sheets for product Dangerous Goods Classification.

2.1. Classification of the substance or mixture

Serious Eye Damage/Irritation: Category 2.

Reproductive Toxicity: Category 1.

2.2. Label elements

The label elements below were prepared in accordance with the Code of Practice on Preparation of Safety Data Sheets for Hazardous Chemicals (Safe Work Australia, December 2011). This information may be different from the actual product

label.

Signal word

Danger

Symbols

Exclamation mark | Health Hazard |

Pictograms



Hazard statements

H319 Causes serious eye irritation.
H360 May damage fertility or the unborn child.

Precautionary statements

Prevention:

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P264 Wash thoroughly after handling.
P280E Wear protective gloves.

Response:

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P313 IF exposed or concerned: Get medical advice/attention.
P337 + P313 IF eye irritation persists: Get medical advice/attention.

Storage:

P405 Store locked up.

Disposal:

P501 Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2.3. Other assigned/identified product hazards

May cause thermal burns. 3M Vapours liberated during processing may be hazardous if inhaled. Eye, nose, throat and lung irritation can occur from such vapours. This material has been tested for acute aquatic environmental toxicity and the test results do not meet the criteria for classification. This material has been tested for chronic aquatic environmental toxicity and the test results do not meet the criteria for classification.

2.4. Other hazards which do not result in classification

None known.

SECTION 3: Composition/information on ingredients

This material is a mixture.

Ingredient	CAS Nbr	% by Weight
Vinylidene Fluoride-Hexafluoropropylene	9011-17-0	95 - 99

Polymer		
4,4'-Dichlorodiphenyl Sulfone	80-07-9	0.1 - 3
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	0.1 - 3

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 flush skin with large amounts of cold water for at least 15 minutes. DO NOT ATTEMPT TO REMOVE MOLTEN MATERIAL. Cover affected area with a clean dressing. Get immediate medical attention.

Eye contact

Immediately flush eyes with large amounts of water for at least 15 minutes. DO NOT ATTEMPT TO REMOVE MOLTEN MATERIAL. Get immediate medical attention.

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

Exposure to extreme heat can give rise to thermal decomposition.

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. 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.

6.3. Methods and material for containment and cleaning up

Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. 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 inhalation of thermal decomposition products. Avoid skin contact with hot material. Store work clothes separately from other clothing, food and tobacco products. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapours/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. No smoking: Smoking while using this product can result in contamination of the tobacco and/or smoke and lead to the formation of hazardous decomposition products. Use personal protective equipment (eg. gloves, respirators...) 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

No occupational exposure limit values exist for any of the components listed in Section 3 of this Safety Data Sheet.

8.2. Exposure controls

8.2.1. Engineering controls

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local exhaust ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. 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/vapours/spray. If ventilation is not adequate, use respiratory protection equipment. Local exhaust required above 400 C.

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.

Select and use eye protection in accordance with AS/NZS 1336. Eye protection should comply with the performance specifications of AS/NZS 1337.

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

Select and use gloves according to AS/NZ 2161.

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 vapours and particulates

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

Select and use respirators according to AS/NZS 1715. Respirators should comply with AS/NZS 1716 performance specifications. For information about respirators, call 3M on 1800 024 464.

Thermal hazards

Wear heat insulating gloves, indirect vented goggles, and a full face shield when handling hot material to prevent thermal burns.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Solid.
Specific Physical Form:	Solid Block or Slab
Colour	Straw, White
Odour	Odourless
Odour threshold	<i>No data available.</i>
pH	<i>Not applicable.</i>
Melting point/Freezing point	<i>Not applicable.</i>
Boiling point/Initial boiling point/Boiling range	<i>Not applicable.</i>
Flash point	No flash point
Evaporation rate	<i>No data available.</i>
Flammability (solid, gas)	Not classified
Flammable Limits(LEL)	<i>Not applicable.</i>
Flammable Limits(UEL)	<i>Not applicable.</i>
Vapour pressure	<i>Not applicable.</i>
Vapor Density and/or Relative Vapor Density	<i>Not applicable.</i>
Density	1.8 g/cm ³
Relative density	1.8 [Ref Std: WATER=1]
Water solubility	Negligible
Solubility- non-water	<i>No data available.</i>
Partition coefficient: n-octanol/water	<i>No data available.</i>
Autoignition temperature	<i>Not applicable.</i>
Decomposition temperature	<i>No data available.</i>
Viscosity/Kinematic Viscosity	<i>Not applicable.</i>
Volatile organic compounds (VOC)	<i>No data available.</i>
Percent volatile	<i>No data available.</i>
VOC less H₂O & exempt solvents	<i>No data available.</i>
Molecular weight	<i>No data available.</i>

Nanoparticles

This material does not contain nanoparticles.

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is considered to be non reactive under normal use conditions

10.2 Chemical stability

Stable.

10.3. Conditions to avoid

None known.

10.4. Possibility of hazardous reactions

Hazardous polymerisation will not occur.

10.5 Incompatible materials

Aluminium or magnesium powder and high/shear temperature conditions.

10.6 Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
Carbon monoxide.	At elevated temperatures.
Carbon dioxide.	At elevated temperatures.
Hydrogen Fluoride	At elevated temperatures.
Perfluoroisobutylene (PFIB).	At elevated temperatures.
Oxides of sulphur.	At elevated temperatures.
Toxic vapour, gas, particulate.	At elevated temperatures.

If the product is exposed to extreme conditions of heat from misuse or equipment failure, toxic decomposition products that include hydrogen fluoride and perfluoroisobutylene can occur.

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 labelling, 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.

During heating:

Polymer fume fever: Sign/symptoms may include chest pain or tightness, shortness of breath, cough, malaise, muscle aches, increased heart rate, fever, chills, sweats, nausea and headache.

Skin contact

During heating: Thermal Burns: Signs/symptoms may include intense pain, redness and swelling, and tissue destruction.

Eye contact

During heating: Thermal Burns: Signs/symptoms may include severe pain, redness and swelling, and tissue destruction.

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

Ingestion

Gastrointestinal irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhoea. May cause additional health effects (see below).

Additional Health Effects:**Reproductive/Developmental Toxicity:**

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

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	Ingestion		No data available; calculated ATE >5,000 mg/kg
Vinylidene Fluoride-Hexafluoropropylene Polymer	Dermal		LD50 estimated to be > 5,000 mg/kg
Vinylidene Fluoride-Hexafluoropropylene Polymer	Ingestion	Rat	LD50 6,000 mg/kg
4,4'-Dichlorodiphenyl Sulfone	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
4,4'-Dichlorodiphenyl Sulfone	Ingestion	Rat	LD50 4,810 mg/kg
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Dermal	Rat	LD50 > 2,000 mg/kg
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Ingestion	Rat	LD50 > 2,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
Vinylidene Fluoride-Hexafluoropropylene Polymer	Rabbit	No significant irritation
4,4'-Dichlorodiphenyl Sulfone	Rabbit	Minimal irritation
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
Vinylidene Fluoride-Hexafluoropropylene Polymer	Rabbit	Mild irritant
4,4'-Dichlorodiphenyl Sulfone	Rabbit	Severe irritant
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Rabbit	Corrosive

Skin Sensitisation

Name	Species	Value
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Guinea pig	Not classified

Respiratory Sensitisation

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

Germ Cell Mutagenicity

Name	Route	Value
4,4'-Dichlorodiphenyl Sulfone	In Vitro	Some positive data exist, but the data are not sufficient for classification
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	In Vitro	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
4,4'-Dichlorodiphenyl Sulfone	Ingestion	Multiple animal species	Not carcinogenic

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

Name	Route	Value	Species	Test result	Exposure Duration
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Ingestion	Not classified for development	Rat	NOAEL 100 mg/kg/day	prematuring into lactation
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Ingestion	Toxic to female reproduction	Rat	LOAEL 30 mg/kg/day	prematuring into lactation
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	Ingestion	Toxic to male reproduction	Rat	LOAEL 30 mg/kg/day	55 days

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

Name	Route	Target Organ(s)	Value	Species	Test result	Exposure Duration
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	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
Vinylidene Fluoride-Hexafluoropropylene Polymer	Ingestion	liver	Not classified	Rat	NOAEL 10,000 mg/kg/day	2 weeks
4,4'-Dichlorodiphenyl Sulfone	Ingestion	hematopoietic system liver	Not classified	Rat	NOAEL 200 mg/kg/day	14 weeks
4,4'-Dichlorodiphenyl Sulfone	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 19 mg/kg/day	14 weeks
4,4'-Dichlorodiphenyl Sulfone	Ingestion	nervous system	Not classified	Rat	NOAEL 200 mg/kg/day	14 weeks
4,4'-[2,2,2-trifluoro-1-	Ingestion	heart endocrine system	Not classified	Rat	NOAEL 100 mg/kg/day	28 days

(trifluoromethyl)ethylidene] diphenol		gastrointestinal tract hematopoietic system liver nervous system kidney and/or bladder				
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Aspiration Hazard

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

Exposure Levels

Refer Section 8.1 **Control Parameters** of this Safety Data Sheet.

Interactive Effects

Not determined.

SECTION 12: Ecological 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. Additional information leading to material classification in Section 2 is available upon request. In addition, environmental fate and effects data on ingredients may not be reflected in this section because an ingredient is present below the threshold for labelling, an ingredient is not expected to be available for exposure, or the data is considered not relevant to the material as a whole.

12.1. Toxicity**Acute aquatic hazard:**

Not acutely toxic to aquatic life by GHS criteria. Aquatic toxicity classifications based on the results from a leachate study conducted per methodology allowed for in Annex 10 of UN GHS.

Chronic aquatic hazard:

Not chronically toxic to aquatic life by GHS criteria. Aquatic toxicity classifications based on the results from a leachate study conducted per methodology allowed for in Annex 10 of UN GHS.

No product test data available.

Material	CAS Number	Organism	Type	Exposure	Test endpoint	Test result
Vinylidene Fluoride-Hexafluoropropylene Polymer	9011-17-0		Data not available or insufficient for classification			n/a
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Green Algae	Endpoint not reached	72 hours	EC50	>100 mg/l
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Activated sludge	Experimental	3 hours	EC10	>1,000 mg/l
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Water flea	Experimental	48 hours	EC50	>100 mg/l
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Zebra Fish	Experimental	96 hours	LC50	>100 mg/l
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Green algae	Experimental	72 hours	NOEC	0.28 mg/l

yl Sulfone						
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Water flea	Experimental	21 days	NOEC	0.32 mg/l
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Green Algae	Experimental	72 hours	ErC50	>0.808 mg/l
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Water flea	Experimental	48 hours	EC50	2.7 mg/l
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Green Algae	Experimental	72 hours	NOEC	0.0522 mg/l
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Water flea	Experimental	21 days	NOEC	0.23 mg/l
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Zebra Fish	Experimental	28 days	NOEC	0.05 mg/l
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Activated sludge	Experimental	3 hours	EC50	126.8

12.2. Persistence and degradability

Material	CAS Number	Test type	Duration	Study Type	Test result	Protocol
Vinylidene Fluoride-Hexafluoropropylene Polymer	9011-17-0	Data not available-insufficient			n/a	
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Experimental Biodegradation	28 days	BOD	0 % BOD/ThBOD	OECD 301C - MITI test (I)
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Estimated Hydrolysis		Hydrolytic half-life (pH 7)	>1 years (t 1/2)	EC C.7 Hydrolysis at pH
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Experimental Biodegradation	28 days	CO2 evolution	0 %CO2 evolution/THC O2 evolution	OECD 301B - Modified sturm or CO2

12.3 : Bioaccumulative potential

Material	CAS Number	Test type	Duration	Study Type	Test result	Protocol
Vinylidene Fluoride-Hexafluoropropylene Polymer	9011-17-0	Data not available or insufficient for classification	N/A	N/A	N/A	N/A
4,4'-Dichlorodiphenyl Sulfone	80-07-9	Experimental BCF-Carp	35 days	Bioaccumulation factor	82	OECD 305E - Bioaccumulation flow-through fish test
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Experimental BCF - Other	168 hours	Bioaccumulation factor	9.0	OECD305-Bioconcentration
4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]diphenol	1478-61-1	Experimental Bioconcentration		Log Kow	2.79	EC A.8 Partition Coefficient

12.4. Mobility in soil

Please contact manufacturer for more details

12.5 Other adverse effects

No information available.

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. Combustion products will include HF. Facility must be capable of handling halogenated materials.

SECTION 14: Transport Information

Australian Dangerous Goods Code (ADG) - Road/Rail Transport

UN No.: Not applicable.

Proper shipping name: Not applicable.

Class/Division: Not applicable.

Sub Risk: Not applicable.

Packing Group: Not applicable.

Hazchem Code: Not applicable

IERG: Not applicable.

International Air Transport Association (IATA) - Air Transport

UN No.: Not applicable.

Proper shipping name: Not applicable.

Class/Division: Not applicable.

Sub Risk: Not applicable.

Packing Group: Not applicable.

International Maritime Dangerous Goods Code (IMDG)- Marine Transport

UN No.: Not applicable.

Proper shipping name: Not applicable.

Class/Division: Not applicable.

Sub Risk: Not applicable.

Packing Group: Not applicable.

Marine Pollutant: Not applicable.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

Australian Inventory Status:

The chemical components contained within this product are listed on the Australian Inventory of Chemical Substances and are in compliance with the requirements of the Industrial Chemicals (Notification and Assessment) Act 1989 as amended.

Poison Schedule: This product is intended for Industrial or Professional Use only and therefore is not packaged and labelled in accordance with the requirements of the Standard for the Uniform Scheduling of Medicines and Poisons.

SECTION 16: Other information

Revision information:

Complete document review.

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Safety Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

Greenguard® is a United States based program. The 'Low VOC' reference related to United States Federal and State regulations exemptions for some solvents.

3M Australia SDSs are available at www.3m.com.au