



## Safety Data Sheet

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### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Dyneon™ Fluoroelastomer FE 5610

#### Product Identification Numbers

98-0211-8031-4, 98-0211-8032-2, 98-0211-9634-4, ZF-0002-1718-0  
7100054701, 7100152856, 7000059283, 7000117350

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

##### Recommended use

Fluoroelastomer

#### 1.3. Supplier's details

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

#### 1.4. Emergency telephone number

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

### SECTION 2: Hazard identification

#### 2.1. Hazard classification

Serious Eye Damage/Irritation: Category 2A.

Skin Sensitizer: Category 1.

Reproductive Toxicity: Category 1B.

#### 2.2. Label elements

##### Signal word

Danger

##### Symbols

Exclamation mark | Health Hazard |

##### Pictograms

**Hazard Statements**

Causes serious eye irritation.  
 May cause an allergic skin reaction.  
 May damage fertility or the unborn child.

**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.  
 Wear protective gloves and eye/face protection.  
 Wash thoroughly after handling.  
 Contaminated work clothing must not be allowed out of the workplace.

**Response:**

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 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.

**Supplemental Information:**

May cause thermal burns.

### SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
Vinylidene Fluoride - Hexafluoropropylene Polymer	9011-17-0	95 - 99
Bisphenol AF	1478-61-1	< 3 Trade Secret *
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	75768-65-9	< 1
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2Cl2)	921213-47-0	< 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 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

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

When fire fighting conditions are severe and total thermal decomposition of the product is possible, 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

Do not breathe 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/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. 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 (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**

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

### **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/vapors/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

##### **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:

During heating:

Use a positive pressure supplied-air respirator if there is a potential for over exposure from an uncontrolled release, exposure levels are not known, or under any other circumstances where air-purifying respirators may not provide adequate protection.

Half facepiece or full facepiece air-purifying respirator suitable for particulates

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

#### Thermal hazards

Wear heat insulating gloves when handling hot material to prevent thermal burns.

## SECTION 9: Physical and chemical properties

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

#### Appearance

Physical state

Solid

Color

Straw, White

**Specific Physical Form:**

Solid Block or Slab

**Odor**

Odorless

**Odor threshold**

*No Data Available*

**pH**

*Not Applicable*

**Melting point**

*Not Applicable*

**Boiling Point**

*Not Applicable*

**Flash Point**

No flash point

**Evaporation rate**

*No Data Available*

**Flammability (solid, gas)**

Not Classified

**Flammable Limits(LEL)**

*Not Applicable*

**Flammable Limits(UEL)**

*Not Applicable*

**Vapor Pressure**

*Not Applicable*

**Vapor Density**

*Not Applicable*

**Density**

1.8 g/cm<sup>3</sup>

**Specific Gravity**

1.8 [Ref Std: WATER=1]

**Solubility in Water**

Negligible

**Solubility- non-water**

*No Data Available*

**Partition coefficient: n-octanol/ water**

*No Data Available*

**Autoignition temperature**

*Not Applicable*

**Decomposition temperature**

*No Data Available*

**Viscosity**

*Not Applicable*

**Molecular weight**

*No Data Available*

**Volatile Organic Compounds**

*No Data Available*

## 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. Possibility of hazardous reactions

Hazardous polymerization will not occur.

### 10.4. Conditions to avoid

None known.

### 10.5. Incompatible materials

Al or Mg 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 Sulfur	At Elevated Temperatures
Toxic Vapor, Gas, Particulate	At Elevated Temperatures

If the product is exposed to extreme condition 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 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.

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.

Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

#### 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 diarrhea.

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
Bisphenol AF	Dermal	Rat	LD50 > 2,000 mg/kg
Bisphenol AF	Ingestion	Rat	LD50 > 2,000 mg/kg
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Dermal	Professional judgement	LD50 estimated to be > 5,000 mg/kg
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Ingestion	Rat	LD50 > 2,000 mg/kg
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2C12)	Dermal	Rat	LD50 > 2,000 mg/kg
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2C12)	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
Bisphenol AF	Rabbit	No significant irritation
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Rabbit	No significant irritation
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2C12)	Rabbit	No significant irritation

#### Serious Eye Damage/Irritation

Name	Species	Value
Vinylidene Fluoride - Hexafluoropropylene Polymer	Rabbit	Mild irritant
Bisphenol AF	Rabbit	Corrosive
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Rabbit	Mild irritant
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2C12)	Rabbit	Severe irritant

#### Skin Sensitization

Name	Species	Value
Bisphenol AF	Guinea pig	Not classified
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Guinea pig	Not classified
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products	Mouse	Sensitizing

with benzene, chlorine and sulfur chloride (S2Cl2)

**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
Bisphenol AF	In Vitro	Some positive data exist, but the data are not sufficient for classification
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	In Vitro	Not mutagenic
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2Cl2)	In Vitro	Some positive data exist, but the data are not sufficient for classification

**Carcinogenicity**

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

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

Name	Route	Value	Species	Test Result	Exposure Duration
Bisphenol AF	Ingestion	Not classified for development	Rat	NOAEL 100 mg/kg/day	prematuring into lactation
Bisphenol AF	Ingestion	Toxic to female reproduction	Rat	NOAEL 30 mg/kg/day	prematuring into lactation
Bisphenol AF	Ingestion	Toxic to male reproduction	Rat	NOAEL 30 mg/kg/day	55 days
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Ingestion	Not classified for development	Rat	NOAEL 100 mg/kg/day	prematuring into lactation
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Ingestion	Toxic to female reproduction	Rat	LOAEL 30 mg/kg/day	prematuring into lactation
4,4'-(HEXAFLUOROISOPROPYLIDENE)DIPHENOL BENZYLTRIPHENYLPHOSPHONIUM SALT (1:1)	Ingestion	Toxic to male reproduction	Rat	LOAEL 30 mg/kg/day	55 days
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2Cl2)	Ingestion	Not classified for reproduction and/or development	Rat	NOAEL 150 mg/kg/day	28 days

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

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Bisphenol AF	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	Ingestion	liver	Not classified	Rat	NOAEL 10,000	2 weeks



Polymer					mg/kg/day	
Bisphenol AF	Ingestion	heart   endocrine system   gastrointestinal tract   hematopoietic system   liver   nervous system   kidney and/or bladder	Not classified	Rat	NOAEL 100 mg/kg/day	28 days
Phenol, 4,4'-[2,2,2-trifluoro-1-(trifluoromethyl)ethylidene]bis-, reaction products with benzene, chlorine and sulfur chloride (S2C12)	Ingestion	endocrine system   liver   kidney and/or bladder   auditory system   heart   bone, teeth, nails, and/or hair   bone marrow   hematopoietic system   immune system   nervous system   respiratory system   vascular system	Not classified	Rat	NOAEL 150 mg/kg/day	28 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 waste product in a permitted industrial waste facility. As a disposal alternative, 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. 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**

Reproductive toxicity

Respiratory or Skin Sensitization

Serious eye damage or eye irritation

**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. 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.

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

**HMIS Hazard Classification**

**Health:** \*2 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

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