



## Safety Data Sheet

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### SECTION 1: Identification

#### 1.1. Product identifier

3M™ Dyneon™ High Temperature PFE 4131TZ

#### Product Identification Numbers

98-0213-2484-7

7000006365

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

##### Recommended use

Custom Compound

#### 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

Not classified as hazardous according to OSHA Hazard Communication Standard, 29 CFR 1910.1200.

#### 2.2. Label elements

##### Signal word

Not applicable.

##### Symbols

Not applicable.

##### Pictograms

Not applicable.

#### Supplemental Information:

The health hazards of this material are not completely known. See the SDS. May cause thermal burns.

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

Ingredient	C.A.S. No.	% by Wt
Perfluoro(5-cyanopentyl vinyl ether)-Perfluoro(methyl vinyl ether)-Tetrafluoroethylene Copolymer	163336-49-0	95 - 100
Dichlorodimethylsilane Reaction Product with Silica	68611-44-9	< 3
Phosphonium, tetrabutyl-, salt with octafluorohexanedioic acid (2:1)	651332-39-7	< 2

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

No need for first aid is anticipated. If symptoms develop, remove the affected person to fresh air. 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. Observe precautions from other sections.

**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.

Refer to Section 15 for additional information

**SECTION 7: Handling and storage****7.1. Precautions for safe handling**

Avoid eye contact. Do not breathe thermal decomposition products. Avoid skin contact with hot material. For industrial/occupational use only. Not for consumer sale or use. Store work clothes separately from other clothing, food and tobacco products. Avoid breathing dust/fume/gas/mist/vapors/spray. 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.

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

Protect from sunlight. Store away from heat.

Refer to Section 15 for additional information

**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
SILICA, AMORPHOUS	68611-44-9	OSHA	TWA:20 millions of particles/cu. ft.;TWA concentration:0.8 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists

AIHA : American Industrial Hygiene Association

CMRG : Chemical Manufacturer's Recommended Guidelines

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

TWA: Time-Weighted-Average

STEL: Short Term Exposure Limit

CEIL: Ceiling

**8.2. Exposure controls****8.2.1. Engineering controls**

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:

Indirect Vented Goggles

**Skin/hand protection**

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

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

**Respiratory protection**

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

For those situations where the material might be exposed to extreme overheating due to misuse or equipment failure, use a positive pressure supplied-air respirator.

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.

**Thermal hazards**

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

Refer to Section 15 for additional information

**SECTION 9: Physical and chemical properties****9.1. Information on basic physical and chemical properties****Appearance****Physical state**

Solid

**Color**

Beige, 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***Not Applicable***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 - 2.2 g/cm<sup>3</sup>**Specific Gravity**

1.8 - 2.2 [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**

≥380 °C

**Viscosity***Not Applicable***Molecular weight***No Data Available***Volatile Organic Compounds***Not Applicable*

Percent volatile  
VOC Less H2O & Exempt Solvents

*Not Applicable*  
*Not Applicable*

## 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

Al or Mg powder and high/shear temperature conditions

### 10.6. Hazardous decomposition products

<u>Substance</u>	<u>Condition</u>
Carbonyl Fluoride	At Elevated Temperatures
Carbon monoxide	At Elevated Temperatures
Carbon dioxide	At Elevated Temperatures
Hydrogen Fluoride	At Elevated Temperatures
Perfluoroisobutylene (PFIB)	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:

No information available.

#### Skin Contact:

May be harmful in contact with skin.

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.

**Ingestion:**

May be harmful if swallowed.

**Additional Information:**

The health hazards of this material are not completely known. Conservative safe handling measures should be followed (as described in sections 7 and 8), and appropriate first aid measures (as described in section 4) should be taken if exposure occurs.

**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 >2,000 - =5,000 mg/kg
Overall product	Ingestion		No data available; calculated ATE >2,000 - =5,000 mg/kg
Perfluoro(5-cyanopentyl vinyl ether)-Perfluoro(methyl vinyl ether)-Tetrafluoroethylene Copolymer	Dermal	similar compounds	LD50 estimated to be 2,000 - 5,000 mg/kg
Perfluoro(5-cyanopentyl vinyl ether)-Perfluoro(methyl vinyl ether)-Tetrafluoroethylene Copolymer	Ingestion	similar compounds	LD50 estimated to be 2,000 - 5,000 mg/kg
Dichlorodimethylsilane Reaction Product with Silica	Dermal	Rabbit	LD50 > 5,000 mg/kg
Dichlorodimethylsilane Reaction Product with Silica	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 0.691 mg/l
Dichlorodimethylsilane Reaction Product with Silica	Ingestion	Rat	LD50 > 5,110 mg/kg
Phosphonium, tetrabutyl-, salt with octafluorohexanedioic acid (2:1)	Dermal		LD50 estimated to be 1,000 - 2,000 mg/kg
Phosphonium, tetrabutyl-, salt with octafluorohexanedioic acid (2:1)	Ingestion	Rat	LD50 300-2,000 mg/kg

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**

Name	Species	Value
Dichlorodimethylsilane Reaction Product with Silica	Rabbit	No significant irritation

**Serious Eye Damage/Irritation**

Name	Species	Value
Dichlorodimethylsilane Reaction Product with Silica	Rabbit	No significant irritation

**Skin Sensitization**

Name	Species	Value
Dichlorodimethylsilane Reaction Product with Silica	Human and animal	Not classified

**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
Dichlorodimethylsilane Reaction Product with Silica	In Vitro	Not mutagenic

**Carcinogenicity**

Name	Route	Species	Value
Dichlorodimethylsilane Reaction Product with Silica	Not Specified	Mouse	Some positive data exist, but the data are not sufficient for classification

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

Name	Route	Value	Species	Test Result	Exposure Duration
Dichlorodimethylsilane Reaction Product with Silica	Ingestion	Not classified for female reproduction	Rat	NOAEL 509 mg/kg/day	1 generation
Dichlorodimethylsilane Reaction Product with Silica	Ingestion	Not classified for male reproduction	Rat	NOAEL 497 mg/kg/day	1 generation
Dichlorodimethylsilane Reaction Product with Silica	Ingestion	Not classified for development	Rat	NOAEL 1,350 mg/kg/day	during organogenesis

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

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

**Specific Target Organ Toxicity - repeated exposure**

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
Dichlorodimethylsilane Reaction Product with Silica	Inhalation	respiratory system   silicosis	Not classified	Human	NOAEL Not available	occupational exposure

**Aspiration Hazard**

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

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

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

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

**Chemical fate information**

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

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

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

Dispose of 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

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

Contact 3M for more information.

#### EPCRA 311/312 Hazard Classifications:

##### Physical Hazards

Not applicable

##### Health Hazards

Not applicable

#### Additional TSCA Information

<u>Components</u>	<u>CAS No</u>	<u>Additional Information</u>
Phosphonium, tetrabutyl-, salt with octafluorohexanedioic acid (2:1)	651332-39-7	Allowed use(s): Cure catalyst. Required exposure controls when handling the LVE substance: Appropriate local exhaust ventilation during heating; indirect vented goggles; gloves composed of nitrile rubber; coveralls as needed based on the results of an exposure assessment; NIOSH approved fullface supplied-air respirator, half facepiece or full facepiece air-purifying respirator with organic vapor cartridges and N95 particulate prefilters based on airborne concentration of contaminants and in accordance to OSHA regulations. Required environmental release controls for the LVE substance: Incineration of wastes and cleanup materials in a permitted facility (for LVE substance manufacturing sites) or disposal to landfill (for downstream processing/use sites).

### 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 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:** 1 **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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