



Instruments Designed for Teaching

**Specifications
and
Safety Data Sheets
for liquid Samples
for
EFNMR**

www.teachspin.com

SPECIFICATIONS

TeachSpin EF-NMR Sample Coil and Controller,
EFNMR1-A
www.teachspin.com

Sample coil:

1 Coil, of 1340 turns of copper litz wire
Coil Constant: near 15 mT/A
Inductance \approx 73 mH; d.c. Resistance \approx 10.5 Ω
Coil Q-factor (at 2.0 kHz): \approx 70
Current Limit: 0.5 to 3.0 Amperes; 0.1 to 99.9 s duration

Notice that an *external* current-regulated power supply is needed for the sample coil used in its polarizing-coil mode.

Sample holders:

Both fit into the sample coil's tunnel of inside diameter 2.00"
Standard holder: 125 ml Nalgene bottle
Segmented holder: 7 compartments, 11 ml each

Accessible frequencies:

1.6 to 2.6 kHz

Controller:

Pre-amplifier gain: \approx 1000
Band-pass amplifier gain: \approx 15

TeachSpin EF-NMR Gradient/Field Coils and Controller, EFNMR G/FC1-A

Helmholtz coils:

2 Coils, each of 30 turns of #20 AWG copper wire, connected in series
Nominal Diameter of coils: 604 mm
Nominal Separation of coils: 303 mm
Coil Constant: near 89 ($\pm 1\%$) $\mu\text{T/A}$
Current Limit: 3.0 Amperes continuous current
Field Uniformity: 0.01 %, for volume within 3 cm of center of coils
Frame, permitting altitude/azimuth adjustment of coils' z-axis

Notice that an *external* current-regulated power supply is needed for the Helmholtz coils.

Gradient coils:

3 Coil Systems, for creating gradients $\partial B_z / \partial x$, $\partial B_z / \partial y$, $\partial B_z / \partial z$
Gradient coil systems are embedded in the planes of the Helmholtz-coil forms.
Coil Constants: near 250 $\mu\text{T/m}$ per Ampere of coil current
Current Supply: 3 supplies, each ± 20 mA, with 10-turn manual controls
Gradient Capability: $\pm 5 \mu\text{T/m}$, for ± 5 turns from center position

Notice that the EF-NMR G/FC Controller *contains* the current-regulated power supplies for these coils.

Current-Monitor points:

Monitor Resistor in series with Helmholtz coil: 0.1Ω , 1% tolerance, 25 W
Monitor Resistors in series with each gradient coil: 100Ω , 1% tolerance, $\frac{1}{4}$ W



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KJLC Code: **HT70CA**

ACTIO MSDS ID: 564138

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SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION (N/A)Product Name: **Galden HT 70**

Synonyms: None

Chemical Family: Fluorocarbons,
Perfluorinated polyethers

Manufacturer Name: Solvay Solexis, Inc.

Address: 10 Leonards Lane
Thorofare, NJ 08086Emergency Telephone:
856-853-8119

Business Phone: 856-853-8119

CHEMTREC Numbers:

For emergencies in the US, call CHEMTREC: 800-424-9300

Revision Date: May 24, 2005

Physical Form: Clear, liquid

Color: Colorless

Chemical Name: Propene, 1,1,2,3,3-hexafluoro, oxidized, polymerized

Emergency Overview: Thermal decomposition will generate hydrogen fluoride (HF), which is corrosive.

NFPA Ratings (Scale of 0-4)

Product Codes:

[To Top of page](#)**SECTION 2: COMPOSITION, INFORMATION ON INGREDIENTS** (N/A)

Ingredient Name	CAS#	Ingredient Percent
Propene, 1,1,2,3,3-hexafluoro, oxidized, polymerized	69991-67-9	Approximate: 100% by Weight
EC Index Number:	1	

[To Top of page](#)**SECTION 3 : HAZARDS IDENTIFICATION** (N/A)

Emergency Overview: Thermal decomposition will generate hydrogen fluoride (HF), which is corrosive.

Physical State: Clear liquid.

Color: Colorless

Propene, 1,1,2,3,3-hexafluoro, oxidized, polymerized :

Potential Health Effects:

Eye Contact: Eye contact may cause slight irritation.

Skin Contact: Skin contact may cause slight irritation.

Inhalation: Inhalation of vapors or mists may cause respiratory tract irritation.

Ingestion: No ill effects are expected.

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**SECTION 4 : FIRST AID MEASURES**

(N/A)

Eye Contact: Flush eyes for 15 minutes with copious amounts of water, retracting eyelids often. Seek medical attention if irritation persists.

Skin Contact: Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes.

Inhalation: If symptoms of irritation, discomfort or overcome by exposure, remove affected person to fresh air. Give oxygen or artificial respiration as needed.

Ingestion: If conscious, drink three to four 8 ounce glasses of water or milk. Call a physician. If unconscious, immediately take affected person to a hospital. Do not give anything by mouth to an unconscious person.

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**SECTION 5 : FIRE FIGHTING MEASURES**

(N/A)

Flash Point: Not Applicable

Upper Flammable or Explosive Limit: Not Applicable

Lower Flammable or Explosive Limit: Not Applicable

Auto Ignition Temperature: Not Applicable

Extinguishing Media: Water (spray or fog), foam, dry chemical or carbon dioxide (CO₂).

Fire Fighting Instructions: Use self contained breathing apparatus (SCBA) and skin protection for acid gas exposure. Do not enter fire area without proper protection. Fight fire from safe distance. If possible, air monitoring should be performed.

Unusual Fire Hazards: Fluoropolymers will degrade upon prolonged heating or in a fire, liberating hydrogen fluoride (HF) and carbonyl fluoride (COF₂). This gas is toxic if inhaled or it comes into contact with moist skin. HF has an ACGIH PEL TLV (8hr TWA) of 0.5 ppm and a ceiling limit of 2 ppm (1.7 mg/m³). COF₂ has an ACGIH TLV of 2 ppm (5.4 mg/m³) and an OSHA PEL TWA of 2 ppm (5 mg/m³).

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**SECTION 6 : ACCIDENTAL RELEASE MEASURES**

(N/A)

Spill Cleanup Measures: Releases: In case of a release or spill, absorb material onto vermiculite or similar inert absorbent. Use Perfluorosolv0 PFS-1 as an aid in cleaning. Place spilled material into covered container for disposal. Dispose of according to applicable local, state and federal regulations. Extinguish all ignition sources and evacuate the area. Exercise caution; spill area may be slippery.

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**SECTION 7 : HANDLING and STORAGE**

(N/A)

Handling: Wash hands after use and before handling food or applying cosmetics. Do not use tobacco products in the immediate area.

Storage: Keep containers closed. Keep away from heat, sparks and flames. Do not store near combustible materials.

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**SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION**

(N/A)

Local Exhaust: Vent vapors or mists generated by processing away from operating personnel. Local exhaust ventilation at a rate of 50 feet per minute.

Skin Protection Description: Rubber or latex recommended but not necessary.

Eye/Face Protection: ANSI Z87.1 approved safety glasses with side shields or equivalent.

Respiratory Protection: No occupational exposure standards have been developed for this material. In situations where exposure to vapors or mists is likely, NIOSH/MSHA approved respirators are recommended. Respirator use limitations made by NIOSH/MSHA or the manufacturer must be observed. Respiratory protection programs must be in accordance with 29 CFR 1910.134.

Exposure Limits: ACGIH Threshold Limit Value (8 hr. time weighted average): None established

OSHA Permissible Exposure Limit Value (8 hr. time weighted average): None established

Solvay Acceptable Exposure Limit 1000 ppm

[To Top of page](#) **SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES**

(N/A)

Physical State/Appearance:	Clear liquid
Color:	Colorless
Odor:	Odorless
Vapor Pressure:	141 torr
Vapor Density:	(Air=1): Not available
Boiling Point:	70 deg C
Melting Point:	Not available
Solubility:	In Water: Insoluble
Specific Gravity:	1.7-1.9
Percent Volatile:	By Volume: 0

[To Top of page](#) **SECTION 10 : STABILITY and REACTIVITY**

(N/A)

Chemical Stability:	This material is stable.
Conditions to Avoid:	Heat, sparks, flames, and other ignition sources; avoid heating above 290 deg C/554 deg F.
Incompatibilities with Other Materials:	Incompatibility (Materials to Avoid): Alkali metals and halogenated compounds.
Reactivity:	Materials to Avoid: Strong or non-aqueous alkali and Lewis acids above 100 deg C/212 deg F.
Hazardous Decomposition Products:	This material is not reactive. Thermal decomposition of this product will generate hydrogen fluoride (HF), which is corrosive, causing burns on contact with skin and other tissue.

[To Top of page](#) **SECTION 11 : TOXICOLOGICAL INFORMATION**

(N/A)

Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized:	
Acute Health Effects:	Rat intraperitoneal LD50: Greater than 25 g/kg
Skin Effects:	Rat dermal LD50: Greater than 2 g/kg
Ingestion Effects:	Rat oral LD50: Greater than 25.65 g/kg
Sensitization:	Guinea pig sensitization: Not a sensitizer
Irritation:	Rabbit skin irritation: Not irritating Rabbit eye irritation: Not irritating
Other Toxicological Information:	Solvay Acceptable Exposure Limit 1000 ppm

[To Top of page](#) **SECTION 12 : ECOLOGICAL INFORMATION**

(N/A)

Ecological Paragraph:	No ecotoxicological information is available for this material.
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[To Top of page](#) **SECTION 13 : DISPOSAL CONSIDERATIONS**

(N/A)

Waste Disposal:	Material, as supplied, is not a hazardous waste. Landfill according to current federal, state and local regulations, or incinerate in a high-temperature incinerator designed to burn fluorine-containing materials. Processing, use or contamination may make this information inaccurate or incomplete.
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[To Top of page](#) **SECTION 14 : TRANSPORT INFORMATION**

(N/A)

DOT Hazard Class:	Shipping Class: Not regulated by DOT.
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SECTION 15 : REGULATORY INFORMATION

(N/A)

Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized:

TSCA 8(b): Inventory Status:	All components of this product are listed on the Toxic Substances Control Act (TSCA) Section 8(b) Chemical Inventory.
Section 302:	Extremely Hazardous Substances: Not listed
Section 312 Hazard Category:	SARA 311/312:
Acute:	No
Chronic:	No
Fire:	No
Reactive:	No
Pressure:	No
Section 313 Toxic Release Form:	Not listed
OSHA 29 CFR 1200:	This product is not a "hazardous substance" as defined by OSHA Hazard Communication Standard (29 CFR 1910.1200).
Canada WHMIS:	All components of this product are listed on the Canadian Environmental Protection Act (CEPA) provisional domestic substances list (DSL). This product is not a "controlled product" as defined by the Canadian Workplace Hazardous Materials Information System (WHMIS).

SECTION 16 : ADDITIONAL INFORMATION

(N/A)

NFPA:

Health:	1
Fire Hazard:	0
Reactivity:	0
MSDS Revision Date:	May 24, 2005

Disclaimer:

Material Safety Data Sheets contain country-specific regulatory information; therefore, the MSDS's provided are for use only by customers of Solvay Solexis, Inc. in North America. If you are located in a country other than Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location.

The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

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NFPA Ratings (Scale of 0-4)

ADDENDUM: Other Client Information**Notes:**

, HT70CA, HT70CP, HT70G2.5,

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KJLC Code: HT110CA

ACTIO MSDS ID: 2587

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(N/A)

SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATIONProduct Name: **Galden HT 110**

Synonyms: None

Chemical Family: Fluorocarbons,
Perfluorinated polyethers

Manufacturer Name: Solvay Solexis, Inc.

Address: 10 Leonards Lane
Thorofare, NJ 08086Emergency Telephone:
856-853-8119

Business Phone: 856-853-8119

CHEMTREC Numbers:

For emergencies in the US, call CHEMTREC: 800-424-9300

Revision Date: May 24, 2005

Physical Form: Clear, liquid.

Color: Colorless.

Chemical Name: Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized

Emergency Overview:
Thermal decomposition will generate hydrogen fluoride (HF), which is corrosive.

NFPA Ratings (Scale of 0-4)

Product Codes:

[To Top of page](#)**SECTION 2: COMPOSITION, INFORMATION ON INGREDIENTS**

(N/A)

<i>Ingredient Name</i>	<i>CAS#</i>	<i>Ingredient Percent</i>
Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized	69991-67-9	Approximate: 100% by Weight
EC Index Number:	1	

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SECTION 3 : HAZARDS IDENTIFICATION

(N/A)

Emergency Overview: Thermal decomposition will generate hydrogen fluoride (HF), which is corrosive.
 Physical State: Clear, liquid.
 Color: Colorless.

Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized :

Potential Health Effects:
 Eye Contact: Eye contact may cause slight irritation.
 Skin Contact: Skin contact may cause slight irritation.
 Inhalation: Inhalation of vapors or mists may cause respiratory tract irritation.
 Ingestion: No ill effects are expected.

[To Top of page](#) **SECTION 4 : FIRST AID MEASURES**

(N/A)

Eye Contact: Flush eyes for 15 minutes with copious amounts of water, retracting eyelids often. Seek medical attention if irritation persists.
 Skin Contact: Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If symptoms of irritation, discomfort or overcome by exposure, remove affected person to fresh air. Give oxygen or artificial respiration as needed.
 Inhalation: If conscious, drink three to four 8 ounce glasses of water or milk. Call a physician. If unconscious, immediately take affected person to a hospital. Do not give anything by mouth to an unconscious person.

[To Top of page](#) **SECTION 5 : FIRE FIGHTING MEASURES**

(N/A)

Flash Point: Not Applicable.
 Upper Flammable or Explosive Limit: Not Applicable.
 Lower Flammable or Explosive Limit: Not Applicable.
 Auto Ignition Temperature: Not Applicable.
 Extinguishing Media: Water (spray or fog), foam, dry chemical or carbon dioxide (CO₂).
 Fire Fighting Instructions: Use self contained breathing apparatus (SCBA) and skin protection for acid gas exposure. Do not enter fire area without proper protection. Fight fire from safe distance. If possible, air monitoring should be performed.
 Unusual Fire Hazards: Fluoropolymers will degrade upon prolonged heating or in a fire, liberating hydrogen fluoride (HF) and carbonyl fluoride (COF₂). This gas is toxic if inhaled or it comes into contact with moist skin. HF has an ACGIH PEL TLV (8hr TWA) of 0.5 ppm and a ceiling limit of 2 ppm (1.7 mg/m³). COF₂ has an ACGIH TLV of 2 ppm (5.4 mg/m³) and an OSHA PEL TWA of 2 ppm (5 mg/m³).

[To Top of page](#) **SECTION 6 : ACCIDENTAL RELEASE MEASURES**

(N/A)

Spill Cleanup Measures: In case of a release or spill, absorb material onto vermiculite or similar inert absorbent. Use Perfluorosolv® PFS-1 as an aid in cleaning. Place spilled material into covered container for disposal. Dispose of according to applicable local, state and federal regulations. Extinguish all ignition sources and evacuate the area. Exercise caution; spill area may be slippery.

[To Top of page](#) **SECTION 7 : HANDLING and STORAGE**

(N/A)

Handling: Wash hands after use and before handling food or applying cosmetics. Do not use tobacco products in the immediate area.
 Storage: Keep containers closed. Keep away from heat, sparks and flames. Do not store near combustible materials.

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SECTION 8 : EXPOSURE CONTROLS, PERSONAL PROTECTION

(N/A)

Local Exhaust:	Vent vapors or mists generated by processing away from operating personnel. Local exhaust ventilation at a rate of 50 feet per minute.
Skin Protection Description:	Rubber or latex recommended but not necessary.
Eye/Face Protection:	ANSI Z87.1 approved safety glasses with side shields or equivalent.
Respiratory Protection:	No occupational exposure standards have been developed for this material. In situations where exposure to vapors or mists is likely, NIOSH/MSHA approved respirators are recommended. Respirator use limitations made by NIOSH/MSHA or the manufacturer must be observed. Respiratory protection programs must be in accordance with 29 CFR 1910.134.
Exposure Limits:	Solvay Acceptable Exposure Limit 1000 ppm

Ingredient Guidelines

Ingredient: Propene, 1,1,2,3,3-hexafluoro, oxidized, polymerized

Guideline Type:	ACGIH TLV-TWA
Guideline Information:	(8 hr. time weighted average): None established.
Guideline Type:	OSHA PEL-TWA
Guideline Information:	(8 hr. time weighted average): None established.

[To Top of page](#)**SECTION 9 : PHYSICAL and CHEMICAL PROPERTIES**

(N/A)

Physical State/Appearance:	Clear liquid
Color:	Colorless
Odor:	Odorless
Vapor Pressure:	17 torr
Vapor Density:	(Air=1): Not available.
Boiling Point:	110 deg C
Melting Point:	Not available.
Solubility:	In Water: Insoluble.
Specific Gravity:	1.7-1.9
Percent Volatile:	By Volume: 0

[To Top of page](#)**SECTION 10 : STABILITY and REACTIVITY**

(N/A)

Chemical Stability:	This material is stable.
Conditions to Avoid:	Heat, sparks, flames, and other ignition sources; avoid heating above 290 deg C/554 deg F.
Incompatibilities with Other Materials:	Materials to Avoid: Alkali metals and halogenated compounds.
	Materials to Avoid: Strong or non-aqueous alkali and Lewis acids above 100 deg C/212 deg F.
Reactivity:	This material is not reactive.
Hazardous Decomposition Products:	Thermal decomposition of this product will generate hydrogen fluoride (HF), which is corrosive, causing burns on contact with skin and other tissue.

[To Top of page](#)**SECTION 11 : TOXICOLOGICAL INFORMATION**

(N/A)

Propene, 1,1,2,3,3-hexafluoro, oxidized, polymerized :

Acute Health Effects:	Rat intraperitoneal LD50: > 25 g/kg
Skin Effects:	Rat dermal LD50: > 2 g/kg
Ingestion Effects:	Rat oral LD50: > 25.65 g/kg
Sensitization:	Guinea pig sensitization: Not a sensitizer.
Irritation:	Rabbit skin irritation: Not irritating Rabbit eye irritation: Not irritating
Other Toxicological Information:	Solvay Acceptable Exposure Limit 1000 ppm

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SECTION 12 : ECOLOGICAL INFORMATION

(N/A)

otoxicity:

No ecotoxicological information is available for this material.

[To Top of page](#) **SECTION 13 : DISPOSAL CONSIDERATIONS**

(N/A)

Waste Disposal:

Material, as supplied, is not a hazardous waste. Landfill according to current federal, state and local regulations, or incinerate in a high-temperature incinerator designed to burn fluorine-containing materials. Processing, use or contamination may make this information inaccurate or incomplete.

[To Top of page](#) **SECTION 14 : TRANSPORT INFORMATION**

(N/A)

DOT Hazard Class:

Not regulated by DOT.

[To Top of page](#) **SECTION 15 : REGULATORY INFORMATION**

(N/A)

Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized:

TSCA 8(b): Inventory Status:

All components of this product are listed on the Toxic Substances Control Act (TSCA) Section 8(b) Chemical Inventory.

Section 302:

Extremely Hazardous Substances: Not listed

Section 312 Hazard Category:

SARA 311/312:

Acute:

No

Chronic:

No

Ire:

No

Reactive:

No

Pressure:

No

Section 313 Toxic Release Form:

Toxic Chemical: Not listed.

OSHA 29 CFR 1200:

This product is not a "hazardous substance" as defined by OSHA Hazard Communication Standard (29 CFR 1910.1200).

Canada WHMIS:

All components of this product are listed on the Canadian Environmental Protection Act (CEPA) provisional domestic substances list (DSL).

This product is not a "controlled product" as defined by the Canadian Workplace Hazardous Materials Information System (WHMIS).

[To Top of page](#) **SECTION 16 : ADDITIONAL INFORMATION**

(N/A)

NFPA:

Health:	1
Fire Hazard:	0
Reactivity:	0

MSDS Revision Date:

May 24, 2005

Disclaimer:

Material Safety Data Sheets contain country-specific regulatory information; therefore, the MSDS's provided are for use only by customers of Solvay Solexis, Inc. in North America. If you are located in a country other than Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location.

The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

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NFPA Ratings (Scale of 0-4)

ADDENDUM : Other Client Information

Notes:

, HT110CA, HT110CP, HT110SAMP,

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KJLC Product Code: MFYPFS-2CA

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SECTION 1: CHEMICAL PRODUCT and COMPANY IDENTIFICATION (N/A)

Product Name: **Galden Perfluorosolv
PFS-2**

Synonyms: None

Chemical Family: Fluorocarbons,
Perfluorinated polyethers

Manufacturer Name: Kurt J. Lesker Company

Address: 1925 Worthington, Ave.,
Clairton, PA 15025

Emergency Telephone:
856-853-8119

Business Phone: 412.387.9200

CHEMTREC Numbers:

For emergencies in the US, call CHEMTREC: 800-424-9300

Revision Date: May 25, 2005

Trade Names: Galden Perfluorosolv(TM) PFS-2

Physical Form: Clear liquid

Color: Colorless

Chemical Name: Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized

Emergency Overview: Thermal decomposition will generate hydrogen fluoride (HF), which is corrosive.

NFPA Ratings (Scale of 0-4)

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SECTION 2: COMPOSITION/ INFORMATION ON INGREDIENTS (N/A)

Ingredient Name	CAS#	Ingredient Percent
Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized	69991-67-9	Approximate: 100% by Weight

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SECTION 3: HAZARDS IDENTIFICATION (N/A)

Emergency Overview: Thermal decomposition will generate hydrogen fluoride (HF), which is corrosive.

Physical State: Clear liquid.

Color: Colorless

Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized :

Potential Health Effects: Eye contact may cause slight irritation.

Eye Contact:

Skin Contact: Skin contact may cause slight irritation.
 Inhalation: Inhalation of vapors or mists may cause respiratory tract irritation.
 Ingestion: Not an expected exposure route. Ingestion may cause nausea and vomiting.

[To Top of page](#)**SECTION 4: FIRST-AID MEASURES**

(N/A)

Eye Contact: Flush eyes for 15 minutes with copious amounts of water, retracting eyelids often. Seek medical attention if irritation persists.
 Skin Contact: Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. Seek medical attention if irritation persists.
 Inhalation: If symptoms of irritation, discomfort or overcome by exposure, remove affected person to fresh air. Give oxygen or artificial respiration as needed.
 Ingestion: If conscious, drink three to four 8 ounce glasses of water or milk. Call a physician. If unconscious, immediately take affected person to a hospital. Do not give anything by mouth to an unconscious person.

[To Top of page](#)**SECTION 5: FIRE FIGHTING MEASURES**

(N/A)

Flash Point: Not Applicable
 Upper Flammable or Explosive Limit: Not Applicable
 Lower Flammable or Explosive Limit: Not Applicable
 Auto Ignition Temperature: Not Applicable
 Extinguishing Media: Water (spray or fog), foam, dry chemical or carbon dioxide (CO₂).
 Fire Fighting Instructions: Use self contained breathing apparatus (SCBA) and skin protection for acid gas exposure. Do not enter fire area without proper protection. Fight fire from safe distance. If possible, air monitoring should be performed.
 Unusual Fire Hazards: Fluoropolymers will degrade upon prolonged heating or in a fire, liberating hydrogen fluoride (HF) and carbonyl fluoride (COF₂). This gas is toxic if inhaled or it comes into contact with moist skin. HF has an ACGIH PEL TLV (8hr TWA) of 0.5 ppm and a ceiling limit of 2 ppm (1.7 mg/m³). COF₂ has an ACGIH TLV of 2 ppm (5.4 mg/m³) and an OSHA PEL TWA of 2 ppm (5 mg/m³).

[To Top of page](#)**SECTION 6: ACCIDENTAL RELEASE MEASURES**

(N/A)

Spill/Release Reporting: Releases: In case of a release or spill, absorb material onto vermiculite or similar inert absorbent. Use Perfluorosolv(TM) PFS-1 as an aid in cleaning. Place spilled material into covered container for disposal. Dispose of according to applicable local, state and federal regulations. Extinguish all ignition sources and evacuate the area. Exercise caution; spill area may be slippery.

[To Top of page](#)**SECTION 7: HANDLING and STORAGE**

(N/A)

Handling: Wash hands after use and before handling food or applying cosmetics. Do not use tobacco products in the immediate area.
 Storage: Keep containers closed. Keep away from heat, sparks and flames. Do not store near combustible materials.

[To Top of page](#)**SECTION 8: EXPOSURE CONTROLS, PERSONAL PROTECTION**

(N/A)

Local Exhaust: Vent vapors or mists generated by processing away from operating personnel. Local exhaust ventilation at a rate of 50 feet per minute.
 Skin Protection Description: Rubber or latex gloves recommended but not necessary.
 Eye/Face Protection: ANSI Z87.1 approved safety glasses with side shields or equivalent.
 Respiratory Protection: No occupational exposure standards have been developed for this material. In situations where exposure to vapors or mists is likely, NIOSH/MSHA approved respirators are recommended. Respirator use limitations made by NIOSH/MSHA or the manufacturer must be observed. Respiratory protection programs must be in accordance with 29 CFR 1910.134.
 Exposure Limits: Solvay Acceptable Exposure Limit 1000 ppm
 Ingredient Guidelines

Ingredient: Propene,
1,1,2,3,3,3-hexafluoro,
oxidized, polymerized

Guideline Type:	ACGIH TLV-TWA
Guideline Information:	(8 hr. time weighted average): None established
Guideline Type:	OSHA PEL-TWA
Guideline Information:	(8 hr. time weighted average): None established

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SECTION 9: PHYSICAL and CHEMICAL PROPERTIES

(N/A)

Physical State/Appearance:	Clear liquid
Color:	Colorless
Odor:	Odorless
Vapor Pressure:	228 mg Hg @ 25 deg C/77 deg F
Vapor Density:	(Air=1): Not available
Boiling Point:	57 deg C/135 deg F
Melting Point:	Not available
Solubility:	In Water: Insoluble
Specific Gravity:	1.65
Percent Volatile:	By Volume: 0%

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SECTION 10: STABILITY and REACTIVITY

(N/A)

Chemical Stability:	This material is stable.
Conditions to Avoid:	Heat, sparks, flames, and other ignition sources; avoid heating above 290 deg C/554 deg F.
Incompatibilities with Other Materials:	Materials to Avoid: Alkali metals and halogenated compounds. Strong or non-aqueous alkali and Lewis acids above 100 deg C/212 deg F.
Reactivity:	This material is not reactive.
Hazardous Decomposition Products:	Thermal decomposition of this product will generate hydrogen fluoride (HF), which is corrosive, causing burns on contact with skin and other tissue.

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SECTION 11: TOXICOLOGICAL INFORMATION

(N/A)

Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized :

Acute Health Effects:	Rat intraperitoneal LD50: greater than 25 g/kg
Skin Effects:	Rat dermal LD50: greater than 2 g/kg
Ingestion Effects:	Rat oral LD50: greater than 25.65 g/kg
Sensitization:	Guinea pig sensitization: Not a sensitizer
Irritation:	Rabbit skin irritation: Not irritating Rabbit eye irritation: Not irritating
Other Toxicological Information:	Solvay Acceptable Exposure Limit 1000 ppm

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SECTION 12: ECOLOGICAL INFORMATION

(N/A)

Ecological Paragraph: No ecological information is available for this material.

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SECTION 13: DISPOSAL CONSIDERATIONS

(N/A)

Waste Disposal:

Material, as supplied, is not a hazardous waste. Incinerate in a high-temperature incinerator designed to burn fluorine-containing materials. Processing, use or contamination may make this information inaccurate or incomplete.

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SECTION 14: TRANSPORT INFORMATION

(N/A)

DOT Hazard Class: Not regulated by DOT.

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(N/A)

SECTION 15: REGULATORY INFORMATION**Propene, 1,1,2,3,3,3-hexafluoro, oxidized, polymerized:**

TSCA 8(b): Inventory Status: All components of this product are listed on the Toxic Substances Control Act (TSCA) Section 8(b) Chemical Inventory.

Section 302: Extremely Hazardous Substances: Not listed

Section 312 Hazard Category: SARA 311/312:

Acute: No

Chronic: No

Fire: No

Reactive: No

Pressure: No

Section 313 Toxic Release Form: Toxic Chemicals: Not listed

OSHA 29 CFR 1200: This product is not a "hazardous substance" as defined by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Canada WHMIS: This product is not a "controlled product" as defined by the Canadian Workplace Hazardous Materials Information System (WHMIS).

All components of this product are listed on the Canadian Environmental Protection Act (CEPA) provisional domestic substances list (DSL).

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(N/A)

SECTION 16: ADDITIONAL INFORMATION

NFPA:

Health: 1

Fire Hazard: 0

Reactivity: 0

MSDS Revision Date: May 25, 2005

Disclaimer:

Material Safety Data Sheets contain country-specific regulatory information; therefore, the MSDS's provided are for use only by customers of Solvay Solexis, Inc. in North America. If you are located in a country other than Canada, Mexico or the United States, please contact the Solvay Group company in your country for MSDS information applicable to your location.

The previous information is based upon our current knowledge and experience of our product and is not exhaustive. It applies to the product as defined by the specifications. In case of combinations or mixtures, one must confirm that no new hazards are likely to exist. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and integrity of the work environment. (Unless noted to the contrary, the technical information applies only to pure product).

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NFPA Ratings (Scale of 0-4)

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