

**Orthogonal Inc.**  
**95 Brown Road, Ithaca, NY, 14850**  
www.Orthogonalinc.com

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Material Safety Data Sheet

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**Section 1. Product and company information**

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Tradename: Orthogonal Stripper 700 Solution  
Manufacturer /Supplier: Orthogonal Inc.  
95 Brown Rd.  
Ithaca, NY 14850

Intended Use of Product: For R&D materials science use only, not intended for drug or household use.

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**Section 2. Ingredients identification information**

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2.1 Specific Ingredient Data

Tradename: Orthogonal Stripper 700 Solution  
Synonym: none

Chemical Composition

Ingredient Name	CAS number	Percentage
1,1,1,2,3,3-Hexafluoro-4-(1,1,2,3,3,3-Hexafluoropropoxy) pentane	870778-34-0	>98

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**Section 3. Hazards identification information**

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Main symptoms

Effects from Eye Contact	Mild eye irritation: Signs/symptoms may include redness, pain and tearing.
Effects from Skin Contact	No health effects are expected
Effects from Inhalation	If thermal decomposition occurs: May be harmful if inhaled.
Effects from Ingestion	Gastrointestinal irritation: signs/symptoms may include abdominal pain, Stomach upset, nausea, vomiting and diarrhea.
Hazard Classification	None

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**Section 4. First Aid Measures**

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First-aid measures for different exposure routes

Instruction for eye contact: Flush eyes with large amounts of water. If signs/symptoms persist, get medical attention.

Instructions for skin contact: Wash affected area with soap and water. If signs/symptoms develop, get medical attention.

Instructions for Inhalation: If signs/symptoms develop, remove person to fresh air. If signs/symptoms persist, get medical attention.

Instructions for Ingestion: Do not induce vomiting unless instructed to do so by medical personnel. Give victim two glasses of water. Never give anything by mouth to an unconscious person. Get medical attention.

The most important symptoms and hazardous effects: As above

The protection of first-aid responders: Take Class C Prevention Equipment to carry out first aid at Safety areas.

Notes to physicians: None

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## Section 5. Fire fighting measures

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Suitable Extinguishing Media:

Use fire extinguisher with class B extinguishing agents, for example dry chemical , or carbon dioxide.

Special Instructions for Fire Fighting: Not applicable.

Specific Fire-fighting methods: None.

Fire Fighting Procedures:

Water may be used to blanket the fire. Wear full protective equipment (Bunker Gear) and a self-contained breathing apparatus (SCBA).

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## Section 6. Accidental Release Measures

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Personal precautions: Observe precautions from other sections.

Environmental precautions: Refer to Methods for cleaning up.

Spill Response:

Spill Response: The spill should be cleaned up by qualified personnel. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water. Ventilate the area with fresh air. Contain spill. Working from around the edges of the spill inward, cover with bentonite, vermiculite, or commercially available inorganic absorbent material. Mix in sufficient absorbent until it appears dry. Collect as much of the spilled material as possible. Clean up residue with an appropriate solvent selected by a qualified and authorized person. Ventilate the area with fresh air. Read and follow safety precautions on the solvent label and MSDS. Collect the residue containing solution. Place in a metal container approved for transportation by appropriate authorities. Seal the container. Dispose of collected material as soon as possible.

Personal Precautions: Observe precautions from other sections. Evacuate unprotected and untrained personnel from hazard area.

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## Section 7. Safe handling and storage measures

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### Handling

Incompatible Materials: Store away from oxidizing agents. Store away from heat.

Storage Requirements: Avoid contact with incompatible materials.

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## Section 8. Exposure controls measures

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### Recommended ventilation:

Use with appropriate local exhaust ventilation. For those situations where the fluid might be exposed to extreme overheating due to misuse or equipment failure, use with appropriate local ventilation sufficient to maintain levels of thermal decomposition products below their exposure guidelines. Provide appropriate local exhaust ventilation on open containers. Provide appropriate local exhaust when product is heated.

Control parameters: 8 hours time weighted average exposure limits/Short-term exposure limits/maximum exposure limits:

Eye Protection: Keep out of eyes. The following should be worn alone or in combination, as appropriate, to prevent eye contact.

Hand Protection: Avoid skin contact with hot material.

Skin Protection: Avoid prolonged or repeated skin contact. Wear appropriate gloves when handling hot material to prevent thermal burns.

Respirator Protection: Under normal conditions, airborne exposures are not expected to be significant enough to require respirator protection. Avoid breathing of vapors, mists or spray. Do not breath thermal decomposition products. If thermal decomposition products are expected, use full-face, supplied air respirator.

Ingestion: Do not eat, drink or smoke when using this product. Wash exposed areas thoroughly with soap and water.

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## Section 9. Physical and chemical properties

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### Physical state:

Physical form, appearance, odor: Clear liquid, colorless, slight odor

pH: N/A

Boiling point/boiling range: Exact value 130C at 760 mm Hg

Flash point: N/A

Autoflammability: Exact value 297C

Explosive properties: -

Vapor pressure: Exact value 7mm Hg @ 25C

Water solubility: <10 ppm

Specific gravity: Exact value 1.5

Vapor density: Approx. 11.9, (Air = 1)

Evaporation rate: No data available

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## Section 10. Stability and reactivity

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Stability and Reactivity: Hazardous polymerization will not occur. Stable.

Possible hazardous reactions: -

Occurring under specific conditions

Conditions to Avoid: Avoid contact with incompatible materials.

Materials to avoid: Strong oxidizing agents.

Hazardous decomposition: Carbon monoxide at elevated temperatures, carbon dioxide at elevated temperatures, hydrogen fluoride at elevated temperatures, toxic vapor, gas, particulate at elevated temperatures.

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## Section 11. Toxicological information

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Acute toxicity: No data available

Local effects: Refer to section 3

Sensitization information: No data available

Other toxicological Information: Hydrogen Fluoride has an ACGIH Threshold Limit Value of 3 parts per million (as fluoride) as a Ceiling Limit and an OSHA PEL of 3 ppm of fluoride as an eight hour Time-Weighted Average and 6 ppm of fluoride as a Short Term Exposure Limit. The odor threshold for HF is 0.04 ppm, providing good warning properties for exposure.

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## Section 12. Ecological Information

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Possible environmental effects/environmental mobility: No data available

Other Ecotoxicity Information: No data available

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## Section 13. Waste disposal measures

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Methods for Disposal: Product as sold:

As a disposal alternative, incinerate in an industrial or commercial facility in the presence of a combustible material.

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

Potential for Recycling:

Reclaim if feasible.

Do not dispose wantonly, follow Waste Disposal Act Enforcement Rules to dispose the waste.

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## Section 14. Transportation information

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International regulations: Non-regulated chemical (non-dangerous) for transport

IMO Class: -

ICAO Class: -

UN Number: -  
Domestic regulations for transport: Roadway Traffic Safety Regulations  
Specific transport measures and precautionary conditions: -

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### **Section 15. Regulatory information**

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Applicable regulations: Allowable Employee Exposure Levels in In Hazards Labor safety and hygiene installation regulations.

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### **Section 16. Other information**

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In the above document, the “-” symbol means no information currently available or not applicable to the material. The “?” symbol means the subjected information is not determined.

The information in this Material Safety Data Sheet (MSDS) is believed to be correct as of the date issued. However, no guarantee or warranty of any kind, expressed or implied, is made by Orthogonal Inc. with respect to such information.