



8210 N. Austin Avenue, Morton Grove, IL 60053-3205, U.S.A.
 847-967-6000 800-323-8144
 (Monday - Friday: 7:30 a.m. - 4:00 p.m. CST)

Emergency Contact:
 INFOTRAC 800-535-5053 [U.S.A.]

Name: HFBA or Heptafluorobutyric Anhydride
 Code: 1-270085-500, 1-270851-200, 1-270853-200

..... **SAFETY DATA SHEET**

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY

- 1.1 Product Identifier
 - Name HFBA or Heptafluorobutyric Anhydride
 - Code 1-270085-500, 1-270851-200, 1-270853-200
- 1.2 Use of Substance/Mixture
 - Use Analytical Reagent for Gas Chromatography
- 1.3 Details of Manufacturer/Supplier
 - Company Regis Technologies, Inc.
 8210 N. Austin Avenue
 Morton Grove, IL 60053
 847-967-6000; 800-323-8144 (toll free)
 Email: cservice@registech.com
 www.registech.com
- 1.4 Emergency Telephone
 - INFOTRAC 800-535-5053 [U.S.A.]

SECTION 2 HAZARDS IDENTIFICATION

- 2.1 Classification of the Substance or Mixture
 - GHS Classification

Skin Corrosion / Irritation	Category 1B	H314
Serious Eye Damage / Irritation	Category 1	H314

GHS Label Elements
 Pictograms or hazard symbols



Signal Word Danger

Hazard Statement
 H314-Causes severe skin burns and eye damage.

Precautionary Statements

- [Prevention] P280-Wear protective gloves/eye protection/face protection.
- [Response] P301+P330+P331-IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P303+P361+P353-IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
 P304+P340-IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 P305+P351+P338-IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P314- Get medical advice/attention if you feel unwell.
- [Storage] P402+P404- Store in a dry place. Store in a closed container.
 P403+P235-Store in a well-ventilated place. Keep cool.

Abbreviations: NA—not applicable; NE—not established; U—unknown/Not available; NL—not listed; N—no; Y—yes.



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SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Name HFBA or Heptafluorobutyric Anhydride
 Synonyms Heptafluorobutanoic acid, anhydride; Heptafluorobutyric acid, anhydride; Heptafluorobutanoic anhydride; Heptafluorobutyryl anhydride; Perfluorobutanoic anhydride; Perfluorobutyric anhydride

Hazardous components

Component	Classification	Concentration
Heptafluorobutanoic acid, anhydride CAS No. 336-59-4 EC No. 206-410-8	Skin Corr. 1B; Eye Dam. 1; H314	≥ 90.0 %

For full test of the H-Statements mentioned in this Section, see Section 16.

SECTION 4 FIRST AID MEASURES

- 4.1 Description of first aid measures
 - General: Do not attempt to neutralize as it frequently makes matters worse.
 - Eye contact: Rinse eyes with plenty of water for at least 15 minutes; lift eyelids occasionally. If irritation persists, consult physician.
 - Skin contact: Immediately remove contaminated clothing and shoes, then wash skin with soap and plenty of water. If irritation persists, consult physician.
 - Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and keep person warm and at rest. Consult physician.
 - Ingestion: Give large amounts of water or milk (two glasses at most). Avoid vomiting. Consult physician immediately. Do not attempt to neutralize.
 - Physician note: Symptomatic and supportive care. There is no specific antidote.
- 4.2 Most important symptoms and effects, both acute and delayed.
 Causes severe skin burns and eye damage. Risk of blindness.
- 4.3 Indication of immediate medical attention and special treatment needed.
 No information available.

SECTION 5 FIRE-FIGHTING MEASURES

- 5.1 Suitable Extinguishing Media
 Carbon dioxide, dry chemical powder, dry sand.
 Contact with water – Hydrolyzes to produce corrosive heptafluorobutyric acid (CAS No. 422-64-0).
- 5.2 Specific hazards arising from the chemical.
 Corrosive-- Reacts with water and may evolve heat to produce corrosive heptafluorobutyric acid. Sufficient dilution of water may reduce the acidity of the solution.
 Water spray may be used to cool fire-exposed containers. Emits toxic fumes under fire conditions.
 Produces carbon oxides, hydrogen fluoride upon combustion.
- 5.3 Advice for fire-fighters
 Wear personal protective equipment for corrosive acidic vapor conditions. Wear self-contained breathing apparatus (SCBA) if necessary.

SECTION 6 ACCIDENTAL RELEASE MEASURES

- 6.1 Personal precautions, protective equipment, and emergency procedures
 For non-emergency personnel - Do not breath vapors or mists. Avoid material contact. Evacuate unnecessary personnel from area, observe emergency procedures, consult an expert.
 For emergency responders – Protective equipment for corrosive acidic vapor conditions. See Section 8.3.

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- 6.2 Environmental precautions
 Prevent material from entering drains. May form corrosive heptafluorobutyric acid on contact with water.
- 6.3 Methods of clean up
 Evacuate unnecessary people from area. Isolate spilled material.
 Ventilate area. Eliminate all ignition sources. Use spark proof tools.
 Neutralize with sodium bicarbonate or other suitable neutralizing agent.
 If neat or in solution, mix with sand or similar inert adsorbent material or spill pillow.
 Sweep up, seal in appropriate hazardous waste container, and hold for proper waste disposal.
 Keep out of water supplies and sewers. Wash spill site after material pickup is complete.

SECTION 7 HANDLING AND STORAGE.....

- 7.1 Safe Handling Precautions
 Wear suitable protective equipment to avoid contact with skin, eyes, or inhalation of corrosive acidic vapors.
 Wash thoroughly after handling. Immediately remove contaminated clothing.
 Handle in a dry, well ventilated area. Use local exhaust if vapor can be generated.
 Keep away from ignition sources. Take precautionary measures against static discharge.
 Handle under nitrogen. Protect from moisture. Water/moist air contact produces corrosive heptafluorobutyric acid.
- 7.2 Storage Conditions
 Store under inert gas in a tightly sealed container. Store in a cool, dry place suitable for flammable and corrosive materials.
 Protect from moisture, ignition sources, and away from alkaline, acidic and oxidizing materials.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION.....

- 8.1 Control parameters
 Exposure limits Heptafluorobutyric Anhydride (336-59-4) – No information available.
 Environmental Do not empty into drains. May form corrosive heptafluorobutyric acid on contact with water.
- 8.2 Appropriate engineering controls
 Safety shower and eye wash
 Local exhaust and mechanical ventilation required. Hood recommended. Fume scrubber.
- 8.3 Personal protection
 Eye/Face Chemical safety eyewear or goggles
 Hand Compatible chemical-resistant gloves: Rubber (e.g., natural rubber, neoprene, nitrile, or equivalent), Silver Shield®, Viton®
 Respiratory NIOSH/MSHA or European Standard EN 149 approved respirator for organic/acid gas, dust, and mists if exposure limits are exceeded or irritation or other symptoms are experienced.
 Dermal (not hand) Protective Clothing (e.g., lab coat)--flame retardant anti-static material recommended.
 Hygiene Avoid inhalation, ingestion; contact with eyes, skin, and clothing; and prolonged or repeated exposure.
 Wash thoroughly after handling. Wash contaminated clothing before reuse. Discard contaminated footwear.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

- 9.1 Information on physical and chemical data

Chemical Formula	C ₈ F ₁₄ O ₃
Molecular Weight	410.06
Form	liquid
Appearance	clear, colorless
Odor	pungent, strong stench, sharp acidic
Odor threshold	Not available
pH	<2 (As is.)
Melting/freezing point	-43°C (-45.4°F) (lit.)

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Boiling point:	108-109°C (226-228°F) (lit.)	
Flammability (liquid, solid)		
Flash Point	Not available	Method: closed cup
Flammable limits (%v/v)	LEL (lower explosive limit)	Not available
	UEL (upper explosive limit)	Not available
Autoignition temperature	Not available	
Decomposition temperature	Not available	
OSHA Flammability Class	Not available	
Evaporation Rate (BuAc = 1.0)	Not available	
Vapor pressure (mmHg)	Not available	
Vapor density (air=1):	1.612	
Relative density (g/cm ³)	1.653 at 20°C	
Water Solubility	Decomposes/ hydrolyzes	
Water reactive	yes—readily hydrolyzes to form heptafluorobutyric acid	
Solubility (other)	Soluble in halogenated solvents; insoluble in polar solvents.	
Partition coefficient: N-octanol/water	Not available	
Viscosity	Not available	
% Volatiles	100%	
Refractive Index (n _D ²⁰ =):	1.2870 (20°C)	

SECTION 10 STABILITY AND REACTIVITY

- 10.1 Reactivity
Reactive to water or moisture.
- 10.2 Chemical Stability
Stable if stored under nitrogen and protected from moisture and heat.
- 10.3 Possibility of hazardous reactions
Decomposes on contact with water or moist air to form corrosive heptafluorobutyric acid.
- 10.4 Conditions to avoid
Avoid incompatibilities.
Protect from heat and ignition sources.
Keep out of water supplies and sewers.
- 10.5 Incompatible materials
Alkalies or metals
Strong acids or bases
Strong oxidizers or reducing agents
Moist air or water
- 10.6 Hazardous decomposition products
Combustion carbon oxides, hydrogen fluoride
Hydrolysis/decomposition corrosive heptafluorobutyric acid

SECTION 11 TOXICOLOGICAL INFORMATION

- 11.1 Toxicological Information
Acute toxicity Not available. See Further Information below.
Skin corrosion/irritation Not available. See Further Information below.
Serious eye damage/irritation Not available. See Further Information below.
Respiratory irritation Not available. See Further Information below.
Respiratory or skin sensitization Not available
Germ cell mutagenicity Not available

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Carcinogenicity	Not available
IARC	Not available
NTP	Not available
Reproductive toxicity	Not available
STOT-single exposure	Not available
STOT-repeated exposure	Not available
Aspiration hazard	Not available
RTECS Number	Not available

11.2 Further Information

Potential health effects	
Eye	Can cause eye burns, blindness, lacrimation, and destruction of mucous membranes.
Skin	Can cause severe skin burns.
Inhalation	Can be extremely destructive to mucous membranes and respiratory tract. Symptoms: coughing, shortness of breath, difficulty breathing, headache.
Ingestion	Can be very destructive if in contact with mucous membranes of the GI system.
Symptoms	See above route. Pre-existing conditions that may be aggravated: not determined.
Miscellaneous	No data available.

SECTION 12 **ECOLOGICAL INFORMATION**

Ecotoxicity	Not available
Persistence and degradability	Not available
Bioaccumulative potential	Not available
Motility in soil	Not available
Other adverse effects	Not available
General Notes	Heptafluorobutyric Anhydride when in contact with water, readily hydrolyses to corrosive heptafluorobutyric acid. Do not empty into drains or water courses.

SECTION 13 **DISPOSAL CONSIDERATIONS**

13.1 Disposal methods	
U . S. EPA Waste Codes	D002
Waste Characterization (per U. S. regulations)	RCRA Hazard Class (40CFR 261): Corrosive Generator is responsible for proper waste characterization. NOTE: U. S. Federal and state hazardous waste regulations may differ considerably.
Waste Disposal	That which cannot be recovered or recycled, should be disposed of in accordance with all applicable international, national, regional, state, and local laws. Do NOT dump into any sewer, on ground, or into any body of water.

SECTION 14 **TRANSPORT INFORMATION**

14.1 UN number	UN 3265
14.2 UN proper shipping name	Corrosive liquid, acidic, organic, n.o.s. (heptafluorobutyric anhydride)
14.3 Transport Hazard Class	8
14.5 Packing group	PG II
14.6 Environmental hazards	Not applicable
14.6 Special precautions for user	See Section 8 for exposure/personal protection guidance.

SECTION 15 **REGULATORY INFORMATION**

15.1 Safety, health and Environmental regulations specific for the product in question.

NFPA: H3 F3 R1 W (avoid water) HMIS: H3 F3 R1

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15.2 Chemical Inventory Lists

Reviews, Standards, and Regulations

.....Heptafluorobutyric Anhydride
 CAS number 336-59-4
 TSCA:Y
 This compound is sold strictly for FDA or research and development use.....
 EINECS:.....Y
 Number 206-410-8
 CERCLA [Section 103 (40 CFR 302.4)]:..... NL
 RQ (lbs) NA
 RCRA Waste Code..... NA
 OSHA Process Safety [29 CFR 1910.119]: NL
 TQ (lbs)..... NA
 Clean Air Act
 [Section 112r (40 CFR 68)]:..... NL
 TQ (lbs)..... NA
 Contains Ozone Depleters (Class I or Class II) N
 SARA Title III Notification [40 CFR 302.4]:
 Section 302/304 (EHS) Ingredient
 [40 CFR 355.3] NL
 TPQ (lbs)..... NA
 RQ (lbs) NA
 Section 313 Ingredient [40 CFR 372.65] NL
 SARA Hazards Acute.....Y Chronic..... N Fire.....N Pressure..... N ReactivityY
 State Lists: NL
 States..... NL
 On CA 65 Significant Risk Level..... NL

SECTION 16 **OTHER INFORMATION**

16.1 Full test of H-Statements referred to under Section 2 and 3.

Eye Dam. Serious eye damage
 H314 Causes severe skin burns and eye damage.
 Skin Corr. Skin corrosion

The above information is believed to be correct to the best of our present state knowledge, but does not purport to be all-inclusive and shall be used only as a guide. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.

Prepared by: **Regis Technologies**

This is the last page of this MSDS.