

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	Brenntag Blend #4
Manufacturer	Sentury Reagents, Inc. 2515 Commerce Dr. Rock Hill, SC 29730
Telephone	803-327-6880
Fax	803-327-3872
Emergency Phone #	PERS: 800-633-8253
International Phone #	011-801-629-0667
Account	10613

2. HAZARDS IDENTIFICATION**OSHA Hazards**

Target Organ Effect, Toxic by inhalation, Toxic by ingestion, Toxic by skin absorption, Corrosive, Oxidizer

Target Organs:

Liver, Kidneys, Lungs, Teeth, Cardiovascular System

GHS Classification

Oxidizing Liquids (Category 3)
Acute Toxicity, Oral (Category 2)
Acute Toxicity Inhalation (Category 2)
Acute Toxicity Dermal (Category 3)
Skin Corrosion (Category 1A)
Serious Eye Damage (Category 1)

GH3 Label elements, including precautionary statements

Pictogram



Signal word DANGER

Hazard statement(s)

H272	May Intensify Fire
H300	Fatal if swallowed
H311	Toxic in contact with skin
H330	Fatal if inhaled
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

Precautionary statement(s)

P210	Keep away from heat/sparks/open flame/hot surfaces.
P220	Store away from clothing/combustible materials.
P260	Do not breathe fumes/vapours/mist/spray.
P264	Wash hands, face, protective equipment after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well ventilated area.
P280	Wear protective gloves/clothing/eye and face protection.
P284	Wear respiratory protection.
P301+330+331+310	If swallowed: Rinse mouth. DO NOT induce vomiting. Immediately call a poison center/doctor.
P302+352+312+310	If on skin, wash with plenty of water. Apply cool Benzalkonium Chloride pads and/or Calcium Gluconate. Immediately call a poison center/doctor.
P304+340	If inhaled: Remove person to fresh air and keep comfortable for breathing.
P320	Specific Treatment: See specific treatment on SDS.

P361+364 Take off immediately all contaminated clothing and wash before reuse.
 P305+351+338 If in eyes: Was with plenty of water. Remove contact lenses if present and easy to do. Continue rinse.
 P403+233 Keep container tightly closed and store in a well ventilated place.
 P501 Dispose of contents/container in accordance of all hazardous waste laws.

HMIS Classification

Health hazard: 3
Flammability: 1
Physical hazards: 3
Personal protection F

NFPA Rating

Health hazard: 3
Fire: 1
Reactivity hazard: 1

Potential Health Effects

Inhalation May cause irritation of the nose, throat, and respiratory tract.
Skin May produce pain, redness, severe irritation or full thickness burns. May be absorbed through the skin with possible systemic effects.
Eyes Corrosive! Causes irritation and burns. Can cause burns that may lead to permanent impairment of vision, including blindness.
Ingestion Corrosive. Causes immediate pain and burn of the mouth, throat, esophagus and gastrointestinal tract.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula: <10% HF in water by weight H2SO4:HF:HN03

Component	Volume %
*Hydrofluoric Acid	
CAS-No. 7664-39-3	Min 14% Max 16%
*Nitric Acid	
CAS-No. 7697-37-2	Min 6% Max 8%
Sulfuric Acid	
CAS-No. 7664-93-9	Min 14% Max 16%
Water	
	Min 60% Max 62%

*Disclosure as a toxic chemical is required under Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

4. FIRST AID MEASURES

General advice

Compound-Specific First Aid & Notes to Physicians

Speed in removing exposed personnel from contaminated area and in removing HF from skin or eyes is of primary importance. First aid must be started immediately, within seconds, in all cases of contact with hydrofluoric acid in any form. All potentially exposed personnel should be trained in first aid care for HF burns. First aid actions should be planned before beginning work with HF. Calcium gluconate gel should be readily accessible in areas where HF exposure potential exists. Medical assistance should be obtained promptly for all affected persons. The doctor should be informed in detail of the accident. HF differs from other acids in that the fluoride ion readily penetrates skin, causing destruction of deep tissue layers including bone. Unlike the action of other acids, which are rapidly neutralized, this process may continue for days. HF contaminated oils and tars may require additional first aid steps because water washing may not completely remove the oil or tar. Sites that have potential for HF contaminated oils or tars should develop appropriate procedures to remove the oil/tar from the skin to allow treatment. The following are Sentury Reagents' Inc. first aid recommendation for HF exposures; however, modifications may be required to comply with local or state medical board regulatory requirements.

If inhaled

IMMEDIATELY remove the patient to an uncontaminated atmosphere. Call a physician. Administer oxygen as soon as possible. Trained personnel should provide calcium gluconate, 2.5% solution, by nebulizer with patient in sitting position. Keep patient warm. Patients not breathing If exposed person is not breathing, do not give mouth to mouth resuscitation; instead use an Ambu-

bag. Do not administer any liquids or solids to an unconscious person.

In case of skin contact

IMMEDIATELY shower with large quantities of water, within seconds after contact or suspected contact, and completely remove all clothing while in shower (remove goggles last). FLUSH SKIN THOROUGHLY WITH WATER FOR 5 MINUTES. Flushing with water thoroughly for 5 minutes is sufficient to effectively remove HF from skin. Additional flushing time is unnecessary and will delay further treatment. Apply calcium gluconate (2.5%) gel at burn site or area of contamination by rubbing in continuously. Wear impervious gloves. Examination and treatment by a physician is recommended as quickly as feasible. It may be necessary to transport patient to nearest hospital emergency room. Remember that concentrated HF causes immediate pain, BUT DILUTE HF SOLUTIONS MAY NOT CAUSE REDNESS, BURNING OR PAIN UNTIL SEVERAL MINUTES OR EVEN HOURS HAVE ELAPSED.

In case of eye contact

IMMEDIATELY flush eyes with large quantities of water for 5 MINUTES while holding the eyelids apart. Trained personnel should apply calcium gluconate 1% (no stronger) by continuous drip. If skills are available at the scene, a Morgan Therapeutic Lens can be used to irrigate the eyes with a calcium gluconate 1% solution. THE EYES WILL REQUIRE FURTHER TREATMENT--SEE NOTES TO PHYSICIAN--"EYE CONTACT".

If swallowed

DO NOT induce vomiting. If patient is conscious, give water orally to dilute followed by antacid or milk. Seek medical assistance immediately. Call a physician. Throat burns may cause severe swelling and require a tracheotomy (opening the windpipe). The patient should be admitted to the hospital and carefully attended.

MEDICAL SUPPLIES:

The following materials have been found to be useful and effective in the treatment of hydrogen fluoride burns, and should be on hand at the First Aid Station:

- o Calcium gluconate gel - 2.5%. This gel is prepared by mixing 1 standard ampule (10 mL, 10%) of USP calcium gluconate with 1-ounce of water soluble lubricant (e.g., K-Y Lubricating Jelly, Johnson & Johnson). The shelf life of the gel has not been determined. A periodic replacement period should be specified (ie., annually). Storage of gel has limitations and refrigeration may help. Avoid freezing the gel as calcium may precipitate out and reduce its effectiveness.
- o Calcium gluconate 10% (standard ampules).
- o One percent calcium gluconate in normal, sterile saline solution. Make by mixing 1 standard ampule per 90 mL of saline solution.
- o 2.5% calcium gluconate in normal, sterile saline solution. Make by mixing 1 standard ampule per 30 mL of saline solution. Solution (both 1% and 2.5%) shelf-life has not been determined. A periodic replacement period should be specified (ie., every 6 months).
- o Milk of magnesia or other liquid antacid.
- o 99% pure USP medical oxygen with regulator and mask.
- o Impervious gloves.
- o Nebulizer.
- o Blanket.
- o Shower facilities.
- o Ambu bag.
- o Nasal cannula units and Morgan Therapeutic Lens (for eye irrigation).

NOTES TO PHYSICIANS:

Choice of therapy following first aid measures is at the discretion of attending physician. Selection of the best treatment will depend on the following factors:

- o Concentration and temperature of the HF.
- o Degree and extent of the burn.
- o Duration of exposure.
- o Areas of the body affected.
- o Elapsed time since exposure.
- o First aid measures taken before physician's arrival.
- o Age and clinical history of patient.
- o General condition of the patient.

The following methods, using materials listed under MEDICAL SUPPLIES, have been effective in treatment of HF burns. Methods are broken down by routes of exposure. Minor exposures are limited exposures to HF liquid and vapor. Major exposures are extensive exposures to HF liquid and vapor and all cases of combined routes of exposure, e.g., skin and inhalation exposures.

Patients suffering suspected face or chest skin exposure should be assumed to have incurred inhalation exposure also. Be certain that the patient has been properly decontaminated. In all cases of major exposure by HF, hypocalcemia may be present; therefore, calcium levels must be determined immediately upon arrival at the hospital. During hospitalization calcium levels should be monitored frequently. If possible, blood should be drawn for serum calcium in site medical facility and sent to the hospital with the patient. Cardiac monitoring (EKG) is necessary (hypocalcemia causes prolonged Q-T interval and may cause cardiac rhythm abnormalities). Renal and liver function should be monitored. In major inhalation exposure, pulmonary edema or edema of upper airway may occur. Blood gases should be monitored accordingly.

SKIN CONTACT: Care should be taken to see that personnel who apply the gel, especially on the initial application, wear medical gloves to prevent skin contamination with HF and the development of hand burns. Topically applied Calcium Gluconate

Gel (2.5%) must be rubbed into all burn areas continuously until pain has completely subsided, but not longer than 30 minutes. Calcium gluconate gel should not be used until after thorough and complete washing of the skin with water for 5 minutes. If some relief of pain is not obtained within 20-30 minutes, consider calcium gluconate topical injections using stainless steel needle. Severe Skin Burns: When there is evidence of skin penetration as in second or third degree burns or for large burns, a 5% calcium gluconate solution may be injected using a small gauge needle (no. 30) by infiltrating the skin and subcutaneous tissues in the same manner as injection of any local anesthetic. The standard ampoule of 10% calcium gluconate for intravenous use must be diluted to 5% by mixing with an equal amount of normal sterile saline. Care should be taken to avoid overdosing with calcium. Do not inject more than 0.5 mL per square centimeter of affected skin surface. No local infiltration of anesthetic should be used, but in the case of severe burns, regional or general anesthesia may be considered. DO NOT INJECT CALCIUM CHLORIDE to treat skin burns. In cases of overexposure due to HF, as in skin burns of greater than approximately 2 square inches (13 cm²) in area, hypocalcemia may be present. Therefore, systemic administration of calcium gluconate may be necessary. Infusions can be repeated until serum calcium, EKG or symptoms improve. Frequent monitoring of serum calcium, cardiac, renal, and hepatic functions is necessary. Treat hypomagnesemia with 1-2 grams of magnesium.

HAND BURNS: The treatment for hand burns require expert assistance; consult a hand surgeon. Intra arterial calcium infusions have been successfully used to treat HF hand exposures. Calcium gluconate in very small doses can be injected into the fingers. In some cases, burr holes must be drilled in the nail or the nail must be split or removed to permit adequate contact with the sequestering agent. Local anesthesia may be required, but be aware that it may interfere with determining the adequacy of treatment. Care must be used because multiple injections into the fingers can lead to pressure necrosis. Patients whose skin has compromised integrity may have an increased risk of infection after multiple injections of calcium gluconate. Consider the use of antibiotic creams such as Silvadene or Garamycin in these cases.

EYE CONTACT: Immediate washing of the eyes with large quantities of water for 5 minutes should be followed by continuous drip of 1% calcium gluconate (no stronger) in normal, sterile saline using a nasal prong or Morgan Lens. Up to 500 mL over 1-2 hours may be used. A topical anesthetic can minimize the tendency of the eyelid to close and facilitate inserting an irrigation lens. If exposure was minor, perform visual acuity testing and examine the eyes for corneal damage using fluorescein and a slit lamp. An eye specialist (ophthalmologist) should be consulted immediately.

VAPOR INHALATION: Persons suspected of having had HF exposure by inhalation should immediately be given 100% oxygen by mask or catheter. As soon as possible (as precautionary treatment), they should be administered (in the sitting position and utilizing a nebulizer) 2.5% calcium gluconate solution by inhalation for 20 minutes. All those suspected of HF exposure and who experience signs and/or symptoms of respiratory irritation should be considered as strong candidates for admission to an intensive care unit for careful observation during the first 24-48 hours. Delayed pulmonary edema is likely in patients with burns of the skin of face or neck. Patient should be carefully watched for edema of the upper airway with respiratory obstruction and the airway maintained by tracheotomy or endotracheal intubation if necessary. The administration of respiratory care should be very closely supervised and most likely includes continued administration of 2.5% calcium gluconate by inhalation. Toxicity from pulmonary absorption of fluoride ion may rapidly develop in the liver and kidneys and may require more energetic measures of control, up to and including hemodialysis, particularly if the blood urea nitrogen and potassium levels rise. Supportive care is necessary for all organ systems.

INGESTION: THIS SITUATION IS LIFE THREATENING. DO NOT INDUCE VOMITING AND DO NOT USE ACTIVATED CHARCOAL. Refer to first aid measures as described. Extreme throat swelling may cause airway obstruction, which may require endotracheal intubation or cricothyroidotomy.

5. FIRE-FIGHTING MEASURES

Conditions of flammability

Not flammable.

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting Use water spray to keep containers cool.

Hazardous combustion products

Reaction with certain metals generates flammable and potentially explosive hydrogen gas. Considerable heat is evolved when contacted with many substances. Heat increases pressure and may explode container.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Avoid contact with skin, eyes, or clothing. Do not breathe vapor or mist.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Engineering Controls**

Use only with ventilation sufficient to keep vapor concentrations below the exposure limit. Use forced draft ventilation and scrubbers for fume control.

Exposure Limits

Hydrofluoric Acid (10-48%)

PEL (OSHA): 3 ppm, 8 Hr. TWA, as F

RLV (ACGIH): 0.5 ppm, 8 Hr. TWA, as F

Ceiling 2 ppm, as F

Personal protective equipment**Respirators:**

If exposure limits may be exceeded, wear NIOSH approved respiratory protection/

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Wear chemical splash goggles. In addition, where the possibility exists for face contact due to splashing or spraying or material, wear a full-length face shield/chemical splash goggle combination or an acid hood.

Skin and body protection

Wear a full acid suit of acid resistant material with hood, gloves, boots, and full-face air supplied respirator.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES**Appearance**

Form	liquid
Colour	Colorless liquid, fumes in air

Safety data

pH	1
Melting point/ Freezing point	-34°F
Boiling point	152°F
Flash point	Not flammable
Ignition temperature	no data available
Autoignition Temp	no data available
Lower explosion limit	no data available
Upper explosion limit	no data available
Vapour pressure	130 mm Hg @ 70°F
Density	(Air = 1.0) .714 @ 70°F
Water solubility	(Weight%) Complete
Partition coefficient: n-octanol/ Relative vapour density	no data available
Odour	Sharp pungent odor
Odour Threshold	no data available
Evaporation rate	<1 Compared to: Ether

10. STABILITY AND REACTIVITY**Chemical stability**

Stable under recommended storage conditions.

Possibility of hazardous reactions

no data available

Conditions to avoid

no data available

Materials to avoid

Arsenic trioxide, phosphorous Pentoxide, ammonia, calcium oxide, sodium hydroxide, vinyl acetate, ethylenediamine, acetic anhydride.

Hazardous decomposition products

Decomposes by reaction with metals, liberates hydrogen gas. On heating to decomposition, could yield toxic fumes of fluorides. Attacks glass and other silicon containing compounds. Reacts with silica to reduce silicon tetrafluoride, a hazardous colorless gas. Evaporation would produce hydrogen fluoride gas.

11. TOXICOLOGICAL INFORMATION**Acute toxicity****Inhalation LC50**

2300 ppm in rats

Dermal LD50

1-2 minute ALD: 500 mg/kg in mice

Other information on acute toxicity

no data available

Skin corrosion/irritation

Hydrogen Fluoride is corrosive to skin and eyes.

Serious eye damage/eye irritation

Inhalation studies at very high concentrations resulted in eye, mucous membrane and skin irritation, corneal opacities, respiratory distress, pulmonary congestion, and hemorrhage.

Respiratory or skin sensitization

Inhalation studies at very high concentrations resulted in eye, mucous membrane and skin irritation, corneal opacities, respiratory distress, pulmonary congestion, and hemorrhage.

Germ cell mutagenicity

no data available

Carcinogenicity

An 18 month study in animals demonstrated no carcinogenic activity.

Reproductive toxicity

no data available

Teratogenicity

Known human reproductive toxicant

Specific target organ toxicity - single exposure (Globally Harmonized System)

no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

no data available

Potential health effects

Inhalation May be harmful if inhaled. May cause respiratory tract irritation.

Ingestion May be harmful if swallowed.

Skin May be harmful if absorbed through skin. May cause skin irritation.

Eyes May cause eye irritation.

Synergistic effects

no data available

Additional Information

RTECS: GB2975000

12. ECOLOGICAL INFORMATION**Toxicity**

no data available

Persistence and degradability

Sentury Reagents, Inc.

no data available

Bioaccumulative potential

no data available

Mobility in soil

no data available

PBT and vPvB assessment

no data available

Aquatic Toxicity

96 hour LC50 in fish(species not specified): 1-50 ppm

13. DISPOSAL CONSIDERATIONS

RCRA: Is the unused product a RCRA hazardous waste if discarded? YES

RCRA number is U134 for Hydrogen Fluoride and D002(Corrosive).

Other Disposal Considerations: Treat small amounts by adding to an excess of water and neutralize with a lime slurry, limestone, soda ash or other alkali. Add to water and neutralize cautiously as reaction is immediate and can be violent. Considerable amounts of harmful vapors may be released. Good ventilation is required. Dispose of residue (or slurry) by removal to an approved chemical waste landfill or by an approved waste contractor.

The information offered here is for the product as shipped. Use and / or alterations to the product such as mixing with other materials may significantly change the characteristics of the material and alter the RCA classification and the proper disposal method.

14. TRANSPORT INFORMATION

DOT (US)

UN2922, Corrosive liquids, toxic, n.o.s. (hydrofluoric acid, nitric acid), 8, (6.1), II

IMDG

UN2922, Corrosive liquids, toxic, n.o.s. (hydrofluoric acid, nitric acid), 8, (6.1), II

IATA

UN2922, Corrosive liquids, toxic, n.o.s. (hydrofluoric acid, nitric acid), 8, (6.1), II

15. REGULATORY INFORMATION

TOXIC SUBSTANCE CONTROL ACT (TSCA):

TSCA Inventory Status: Hydrofluoric Acid, Aqueous is listed.

SARA. TITLE III / CERCLA

RQ's & TPQ's

"Reportable Quantities" (RQ's) and / or "Threshold Planning Quantities (TPQ's) exist for the following ingredients.

Ingredient	SARA / CERCLA RQ lbs.)	SARAITIS TPQ (lbs.)
Hydrofluoric Acid	100	100
Nitric Acid	1,539 (65%) 1,786 (56%)	
Sulfuric Acid	1.000	1.000

Spills / releases resulting in the loss of any ingredient at or above its RQ requires immediate notification to the National Response Center (1-800-424-8802) and to your local Emergency Planning committee.

SECTION 311 HAZARD CLASS Immediate. Delayed.

SARA 313 Toxic Chemicals: The following ingredients are SARA 313 "Toxic Chemicals"

<u>Ingredient</u>	<u>Comment</u>
Hydrofluoric Acid	None
Nitric Acid	None

STATE RIGHT TO KNOW: In addition to the ingredients found in section 2, the following are listed, for state right to know purposes.

None.

WHMIS CLASSIFICATION (CANADA)

Class D, Division 1, Subdivision A and Class E

FOREIGN INVENTORY STATUS:

Canadian DSI (Domestic Substance List)

EINECS (European Inventory of Existing Commercial Chemical Substances)

California Prop. 65 Components

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Further information

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate

safety precautions. It does not represent any guarantee of the properties of the product. Sentury Reagents, Inc., shall not be held liable for any damage resulting from handling or from contact with the above product.