SAFETY DATA SHEET

Harvard Chemical Research, Inc.

Issue Date 08-May-2014 **Revision Date** 10-Apr-2014 **Version** 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Britener A-600

Other means of identification

Product Code 8994
UN/ID No. 2922
Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Aluminum Britener.
Uses advised against No information available

Details of the supplier of the safety data sheet

Manufacturer Address
Harvard Chemical Research, Inc., 3595 Zip Industrial Blvd., Atlanta, GA 30354

Emergency telephone number

Company Phone Number 1-404-761-0657
24 Hour Emergency Phone Number 1-800-424-9300
Emergency Telephone Chemtrec 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

OSHA Regulatory Status
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral	Category 2
Acute toxicity - Dermal	Category 1
Acute toxicity - Inhalation (Gases)	Category 4
Acute toxicity - Inhalation (Dusts/Mists)	Category 2
Skin corrosion/irritation	Category 1 Sub-category A
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 1A

Label elements

Emergency Overview

Danger

Hazard statements
Fatal if swallowed
Fatal in contact with skin
Fatal if inhaled
Causes severe skin burns and eye damage
May cause cancer

Appearance Clear **Physical state** liquid **Odor** Pungent Acid

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Do not get in eyes, on skin, or on clothing
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wear respiratory protection

Precautionary Statements - Response
Specific treatment (see .? on this label)
Specific measures (see .? on this label)
Specific treatment is urgent (see .? on this label)
Immediately call a POISON CENTER or doctor/physician
Specific treatment (see .? on this label)
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Immediately call a POISON CENTER or doctor/physician
Immediately call a POISON CENTER or doctor/physician
Wash contaminated clothing before reuse
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Call a POISON CENTER or doctor/physician if you feel unwell
Immediately call a POISON CENTER or doctor/physician
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do not induce vomiting.
Give 1 oz. of magnesia with equal amount of water.

Precautionary Statements - Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)
Other Information
• Harmful to aquatic life with long lasting effects
Unknown Acute Toxicity % of the mixture consists of ingredient(s) of unknown toxicity

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight-%	Trade Secret
Sulfuric Acid	7664-93-9	<20	*
Hydrofluoric Acid	7664-39-3	<20	*
Phosphoric Acid	7664-38-2	<5	*
Ethylene Glycol Monobutyl Ether	111-76-2	<5	*
Sodium Nitrate	7631-99-4	<.90	*

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First aid measures

General advice Immediate medical attention is required. Remove contaminated clothing and shoes.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

Skin Contact Remove clothing and soak contaminated are in 0.13% iced aqueous Zephiran chloride solution for 30-60 minutes. DO NOT use Zephiran solution on eyes.

Inhalation Remove to fresh air. If not breathing, clear airway and start artificial respiration. If victim is having trouble breathing, give supplemental oxygen, if available. Get medical attention.

Ingestion Do not induce vomiting. Give 1 oz. of magnesia with equal amount of water. Get medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
CO_2 Foam.

Unsuitable extinguishing media Caution: Use of water spray when fighting fire may be inefficient.

Specific hazards arising from the chemical
Liquid produces hydrogen in contact with metals.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Wear protective gloves/protective clothing and eye/face protection.

Environmental precautions

Environmental precautions See Section 12 for additional ecological information.

Methods and material for containment and cleaning up

Methods for containment Do not freeze. Keep container closed when not in use.

Methods for cleaning up Impound and treat large amounts with alkaline material. PH adjust and dispose in accordance with federal and state regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Use personal protective equipment as required. Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice. Use vinyl apron, rubber gloves and goggles.

Conditions for safe storage, including any incompatibilities

Storage Conditions Do not freeze. Keep container tightly closed in a dry and well-ventilated place.

Incompatible materials Cyanides. Sulfides. Strong alkaline materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines Irritation of skin and eyes.

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric Acid 7664-93-9	TWA: 0.2 mg/m^3 thoracic fraction	TWA: 1 mg/m^3 (vacated) TWA: 1 mg/m^3	IDLH: 15 mg/m^3 TWA: 1 mg/m^3
Hydrofluoric Acid 7664-39-3	TWA: 2.5 mg/m^3 F S* Ceiling: 2 ppm F	TWA: 2.5 mg/m^3 F TWA: 2.5 mg/m^3 dust (vacated) TWA: 2.5 mg/m^3 (vacated) STEL: 6 ppm F	IDLH: 30 ppm Ceiling: 6 ppm 15 min Ceiling: 5 mg/m^3 15 min TWA: 3 ppm TWA: 2.5 mg/m^3
Phosphoric Acid 7664-38-2	STEL: 3 mg/m^3 TWA: 1 mg/m^3	TWA: 1 mg/m^3 (vacated) TWA: 1 mg/m^3 (vacated) STEL: 3 mg/m^3	IDLH: 1000 mg/m^3 TWA: 1 mg/m^3 STEL: 3 mg/m^3
Ethylene Glycol Monobutyl Ether 111-76-2	TWA: 20 ppm	TWA: 50 ppm TWA: 240 mg/m^3 (vacated) TWA: 25 ppm (vacated) TWA: 120 mg/m^3 (vacated) S* S*	IDLH: 700 ppm TWA: 5 ppm TWA: 24 mg/m^3

Appropriate engineering controls

Engineering Controls Showers
Eyewash stations
Ventilation systems.

Individual protection measures, such as personal protective equipment

Eye/face protection Tight sealing safety goggles.

Skin and body protection	Vinyl apron. Rubber gloves.
Respiratory protection	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
General Hygiene Considerations	Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	liquid		
Appearance	Clear	**Odor**	Pungent Acid
Color	No information available	**Odor threshold**	No information available

Property	**Values**	**Remarks • Method**
pH	No information available	
Melting point/freezing point	No information available	
Boiling point / boiling range	104 >212°F	
Flash point	No information available	
Evaporation rate	<1	
Flammability (solid, gas)	No information available	
Flammability Limit in Air		
Upper flammability limit:	No information available	
Lower flammability limit:	No information available	
Vapor pressure	No information available	
Vapor density	>1	
Specific Gravity	1.06	
Water solubility	completely soluble	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
Oxidizing properties	No information available	

Other Information

Softening point	No information available
Molecular weight	No information available
VOC Content (%)	No information available
Density	8.83
Bulk density	No information available

10. STABILITY AND REACTIVITY

Reactivity
No data available

Chemical stability
Stable.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous polymerization Hazardous polymerization does not occur.

Conditions to avoid
Do not freeze.

Incompatible materials
Cyanides. Sulfides. Strong alkaline materials.

Hazardous Decomposition Products
CO and oxides of phosphorous and flourides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information No data available

Inhalation Overall cover of personnel if vapors of products are encountered.

Eye contact Severely irritating to eyes.

Skin Contact Severely irritating to skin.

Ingestion Harmful if swallowed. Do not induce vomiting. Seek medical attention.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Sulfuric Acid 7664-93-9	= 2140 mg/kg (Rat)	-	= 510 mg/m^3 (Rat) 2 h
Hydrofluoric Acid 7664-39-3	-	-	= 0.79 mg/L (Rat) 1 h
Phosphoric Acid 7664-38-2	= 1530 mg/kg (Rat)	= 2740 mg/kg (Rabbit)	> 850 mg/m^3 (Rat) 1 h
Ethylene Glycol Monobutyl Ether 111-76-2	= 470 mg/kg (Rat)	= 99 mg/kg (Rabbit)	= 450 ppm (Rat) 4 h
Sodium Nitrate 7631-99-4	= 1267 mg/kg (Rat)	-	-

Information on toxicological effects

Symptoms No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization No information available.
Germ cell mutagenicity No information available.
Carcinogenicity No information available.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sulfuric Acid 7664-93-9	A2	Group 1	Known	X
Ethylene Glycol Monobutyl Ether 111-76-2	A3	Group 3	-	-
Sodium Nitrate 7631-99-4	-	Group 2A	-	X

Reproductive toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure No information available.
Aspiration hazard No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity % of the mixture consists of ingredient(s) of unknown toxicity
The following values are calculated based on chapter 3.1 of the GHS document .

12. ECOLOGICAL INFORMATION

Ecotoxicity

4% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Sulfuric Acid 7664-93-9	-	500: 96 h Brachydanio rerio mg/L LC50 static	29: 24 h Daphnia magna mg/L EC50
Hydrofluoric Acid 7664-39-3	-	660: 48 h Leuciscus idus mg/L LC50	270: 48 h Daphnia species mg/L EC50
Phosphoric Acid 7664-38-2	-	3 - 3.5: 96 h Gambusia affinis mg/L LC50	4.6: 12 h Daphnia magna mg/L EC50
Ethylene Glycol Monobutyl Ether 111-76-2	-	2950: 96 h Lepomis macrochirus mg/L LC50 1490: 96 h Lepomis macrochirus mg/L LC50 static	1000: 48 h Daphnia magna mg/L EC50 1698 - 1940: 24 h Daphnia magna mg/L EC50
Sodium Nitrate 7631-99-4	-	994.4 - 1107: 96 h Oncorhynchus mykiss mg/L LC50 static 2000: 96 h Lepomis macrochirus mg/L LC50 static	-

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Chemical Name	Partition coefficient
Hydrofluoric Acid 7664-39-3	-1.4
Ethylene Glycol Monobutyl Ether 111-76-2	0.81
Sodium Nitrate 7631-99-4	-3.8

Other adverse effects No information available

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes PH adjust and dispose in accordance with federal and state regulations.

Contaminated packaging Do not reuse container.

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Hydrofluoric Acid 7664-39-3	U134	-	-	U134

Chemical Name	California Hazardous Waste Status
Sulfuric Acid 7664-93-9	Toxic Corrosive
Phosphoric Acid 7664-38-2	Corrosive
Sodium Nitrate 7631-99-4	Toxic Ignitable Reactive

14. TRANSPORT INFORMATION

DOT Regulated

UN/ID No.	2922
Proper shipping name	Corrosive liquid, toxic, n.o.s (Hydrogen fluoride, Sulfuric acid)
Hazard Class	8
Subsidiary class	6.1
Packing Group	II

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Sulfuric Acid - 7664-93-9	1.0
Hydrofluoric Acid - 7664-39-3	1.0
Ethylene Glycol Monobutyl Ether - 111-76-2	1.0
Sodium Nitrate - 7631-99-4	1.0

SARA 311/312 Hazard Categories

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sulfuric Acid 7664-93-9	1000 lb	-	-	X
Hydrofluoric Acid 7664-39-3	100 lb	-	-	X
Phosphoric Acid 7664-38-2	5000 lb	-	-	X

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Sulfuric Acid 7664-93-9	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ
Hydrofluoric Acid 7664-39-3	100 lb	100 lb	RQ 100 lb final RQ RQ 45.4 kg final RQ
Phosphoric Acid 7664-38-2	5000 lb	-	RQ 5000 lb final RQ RQ 2270 kg final RQ

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

Chemical Name	California Proposition 65
Sulfuric Acid - 7664-93-9	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Sulfuric Acid 7664-93-9	X	X	X
Hydrofluoric Acid 7664-39-3	X	X	X
Phosphoric Acid 7664-38-2	X	X	X
Ethylene Glycol Monobutyl Ether 111-76-2	X	X	X
Sodium Nitrate 7631-99-4	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not Applicable

16. OTHER INFORMATION

NFPA	**Health hazards** 0	**Flammability** 0	**Instability** 0	**Physical and Chemical Properties** -
HMIS	**Health hazards** 4	**Flammability** 0	**Physical hazards** 3	**Personal protection** X

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Revision Note

No information available

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet