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Ve/S	sion 1
1 Identification	
Product identifier Product name: Barium bromate	
Stock number: A11008	
CAS Number: 13967-90-3	
<b>EC number:</b> 237-750-5	
Details of the supplier of the safety data sheet	
Manufacturer/Supplier: Alfa Aesar The Science Scientific Chamicale Inc.	
Thermo Fisher Scientific Chemicals, Inc. 30 Bond Street Ward Hill, MA 01835-8099 Tel: 800-343-0660	
Wald Thin, MA 0135-8059 Tel: 800-342-0660 F <u>a</u> x: <u>8</u> 00-322-4757	
Fax. 600-522-4757 Email: tech@alfa.com www.alfa.com	
Information Department: Health, Safety and Environmental Department	
Emergency telephone number: During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.	
2 Hazard(s) identification	
Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)	
GHS03 Flame over circle	
Ox. Sol. 2 H272 May intensify fire; oxidizer.	
GHS07	
Acute Tox. 4 H302 Harmful if swallowed.	
Acute Tox. 4 H332 Harmful if inhaled. Hazards not otherwise classified No information known.	
Label elements GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)	· – – –
Hazard pictograms	
GHS03 GHS07	
Signal word Danger Hazard statements	
H272 May intensify fire; oxidizer. H302+H332 Harmful if swallowed or if inhaled	
Precautionary statements	
P221 Take any precaution to avoid mixing with combustibles. P262 Do not get in eyes, on skin, or on clothing. WHMIS classification	
C - Oxidizing materials D1B - Toxic material causing immediate and serious toxic effects	
Classification system HMIS ratings (scale 0-4)	
(Hazardous Materials Identification System)	
HEALTH I Health (acute effects) = 2 FIRE Flammability = 0 REACTIVITY 3 Physical Hazard = 3	
Other hazards	
Results of PBT and vPvB assessment PBT: Not applicable.	
vPvB: Not applicable.	
3 Composition/information on ingredients	
Chemical characterization: Substances CAS# Description: 13967-90-3 Barium bromate	
Concentration: ≤100%	
Identification number(s): EC number: 237-750-5	
4 First-aid measures	
Description of first aid measures After inhalation	
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Seek immediate medical advice.	
After skin contact Immediately wash with water and soap and rinse thoroughly.	
(Contd. on pa	age 2) USA

Product name: Barlum bromate       (Contil. of page After simulation metion and/one After sivel/owing Seek medical treatment. Information / Rodicion       (Contil. of page After sivel/owing Seek medical treatment. Information / Rodicion         Prof. Split and information / Rodicion       and defacts, both acute and delayed Heatmith if sivel/owing and effects, both acute and delayed Heatmith if sivel/owing and the status and an appendix treatment needed No further relevant information available.       (Contil. of page After Split and After
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Barlum oxide Hydrogen bromite (HB) Hydrogen
Protective equipment: Wear self-contained respirator.         Wear self-contained respirator.         Wear self-contained respirator.         6 Accidental release measures         Personal precautions, protective equipment and emergency procedures         Ensuit adequale ventilation         Environmental precautions: Do not allow product to reach sewage system or any water course.         Methods and material for containment and cleaning up:         Dispose of containmined anterial as weak according to section 13.         Prevention of secondary hazards:         Acts as an outilizing agent material such as wood, paper and fats         Keference to other sections         Reference to other sections         See Section 5 for information on personal protection equipment.         See Section 1 for disposal information.         Precenting and storage         PAC 1: Substance is not listed.         PAC 2: Substance is not listed.         PAC 2: Substance is not listed.         PAC 3: Substance is anotified.         Pace 1: Diverse and the workplace.         Insulation about protection agent on factorial and frame.         Respondence is an oxidizer and its head measures.         Pace 1: Substance is an oxidizer and its head measures.         Pace 1: Substance is an oxidizer and its head of measures.         Precentions for safe handling measures.
<ul> <li>6 Accidental release measures</li> <li>Personal precautions, protective equipment and emergency procedures</li> <li>Wear protective equipment. Keep unprotected persons way.</li> <li>Ensure adequate ventilation</li> <li>Environmental precautions: Do not allow product to reach sewage system or any water course.</li> <li>Methods and material stor containment and cleaning up:</li> <li>Dispose of contaminated material as wate according to section 13.</li> <li>Ensure adequate ventilation:</li> <li>Methods and material sex based according to section 13.</li> <li>Ensure adequate ventilation:</li> <li>Methods and material as wate according to section 13.</li> <li>Ensure adequate ventilation:</li> <li>Methods and no organic materials such as wood, paper and fats</li> <li>Keep away from combustible material.</li> <li>Reference to other sections</li> <li>See Section 7 for information on personal protection equipment.</li> <li>See Section 7 for information on personal protection equipment.</li> <li>See Section 7 for information on personal protection equipment.</li> <li>See Section 7 for information on personal protection equipment.</li> <li>See Section 1 for formation on personal protection equipment.</li> <li>See Section 1 for information on personal protection.</li> <li>PAC-1: Substance is not listed.</li> <li>PAC-2: Substance is not listed.</li> <li>PAC-3: Substance is not listed.</li> <li>PAC-3: Substance is not listed.</li> <li>PAC-3: Substance is not listed.</li> <li>Precautions for safe handling</li> <li>Keep container tightly closed containers.</li> <li>Ensure good vehilation at the workplace.</li> <li>Information about protection against explosions and frees:</li> <li>Information about protection against explosions and frees:</li> <li>Information about protection against explosions and frees:</li> <li>This substance is no tails ted of eaction with reducing agents or combustib</li></ul>
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Reference to other sections         See Section 7 for information on safe handling         See Section 8 for information on safe handling         Protective Action Criteria for Chemicals         PAC-1: Substance is not listed.         PAC-3: Substance is not listed.         PAC-3: Substance is not listed.         Precautions for safe handling         Keep continer tightly sealed.         Store in cool, dry place in tightly closed containers.         Ensure good ventilation at the workplace.         Information about protection against explosions and fires:         Substance/product can reduce the ignition temperature of flammable substances.         This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.         Conditions for safe storage, including any incompatibilities         Storage         Requirements to be met by storerooms and receptacles: No special requirements.         Information about storage in one common storage facility:         Store away from relating agents.         Do not store with morphic metales.         Store away from relating agents.         Do not store with morphic metales.         Store away from
See Section 8 for information on personal protection equipment. See Section 7 for disposal information. Protective Action Criteria for Chemicals PAC-1: Substance is not listed. PAC-2: Substance is not listed. PAC-3: Substance is not listed. 7 Handling Precautions for safe handling Reep container tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation at the workplace. Information about protection against explosions and fires: Substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Conditions for safe storage, including any incompatibilities Store away from fammable substances. Store away from reducing agents. Store away from metal powders. Store away
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PAC-3: Substance is not listed.         7 Handling and storage         Handling         Precautions for safe handling         Keep container tightly sealed.         Store in cool, dry place in tightly closed containers.         Ensure good veniliation at the workplace.         Information about protection against explosions and fires:         Substance/product can reduce the lightlion temperature of flammable substances.         This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.         Conditions for safe storage, including any incompatibilities         Storage         Requirements to be met by storerooms and receptacles: No special requirements.         Information about storage in one common storage facility:         Store away from flammable substances.         Store away from metal powders.         Store away from metal powders.         Store away from metal powders.         Store away from oxidizing agents.         Further information about storage conditions:         Keep container lightly sealed.         Store away from conductions in well sealed containers.         Specific end use(s) No further relevant information available.         8 Exposure controls/personal protection         Additional information about design of technical systems:
Handling Precautions for safe handling Keep container tightly sealed.         Store in cool, dry place in tightly closed containers. Ensure good veniliation at the workplace.         Information about protection against explosions and fires: Substance/product can reduce the ignition temperature of flammable substances.         This substance is an oxidizer and its head of reaction with reducing agents or combustibles may cause ignition.         Conditions for safe storage, including any incompatibilities Storage         Requirements to be met by storerooms and receptacles: No special requirements. Information about storage in one common storage facility: Store away from flammable substances.         Store away from reducing agents.         Do not store with organic materials. Store away from metal powders. Store away from metal powders. Store away from oxidizing agents.         Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Specific end use(s) No further relevant information available.         8 Exposure controls/personal protection Additional information about design of technical systems:
Keep container tightly sealed.         Store in cool, dry place in tightly closed containers.         Ensure good ventilation at the workplace.         Information about protection against explosions and fires:         Substance/product can reduce the ignition temperature of flammable substances.         This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.         Conditions for safe storage, including any incompatibilities         Store age         Requirements to be met by storerooms and receptacles: No special requirements.         Information about storage in one common storage facility:         Store away from flammable substances.         Store away from reducing agents.         Do not store with organic materials.         Store away from metal powders.         Store away from sidizing agents.         Further information about storage conditions:         Keep container tightly sealed.         Store in cool, dry conditions in well sealed containers.         Specific end use(s) No further relevant information available.         8 Exposure controls/personal protection         Additional information about design of technical systems:
Information about protection against explosions and fires: Substance/product can reduce the ignition temperature of flammable substances. This substance is an oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Conditions for safe storage, including any incompatibilities Storage Requirements to be met by storerooms and receptacles: No special requirements. Information about storage in one common storage facility: Store away from flammable substances. Store away from flammable substances. Store away from metal powders. Store away from oxidizing agents. Further information about storage conditions: Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Specific end use(s) No further relevant information available. 8 Exposure controls/personal protection Additional information about design of technical systems:
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Requirements to be met by storerooms and receptacles: No special requirements.         Information about storage in one common storage facility:         Store away from flammable substances.         Store away from metal powders.         Do not store with organic materials.         Store away from metal powders.         Store away from on metal powders.         Store away from oxidizing agents.         Further information about storage conditions:         Keep container tightly sealed.         Store in cool, dry conditions in well sealed containers.         Specific end use(s) No further relevant information available.         8 Exposure controls/personal protection         Additional information about design of technical systems:
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Specific end use(s) No further relevant information available. 8 Exposure controls/personal protection Additional information about design of technical systems:
Specific end use(s) No further relevant information available. 8 Exposure controls/personal protection Additional information about design of technical systems:
Additional information about design of technical systems:
Propeny operating chemical fume nood designed for nazardous chemicals and naving an average face velocity of at least 100 feet per minute.
Control parameters Components with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace. Additional information: No data
Exposure controls Personal protective equipment General protective and hygienic measures The usual pre-autionany measures for handling chemicals should be followed
The usual procedutionary measures for handling chemicals should be followed. Keep away from foodstuffs, beverages and feed. Remove all soiled and contaminated clothing immediately. Wash hands before breaks and at the end of work.
Wash hands before breaks and at the end of work. Maintain an ergonomically appropriate working environment. Breathing equipment: Use suitable respirator when high concentrations are present. Recommended filter device for short term use:
Recommended filter device for short term use: Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air- purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards. Protection of hands:
Impervious gloves Check protective gloves prior to each use for their proper condition. The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

(Contd. of page 2)

### Product name: Barium bromate

Eye protection: Safety glasses with side shields / NIOSH (US) or EN 166(EU) Body protection: Protective work clothing.

9 Physical and chemical properties			
Information on basic physical and chemical properties General Information			
Appearance:			
Form:	Powder		
Odor:	Odorless		
Odor threshold:	Not determined.		
pH-value:	Not applicable.		
Change in condition			
Melting point/Melting range:	Not determined		
Boiling point/Boiling range: Sublimation temperature / start:	Not determined		
Sublimation temperature / start:	Not determined		
Flammability (solid, gaseous)	Contract with combustible material may cause fire.		
Ignition temperature: Decomposition temperature:	Not determined Not determined		
Auto igniting:	Not determined		
Danger of explosion:	Not determined.		
Explosion limits:	Not determined.		
Lower:	Not determined		
Upper:	Not determined		
Vapor pressure:	Not applicable.		
Density at 20 °C (68 °F):	3.99 g/cm³ (33.297 lbs/gal)		
Relative density	Not determined.		
Vapor density Evaporation rate	Not applicable.		
Solubility in / Miscibility with	Not applicable.		
Water:	Not determined		
Partition coefficient (n-octanol/water):			
Viscosity:			
dynamic:	Not applicable.		
kinematic:	Not applicable.		
Other information	No further relevant information available.		
10 Stability and reactivity			

## 10 Stability and reactivity

Reactivity May intensify fire; oxidizer. Chemical stability Stable under recommended storage conditions. Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications. Possibility of hazardous reactions Reacts with storng oxidizing agents Reacts with reducing agents Reacts with flammable substances Conditions to avoid No further relevant information available. Incompatible materials: Incompatible materials: Flammable substances Flammable substances Reducing agents Oxidizing agents Organic materials Metal powders Hazardous decomposition products: Barium oxide Hydrogen bromide 11 Toxicological information Information on toxicological effects Acute toxicity: Harmful if inhaled. Harmful if swallowed. LD/LC50 values that are relevant for classification: No data Skin irritation or corrosion: May cause irritation Sensitization: No sensitizing effects known. Germ cell mutagenicity: No effects known. Carcinogenicity: EPA-CBD: Carginogenic potential cannot be determined. ACGIH A4: Not classifiable as a human carcinogen: Inadeguate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals. Reproductive toxicity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - single exposure: No effects known. Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. 12 Ecological information Toxicity Toxicity Aquatic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: General notes: Do not allow undiluted product or large quantities to reach ground water, water course or sewage system. Avoid transfer into the environment. Avoid transfer into the environment.

Product name: Barium bromate

Product name: Barium bromate		
<b>Results of PBT and vPvB assessment PBT:</b> Not applicable. <b>vPvB:</b> Not applicable. <b>Other adverse effects</b> No further relevant information available.	(Contd. of page 3)	
<b>13 Disposal considerations</b> Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal. Uncleaned packagings: Recommendation: Disposal must be made according to official regulations.		
14 Transport information		
UN-Number DOT, IMDG, IATA	UN2719	
UN proper shipping name DOT ADR IMDG, IATA	Barium bromate 2719 Barium bromate BARIUM BROMATE	
Transport hazard class(es) DOT		
Class Label ADR	5.1 Oxidizing substances 5.1, 6.1	
Class Label IMDG	5.1 (OT2) Oxidizing substances 5.1+6.1	
Class Label IATA	5.1 Oxidizing substances 5.1/6.1	
Class Label	5.1 Oxidizing substances 5.1 (6.1)	
Packing group DOT, ADR, IMDG, IATA		
DOT, ADR, IMDG, IATA Environmental hazards:	II Not applicable.	
Special precautions for user EMS Number: Segregation groups Stowage Category Segregation Code	Warning: Oxidizing substances F-H,S-Q Bromates A SG38 Stow "separated from" ammonium compounds. SG49 Stow "separated from" cyanides	
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code Not applicable.		
Transport/Additional information:		
DOT Quantity limitations	On passenger aircraft/rail: 5 kg	
Marine Pollutant (DOT):	On passenger aircraft/rail: 5 kg On cargo aircraft only: 25 kg No	
IMDG Limited quantities (LQ) Excepted quantities (EQ)	1 kg Code: E2 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 500 g	
UN "Model Regulation":	UN 2719 BARIUM BROMATE, 5.1 (6.1), II	

# 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS) Hazard pictograms



**Signal word** Danger **Hazard statements** H272 May intensify fire; oxidizer. H302+H332 Harmful if swallowed or if inhaled.

(Contd. on page 5)

#### Product name: Barium bromate

(Contd. of page 4)

USA

**Precautionary statements** P221 Take any precaution to avoid mixing with combustibles. P262 Do not get in eyes, on skin, or on clothing.

National regulations All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory. All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).

SARA Section 313 (specific toxic chemical listings)

13967-90-3 Barium bromate

 

 13967-90-3
 Banum bromate

 California Proposition 65
 Propo55 - Chemicals known to cause cancer Substance is not listed.

 Prop 65 - Developmental toxicity Substance is not listed.
 Prop 65 - Developmental toxicity, female Substance is not listed.

 Prop 65 - Developmental toxicity, female Substance is not listed.
 Information about limitation of use: For use only by technically qualified individuals.

 Other regulations, limitations and prohibitive regulations
 Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

 The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

 market and use must be observed. Substance is not listed. Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed. Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user. International with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.
 Department issuing SDS: Global Marketing Department Date of preparation/Revision: Print date, revision date and version number are in the header of each page.
 Abbreviations and acronyms: ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods DOT: US Department of Transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Air Transport Association
 EINECS: European Inventory of Existing Commercial Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society) HMIS: Hazardous Materials Identification System (USA)
 WHMIS: Workplace Hazardous Materials Information System (Canada) LC50: Lethal concentration. 50 percent
 PBT: Persistent, Bioaccumulative and Toxic SVHC: Substances of Very High Concern PV: Svery Persistent and very Bioaccumulative ACGIH: American Conference of Governmental Industrial Hygienists (USA) OSHA: Occupational Safety and Health Administration (USA)
 MTP: National Toxicology Program (USA)
 IAFC: International Agency for Research on Cancer EPA: Environmental Protection Agency (USA)
 Ox. Sol. 2: Oxidizing solids – Category 2 Acute Tox. 4: Acute toxicity – Category 4