SECTION 1. IDENTIFICATION

Product Identifier: (4N) 99.99% Barium Aluminum Alloy

Product Code: BA-AL-04

CAS Number: 12253-23-5

Relevant identified uses of the substance: Scientific research and development

Supplier details:
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351
Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
Classification according to Regulation (EC) No 1272/2008
GHS02 Flame
Flam. Sol. 1 H228 Flammable solid.
Water-react. 2 H261 In contact with water releases flammable gas.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC
F; Highly flammable
R11-14/15: Highly flammable. Reacts violently with water, liberating extremely flammable gases.

Information concerning particular hazards for human and environment:
Not applicable
Hazards not otherwise classified
No information known.

Label elements
Labelling according to Regulation (EC) No 1272/2008
The substance is classified and labeled according to the CLP regulation.
Hazard pictograms

GHS02
Signal word
Danger
Hazard statements
H228 Flammable solid.
H261 In contact with water releases flammable gas.
Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P231+P232 Handle under inert gas. Protect from moisture.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.
P402+P404 Store in a dry place. Store in a closed container.
P501 Dispose of contents/container in accordance with local/regional/
national/international regulations.
WHMIS classification
B6 - Reactive flammable material
Classification system
HMIS ratings (scale 0-4)
(Hazardous Materials Identification System)
Health (acute effects) = 1
Flammability = 3
Physical Hazard = 2
Other hazards
Results of PBT and vPvB assessment
PBT:
Not applicable.
vPvB:
Not applicable

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization: Substances
CAS# Description:
7440-39-3 Barium
7429-90-5 Aluminum

Identification number(s):
EC number:
231-149-1 Barium
231-072-3 Aluminum

SECTION 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.
Seek immediate medical advice.

After eye contact
Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing
Seek medical treatment.
Information for doctor
Most important symptoms and effects, both acute and delayed
No further relevant information available.
Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing agents
In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.
For safety reasons unsuitable extinguishing agents
Water
Special hazards arising from the substance or mixture
Reacts violently with water
If this product is involved in a fire, the following can be released:
Barium oxide
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions:
Do not allow product to reach sewage system or any water course.
Do not allow to penetrate the ground/soil.
Methods and material for containment and cleaning up:
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
Prevention of secondary hazards:
Keep away from ignition sources.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7. HANDLING AND STORAGE

Handling
Precautions for safe handling
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Reacts violently with water

Information about protection against explosions and fires:
- Protect against electrostatic charges.
- Conditions for safe storage, including any incompatibilities

Storage
- Requirements to be met by storerooms and receptacles:
  - Store in a cool location.

Information about storage in one common storage facility:
- Store away from water/moisture.
- Store away from air.

Further information about storage conditions:
- Store under dry inert gas.
- Protect from humidity and water.
- Keep container tightly sealed.
- Store in cool, dry conditions in well sealed containers.

Specific end use(s)
- No further relevant information available.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:
- Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Control parameters
- Components with limit values that require monitoring at the workplace:
  - 7440-39-3 Barium (100.0%)
  - PEL (USA) Long-term value: 0.5 mg/m³ as Ba
  - REL (USA) Long-term value: 0.5 mg/m³ and soluble compounds, as Ba
  - TLV (USA) Long-term value: 0.5 mg/m³ as Ba
  - EL (Canada) Long-term value: 0.5 mg/m³ as Ba
  - EV (Canada) Long-term value: 0.5 mg/m³ as Ba

Additional information:
- No data

Exposure controls

Personal protective equipment
- General protective and hygienic measures
  - The usual precautionary 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.
  - Maintain an ergonomically appropriate working environment.

Breathing equipment:
- Use suitable respirator when high concentrations are present.

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.
Material of gloves
Nitrile rubber, NBR
Penetration time of glove material (in minutes)
480
Glove thickness
0.11 mm
Eye protection:
Safety glasses
Full face protection
Body protection:
Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties
General Information
Appearance: Solid
Form: Not determined
Color: Not determined
Odor: Not determined
Odor threshold: Not determined
pH-value: Not applicable.
Change in condition
Melting point/Melting range: Not determined
Boiling point/Boiling range: Not determined
Sublimation temperature / start: Not determined
Flammability (solid, gaseous): Not determined
Ignition temperature: Not determined
Decomposition temperature: Not determined
Auto igniting: Not determined.
Danger of explosion: Not determined.
 Explosion limits:
Lower: Not determined
Upper: Not determined
Vapor pressure at 547 °C (1017 °F): Not determined
Density at 20 °C (68 °F): Not determined
Relative density: Not determined
Vapor density: Not applicable
Evaporation rate: Not applicable
Solubility in / Miscibility with Water: Not determined
Contact with water releases flammable gases
Partition coefficient (n-octanol/water): Not determined
Viscosity: Not determined
Dynamic: Not applicable.
kinematic: Not applicable
Other information
No further relevant information available.
SECTION 10. STABILITY AND REACTIVITY

Reactivity
Reacts violently with water.
In contact with water releases flammable gases which may ignite spontaneously.
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
Contact with water releases flammable gases
Reacts violently with water
Conditions to avoid
No further relevant information available.
Incompatible materials:
Air
Water/moisture
Hazardous decomposition products:
Barium oxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
LD/LC50 values that are relevant for classification:
No data
Skin irritation or corrosion:
May cause irritation
Eye irritation or corrosion:
May cause irritation
Sensitization:
No sensitizing effects known.
Germ cell mutagenicity:
No effects known.
Carcinogenicity:
EPA-CBD: Carcinogenic potential cannot be determined.
ACGIH A4: Not classifiable as a human carcinogen: Inadequate 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:
The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
Additional toxicological information:
To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
Carcinogenic categories
OSHA-Ca (Occupational Safety & Health Administration)
Substance is not listed.

SECTION 12. ECOLOGICAL INFORMATION

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.
Results of PBT and vPvB assessment
PBT:
Not applicable.
vPvB:
Not applicable.
Other adverse effects
No further relevant information available.

SECTION 13. DISPOSAL CONSIDERATIONS

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.

SECTION 14. TRANSPORT INFORMATION

UN-Number
DOT, IMDG, IATA
UN1400
UN proper shipping name
DOT
Barium
IMDG, IATA
BARIUM
Transport hazard class(es)
DOT
Class
4.3 Substances which, in contact with water, emit flammable gases.
Label
4.3
Class
4.3 (W2) Substances which, in contact with water, emit flammable gases
Label
4.3
IMDG, IATA
Class
4.3 Substances which, in contact with water, emit flammable gases.
Label
4.3
Packing group
DOT, IMDG, IATA
II
Environmental hazards: Not applicable.
Special precautions for user
Warning: Substances which, in contact with water, emit flammable gases
EMS Number: F-G,S-O
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.
Transport/Additional information: DOT
Marine Pollutant (DOT): No
UN "Model Regulation": UN1400, Barium, 4.3, II

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
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 Domestic Substances List (DSL).
SARA Section 313 (specific toxic chemical listings)
7440-39-3 Barium
California Proposition 65
Prop 65 - 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, male
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.
Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use)
Substance is not listed.
REACH - Pre-registered substances
Substance is listed.
Chemical safety assessment:
A Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2019 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.