

SECTION 1: IDENTIFICATION

1.1. Product Identifier

Product Form: Mixture
Product Name: PA106 Actuator
Product Code: PA106
Synonyms: Piston Actuator

1.2. Intended Use of the Product

Use of the Substance/Mixture: Instantaneous linear motion

1.3. Name, Address, and Telephone of the Responsible Party

Company

EaglePicher Technologies, LLC
1215 W C St.
Joplin MO 64801
United States of America
1 417 623 8000
inquiry@eaglepicher.com
www.eaglepicher.com

1.4. Emergency Telephone Number

Emergency Number : For Chemical Emergency Call CHEMTREC day or night
Within USA and Canada: 1.800.424.9300
Mexico: 1.800.681.9531
Outside USA and Canada: 1.703.527.3887 (collect calls accepted)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the Substance or Mixture

GHS-US Classification

Explosive Category 1.4 H204

2.2. Label Elements

GHS-US Labeling

Hazard Pictograms (GHS-US)



Signal Word (GHS-US)

: Warning

Hazard Statements (GHS-US)

: H204 - Fire or projection hazard.

Precautionary Statements (GHS-US)

: P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240 - Ground/Bond container and receiving equipment.
P250 - Do not subject to grinding/shock/friction.
P280 - Wear protective gloves, protective clothing, and eye protection.
P370+P380 - In case of fire: Evacuate area.
P373 - DO NOT fight fire when fire reaches explosives.
P374 - Fight fire with normal precautions from a reasonable distance.
P401 - Store in accordance with local, regional, national, and international regulations.
P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations.

2.3. Other Hazards

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

2.4. Unknown Acute Toxicity (GHS-US)

No data available

PA106 Actuator

Safety Data Sheet

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Not applicable

3.2. Mixture

Name	Synonyms	Product Identifier	%*	GHS US classification
Barium styphnate	Barium bis(2,4,6-trinitroresorcinolate) / 1,3-Benzenediol, 2,4,6-trinitro-, barium salt (2:1) / Resorcinol, 2,4,6-trinitro-, barium salt (2:1)	(CAS-No.) 20236-55-9	≤ 100	Expl. 1.1, H201 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332
Boron	boron	(CAS-No.) 7440-42-8	≤ 100	Comb. Dust
Potassium perchlorate	Perchloric acid, potassium salt / Perchloric acid, potassium salt (1:1) / potassium perchlorate	(CAS-No.) 7778-74-7	≤ 100	Ox. Sol. 2, H272 Eye Irrit. 2A, H319 STOT SE 3, H335

* The actual concentration of ingredient(s) is withheld as a trade secret in accordance with the 29 CFR 1910.1200. Percentages are listed in weight by weight percentage (w/w%) for liquid and solid ingredients. Gas ingredients are listed in volume by volume percentage (v/v%). Full text of H-phrases: see section 16.

SECTION 4: FIRST AID MEASURES

4.1. Description of First-aid Measures

First-aid Measures General: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid Measures After Inhalation: When symptoms occur: go into open air and ventilate suspected area. Obtain medical attention if breathing difficulty persists.

First-aid Measures After Skin Contact: Remove contaminated clothing. Drench affected area with water for at least 5 minutes. Obtain medical attention if irritation develops or persists.

First-aid Measures After Eye Contact: Rinse cautiously with water for at least 5 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain medical attention if irritation develops or persists.

First-aid Measures After Ingestion: Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

4.2. Most Important Symptoms and Effects Both Acute and Delayed

Symptoms/Injuries: Energetic effects (blast effects, heat, noise, and shrapnel) from functioning of the product can cause serious physical injuries.

Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

4.3. Indication of Any Immediate Medical Attention and Special Treatment Needed

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product container or label at hand.

SECTION 5: FIRE-FIGHTING MEASURES

5.1. Extinguishing Media

Suitable Extinguishing Media: Water spray, fog, carbon dioxide (CO₂), alcohol-resistant foam, or dry chemical. DO NOT FIGHT FIRES INVOLVING EXPLOSIVES. Water may be applied through fixed extinguishing system (sprinklers) as long as people need not be present for the system to operate.

Unsuitable Extinguishing Media: DO NOT fight fires involving explosives.

5.2. Special Hazards Arising From the Substance or Mixture

Fire Hazard: Explosive, could cause fire and secondary explosions.

Explosion Hazard: Explosives, Division 1.4 - Explosives (with no significant blast hazard).

Reactivity: Risk of explosion by shock, friction, fire or other sources of ignition.

5.3. Advice for Firefighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire. DO NOT FIGHT FIRES INVOLVING EXPLOSIVE MATERIALS.

Firefighting Instructions: DO NOT ATTEMPT TO FIGHT FIRE DIRECTLY. Fight fire remotely due to the risk of explosion.

Immediately evacuate all personnel from the area to a safe distance. Guard against re-entry. Thermal decomposition can lead to release of irritating gases and vapors.

Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

PA106 Actuator

Safety Data Sheet

Hazardous Combustion Products: Barium oxides. Potassium oxides. Oxides of boron. Chlorine compounds. Carbon and nitrogen oxides.

Other Information: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, Protective Equipment and Emergency Procedures

General Measures: Keep away from heat, sparks, open flames, hot surfaces. – No smoking. Do not get in eyes, on skin, or on clothing. Use special care to avoid static electric charges. Evacuate danger area. Avoid shock and friction.

6.1.1. For Non-Emergency Personnel

Protective Equipment: Non-emergency personnel should evacuate the area of the spill and only enter after emergency personnel have declared the area safe to enter.

Emergency Procedures: Evacuate unnecessary personnel. Evacuate danger area.

6.1.2. For Emergency Personnel

Protective Equipment: Equip cleanup crew with proper protection.

Emergency Procedures: Eliminate ignition sources. Ventilate area. Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

6.2. Environmental Precautions

Prevent entry to sewers and public waters.

6.3. Methods and Materials for Containment and Cleaning Up

For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams. Absorb and contain with inert material. Place contents in suitable container for disposal.

Methods for Cleaning Up: Mechanically recover the product. Use only non-sparking tools. Clean up spills immediately and dispose of waste safely. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

6.4. Reference to Other Sections

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for Safe Handling

Additional Hazards When Processed: Avoid the build-up of electrostatic charge. Risk of explosion if heated under confinement. Avoid shock and friction.

Precautions for Safe Handling: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Avoid prolonged contact with eyes, skin and clothing. Avoid breathing dust. Keep away from sources of ignition - No smoking.

Hygiene Measures: This product is an explosive and should only be used under the supervision of trained and licensed personnel. Handle in accordance with good industrial hygiene and safety procedures. Wash hands and other exposed areas with mild soap and water before eating, drinking, or smoking and again when leaving work.

7.2. Conditions for Safe Storage, Including Any Incompatibilities

Technical Measures: Comply with applicable regulations. Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment.

Storage Conditions: Store under moderate temperatures recommended by competent authority. Store under dry conditions in a well ventilated magazine that has been approved for either detonator storage or explosive storage. Do NOT store explosives in a detonator magazine or detonators in an explosive magazine. Keep away from heat, spark and flames. Keep containers closed. Explosives should be kept well away from initiating explosives; protected from physical damage; separated from oxidizing materials, combustibles, and sources of heat. Isolate from incompatibles.

Incompatible Materials: Strong acids, strong bases, strong oxidizers.

Special Rules on Packaging: Keep only in the original container.

7.3. Specific End Use(s)

Instantaneous linear motion

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control Parameters

For substances listed in section 3 that are not listed here, there are no established exposure limits from the manufacturer, supplier, importer, or the appropriate advisory agency including: ACGIH (TLV), AIHA (WEEL), NIOSH (REL), or OSHA (PEL).

PA106 Actuator

Safety Data Sheet

8.2. Exposure Controls

Appropriate Engineering Controls

: Suitable eye/body wash equipment should be available in the vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed. Proper grounding procedures to avoid static electricity should be followed. Product to be handled in a closed system and under strictly controlled conditions. Use explosion-proof equipment.

Personal Protective Equipment

: Gloves. Protective clothing. Protective goggles. Face shield. Insufficient ventilation: wear respiratory protection.



Materials for Protective Clothing

: Chemically resistant materials and fabrics. Wear fire/flame resistant/retardant clothing.

Hand Protection

: Wear protective gloves.

Eye and Face Protection

: Chemical safety goggles. Faceshield as determined by task.

Skin and Body Protection

: Wear suitable protective clothing.

Respiratory Protection

: If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. In case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

Other Information

: When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on Basic Physical and Chemical Properties

Physical State	: Solid
Appearance	: Cylindrical metal housing (w/ lead wires)
Odor	: Odorless
Odor Threshold	: No data available
pH	: No data available
Evaporation Rate	: No data available
Melting Point	: No data available
Freezing Point	: No data available
Boiling Point	: No data available
Flash Point	: No data available
Auto-ignition Temperature	: No data available
Decomposition Temperature	: No data available
Flammability (solid, gas)	: No data available
Vapor Pressure	: No data available
Relative Vapor Density at 20°C	: No data available
Relative Density	: No data available
Solubility	: No data available
Partition Coefficient: N-Octanol/Water	: No data available
Viscosity	: No data available
Explosive Properties	: Explosives, Division 1.4 - Explosives (with no significant blast hazard).
Operating Range	: -42°C (-43°F) to 69°C (156 °F)
All-Fire Current	: 2.80 ± 0.06 A

9.2. Other Information

No additional information available

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

Extreme risk of explosion by shock, friction, fire or other sources of ignition.

10.2. Chemical Stability

Risk of explosion by shock, friction, fire or other sources of ignition.

10.3. Possibility of Hazardous Reactions

Hazardous polymerization will not occur.

PA106 Actuator

Safety Data Sheet

10.4. Conditions to Avoid

Keep away from open flames, hot surfaces and sources of ignition. Incompatible materials.

10.5. Incompatible Materials

Strong acids, strong bases, strong oxidizers.

10.6. Hazardous Decomposition Products

Barium oxides. Potassium oxides. Oxides of boron. Chlorine compounds. Carbon and nitrogen oxides.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological Effects

Acute Toxicity (Oral): Not classified.

Acute Toxicity (Dermal): Not classified

Acute Toxicity (Inhalation): Not classified.

Barium styphnate (20236-55-9)	
ATE (Oral)	500.00 mg/kg body weight
ATE (Dust/Mist)	1.50 mg/l/4h
Boron (7440-42-8)	
LD50 Oral Rat	> 2000 mg/kg
LC50 Inhalation Rat	> 5.08 mg/l/4h

Skin Corrosion/Irritation: Not classified

Serious Eye Damage/Irritation: Not classified.

Respiratory or Skin Sensitization: Not classified

Germ Cell Mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive Toxicity: Not classified

Specific Target Organ Toxicity (Single Exposure): Not classified.

Specific Target Organ Toxicity (Repeated Exposure): Not classified

Aspiration Hazard: Not classified

Symptoms/Injuries After Inhalation: Prolonged exposure may cause irritation.

Symptoms/Injuries After Skin Contact: Prolonged exposure may cause skin irritation.

Symptoms/Injuries After Eye Contact: May cause slight irritation to eyes.

Symptoms/Injuries After Ingestion: Ingestion may cause adverse effects.

Chronic Symptoms: None expected under normal conditions of use.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Ecology - General : Not classified.

Potassium perchlorate (7778-74-7)	
EC50 - Crustacea [1]	1310 mg/l

12.2. Persistence and Degradability

PA-106 Actuator	
Persistence and Degradability	Not established.

12.3. Bioaccumulative Potential

PA-106 Actuator	
Bioaccumulative Potential	Bioaccumulation of metals cannot be excluded.

12.4. Mobility in Soil

PA-106 Actuator	
Ecology - Soil	Adsorption to solid soil phase is not expected.

12.5. Other Adverse Effects

Other Adverse Effects : None known.

Other Information : Avoid release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste Treatment Methods

Waste Treatment Methods: Explosives should be destroyed by open burning or by burning in an approved incinerator. Explosives should not be burned in containers.

Sewage Disposal Recommendations: Do not dispose of waste into sewer. Do not empty into drains.

PA106 Actuator

Safety Data Sheet

Waste Disposal Recommendations: Dispose of contents/container in accordance with local, regional, national, and international regulations.

Additional Information: Incinerate at a licensed installation.

Ecology - Waste Materials: Avoid release to the environment.

SECTION 14: TRANSPORT INFORMATION

The shipping description(s) stated herein were prepared in accordance with certain assumptions at the time the SDS was authored, and can vary based on a number of variables that may or may not have been known at the time the SDS was issued.

14.1. In Accordance with DOT

Proper Shipping Name : ARTICLES, EXPLOSIVE, N.O.S. (CONTAINS BARIUM STYPHNATE)
Hazard Class : 1.4E
Identification Number : UN0471
Label Codes : 1.4E



14.2. In Accordance with IMDG

Proper Shipping Name : ARTICLES, EXPLOSIVE, N.O.S. (CONTAINS BARIUM STYPHNATE)
Hazard Class : 1
Division : 1.4
Compatibility Group : E
Identification Number : UN0471
Label Codes : 1.4E
EmS-No. (Fire) : F-B
EmS-No. (Spillage) : S-X



14.3. In Accordance with IATA

CARGO AIRCRAFT ONLY

Proper Shipping Name : ARTICLES, EXPLOSIVE, N.O.S. (CONTAINS BARIUM STYPHNATE)
Identification Number : UN0471
Hazard Class : 1
Label Codes : 1.4E, CARGO AIRCRAFT ONLY
Division : 1.4
Compatibility Group : E
ERG Code (IATA) : 1L



SECTION 15: REGULATORY INFORMATION

15.1. US Federal Regulations

PA106 Actuator

SARA Section 311/312 Hazard Classes : Physical hazard - Explosive

Boron (7440-42-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

Potassium perchlorate (7778-74-7)

Listed on the United States TSCA (Toxic Substances Control Act) inventory - Status: Active

15.2. US State Regulations

Boron (7440-42-8)

U.S. - New Jersey - Right to Know Hazardous Substance List

Potassium perchlorate (7778-74-7)

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - Massachusetts - Right To Know List

SECTION 16: OTHER INFORMATION, INCLUDING DATE OF PREPARATION OR LAST REVISION

Date of Preparation or Latest Revision : 05/18/2023

Revision

Other Information : This document has been prepared in accordance with the SDS requirements of the OSHA Hazard Communication Standard 29 CFR 1910.1200

PA-106 Actuator

Safety Data Sheet

GHS Full Text Phrases:

H204	Fire or projection hazard
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground/Bond container and receiving equipment.
P250	Do not subject to grinding/shock/friction.
P280	Wear protective gloves, protective clothing, and eye protection.
P370+P380	In case of fire: Evacuate area.
P373	DO NOT fight fire when fire reaches explosives.
P374	Fight fire with normal precautions from a reasonable distance.
P401	Store in accordance with local, regional, national, and international regulations.
P501	Dispose of contents/container in accordance with local, regional, national, and international regulations.

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

SDS US (GHS HazCom)