

**Material Safety Data Sheet**

According to OSHA and ANSI

Printing date 05/28/2011

Reviewed on 09/05/2003

**1 Identification of the substance/mixture and of the company/undertaking****Product identifier****Product name:** Bis(pentamethylcyclopentadienyl)barium, 1,2-dimethoxyethane adduct**Stock number:** 43639**Index number:**

056-002-00-7

**Relevant identified uses of the substance or mixture and uses advised against.****Sector of Use** SU24 Scientific research and development**Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company

Johnson Matthey Catalog Company, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

**Information Department:** Health, Safety and Environmental Department**Emergency telephone number:**

During normal hours the Health, Safety and Environmental Department at (800) 343-0660. After normal hours call Carechem 24 at (866) 928-0789.

**2 Hazards identification****Classification of the substance or mixture**

GHS07

H302 Harmful if swallowed.

H332 Harmful if inhaled.

**Classification according to Directive 67/548/EEC or Directive 1999/45/EC**

Xn; Harmful

R20/22: Harmful by inhalation and if swallowed.

**Label elements****Labelling according to EU guidelines:****Code letter and hazard designation of product:**

Xn Harmful

**Risk phrases:**

20/22 Harmful by inhalation and if swallowed.

**Safety phrases:**

28 After contact with skin, wash immediately with plenty of water

**Hazard description:****WHMIS classification****Classification system****HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	2
FIRE	1
REACTIVITY	1

Health (acute effects) = 2

Flammability = 1

Reactivity = 1

**Other hazards****Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.

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**3 Composition/information on ingredients****Chemical characterization: Substances****(CAS#) Description:**

Bis(pentamethylcyclopentadienyl)barium, 1,2-dimethoxyethane adduct (CAS# ?), 100%

**Identification number(s):**

Index number: 056-002-00-7

**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 immediate medical advice.**5 Firefighting measures****Extinguishing media**

Suitable extinguishing agents CO2, sand, extinguishing powder. Do not use water.

**For safety reasons unsuitable extinguishing agents** Water**Special hazards arising from the substance or mixture**

In case of fire, the following can be released:

Barium oxide

Carbon monoxide and carbon dioxide

**Advice for firefighters****Protective equipment:**

Wear self-contained respirator.

Wear fully protective impervious suit.

**6 Accidental release measures****Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

**Environmental precautions:**

Do not allow material to be released to the environment without proper governmental permits.

**Methods and material for containment and cleaning up:**

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

**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.

**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.

**Information about protection against explosions and fires:**

Keep ignition sources away.

Protect from heat.

**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 oxidizing agents.

Store away from water/moisture.

Store away from air.

**Further information about storage conditions:**

Store under dry inert gas.

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Avoid contact with air/oxygen.  
 Keep container tightly sealed.  
 Store in cool, dry conditions in well sealed containers.

**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:**

Barium, and soluble compounds, as Ba

	mg/m <sup>3</sup>
ACGIH TLV	0.5; Not classified as a human carcinogen
Austria MAK	0.5
Belgium TWA	0.5
Denmark TWA	0.5
Finland TWA	0.5
Germany MAK	0.5 (total dust)
Hungary	0.5-STEEL
Ireland TWA	0.5
Korea TLV	0.5
Netherlands MAC-TGG	0.5
Norway TWA	0.5
Poland TWA	0.5; 1.5-STEEL
Sweden TWA	0.5
Switzerland MAK-W	0.5
United Kingdom LTEL	0.5
USA PEL	0.5

**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.

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

**Protection of hands:** Impervious gloves

**Eye protection:** Safety glasses

**Body protection:** Protective work clothing.

**9 Physical and chemical properties****Information on basic physical and chemical properties****General Information****Appearance:**

<b>Form:</b>	Powder
<b>Odor:</b>	Odorless
<b>Odour threshold:</b>	Not determined.

**pH-value:** Not applicable.

**Change in condition**

<b>Melting point/Melting range:</b>	Not determined
<b>Boiling point/Boiling range:</b>	Not determined
<b>Sublimation temperature / start:</b>	Not determined

**Flash point:** Not applicable

**Flammability (solid, gaseous)** Not determined.

**Ignition temperature:** Not determined

**Decomposition temperature:** Not determined

**Auto igniting:** Not determined.

**Danger of explosion:** Product does not present an explosion hazard.

**Explosion limits:**

<b>Lower:</b>	Not determined
<b>Upper:</b>	Not determined

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<b>Vapor pressure:</b>	Not applicable.
<b>Density:</b>	Not determined
<b>Relative density</b>	Not determined.
<b>Vapour density</b>	Not applicable.
<b>Evaporation rate</b>	Not applicable.
<b>Segregation coefficient (n-octanol/water):</b> Not determined.	
<b>Viscosity:</b>	
<b>dynamic:</b>	Not applicable.
<b>kinematic:</b>	Not applicable.
<b>Other information</b>	No further relevant information available.

**10 Stability and reactivity****Reactivity****Chemical stability****Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

**Possibility of hazardous reactions** No dangerous reactions known**Incompatible materials:**

Water/moisture

Oxidizing agents

Air

**Hazardous decomposition products:**

Barium oxide

Carbon monoxide and carbon dioxide

**11 Toxicological information****Information on toxicological effects****Acute toxicity:****Primary irritant effect:****on the skin:** Irritant to skin and mucous membranes.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Subacute to chronic toxicity:**

Barium compounds may cause severe gastroenteritis, including abdominal pain, vomiting and diarrhea, tremors, faintness, paralysis of the arms and legs, and slow or irregular heartbeat. Severe cases may produce collapse and death due to respiratory failure. Soluble barium compounds are more likely to cause these effects than insoluble compounds. Inhalation of fumes may cause sore throat, coughing, labored breathing, and irritation of the respiratory tract as well as the above symptoms.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

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.

**12 Ecological information****Toxicity****Aquatic toxicity:** No further relevant information available.**Persistence and degradability** No further relevant information available.**Behavior in environmental systems:****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 of it to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without proper governmental permits.

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

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**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.**14 Transport information****DOT regulations:**

**Hazard class:** 6.1  
**Identification number:** UN1564  
**Packing group:** III  
**Proper shipping name (technical name):** BARIUM COMPOUND, N.O.S.  
 (bis(pentamethylcyclopentadienyl)barium, 1,2-dimethoxyethane adduct)  
**Label** 6.1

**Land transport ADR/RID (cross-border)**

**ADR/RID class:** 6.1 (T5) Toxic substances  
**Danger code (Kemler):** 60  
**UN-Number:** 1564  
**Packaging group:** III  
**UN proper shipping name:** 1564 BARIUM COMPOUND, N.O.S.  
 (bis(pentamethylcyclopentadienyl)barium, 1,2-dimethoxyethane adduct)

**Maritime transport IMDG:**

**IMDG Class:** 6.1  
**UN Number:** 1564  
**Label** 6.1  
**Packaging group:** III  
**Marine pollutant:** No  
**Proper shipping name:** BARIUM COMPOUND, N.O.S.  
 (bis(pentamethylcyclopentadienyl)barium, 1,2-dimethoxyethane adduct)

**Air transport ICAO-TI and IATA-DGR:**

**ICAO/IATA Class:** 6.1  
**UN/ID Number:** 1564  
**Label** 6.1  
**Packaging group:** III  
**Proper shipping name:** BARIUM COMPOUND, N.O.S.  
 (bis(pentamethylcyclopentadienyl)barium, 1,2-dimethoxyethane adduct)

**UN "Model Regulation":** UN1564, BARIUM COMPOUND, N.O.S., 6.1, III**Special precautions for user** Warning: Toxic substances**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.

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**15 Regulatory information****Safety, health and environmental regulations/legislation specific for the substance or mixture****Product related hazard informations:****Hazard symbols:**

Xn Harmful

**Risk phrases:**

20/22 Harmful by inhalation and if swallowed.

**Safety phrases:**

28 After contact with skin, wash immediately with plenty of water

**National regulations**

This product is not listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical Substance Inventory. Use of this product is restricted to research and development only.

**Information about limitation of use:**

For use only by technically qualified individuals.

This product contains barium and is subject to the reporting requirements of section 313 of the Emergency Planning and Community Right to Know Act of 1986 and 40CFR372.

**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 Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing MSDS:** Health, Safety and Environmental Department.**Contact:**

Zachariah C. Holt

Global EHS Manager

**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)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

USA