

## Barium, rod 22mm diameter

### Apollo Scientific

Chemwatch Hazard Alert Code: 3

Part Number: IN1171

Version No: 1.1

Safety Data Sheet (Conforms to Annex II of REACH (1907/2006) - Regulation 2020/878)

Issue Date: 16/09/2022

Print Date: 31/07/2023

S.REACH.GBR.EN

## SECTION 1 Identification of the substance / mixture and of the company / undertaking

### 1.1. Product Identifier

Product name	Barium, rod 22mm diameter
Chemical Name	barium
Synonyms	Not Available
Proper shipping name	BARIUM
Chemical formula	Ba
Other means of identification	Not Available
CAS number	7440-39-3
EC number	231-149-1

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Not Available
Uses advised against	No specific uses advised against are identified.

### 1.3. Details of the manufacturer or supplier of the safety data sheet

Registered company name	Apollo Scientific
Address	Whitefield Road, Bredbury SK62QR United Kingdom
Telephone	01614060505
Fax	0161 406 0506
Website	<a href="http://www.apolloscientific.co.uk/">http://www.apolloscientific.co.uk/</a>
Email	sales@apolloscientific.co.uk

### 1.4. Emergency telephone number

Association / Organisation	Not Available
Emergency telephone numbers	Not Available
Other emergency telephone numbers	Not Available

## SECTION 2 Hazards identification

### 2.1. Classification of the substance or mixture

Classification according to regulation (EC) No	H373 - Specific Target Organ Toxicity - Repeated Exposure Category 2, H332 - Acute Toxicity (Inhalation) Category 4, H335 - Specific Target Organ Toxicity - Single Exposure (Respiratory Tract Irritation) Category 3, H302 - Acute Toxicity (Oral) Category
--	---

Barium, rod 22mm diameter

<b>1272/2008 [CLP] and amendments<sup>[1]</sup></b>	4, H315 - Skin Corrosion/Irritation Category 2, H319 - Serious Eye Damage/Eye Irritation Category 2, H228 - Flammable Solids Category 1, H261 - Substances and Mixtures which in Contact with Water Emit Flammable Gases Category 2
<b>Legend:</b>	1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI

2.2. Label elements

<b>Hazard pictogram(s)</b>	
<b>Signal word</b>	<b>Danger</b>

Hazard statement(s)

<b>H373</b>	May cause damage to organs through prolonged or repeated exposure.
<b>H332</b>	Harmful if inhaled.
<b>H335</b>	May cause respiratory irritation.
<b>H302</b>	Harmful if swallowed.
<b>H315</b>	Causes skin irritation.
<b>H319</b>	Causes serious eye irritation.
<b>H228</b>	Flammable solid.
<b>H261</b>	In contact with water releases flammable gases.

Supplementary statement(s)

Not Applicable

Precautionary statement(s) Prevention

<b>P210</b>	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
<b>P231+P232</b>	Handle and store contents under inert gas. Protect from moisture.
<b>P260</b>	Do not breathe dust/fume.
<b>P271</b>	Use only outdoors or in a well-ventilated area.
<b>P240</b>	Ground and bond container and receiving equipment.
<b>P241</b>	Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.
<b>P264</b>	Wash all exposed external body areas thoroughly after handling.
<b>P270</b>	Do not eat, drink or smoke when using this product.
<b>P280</b>	Wear protective gloves, protective clothing, eye protection and face protection.
<b>P223</b>	Do not allow contact with water.

Precautionary statement(s) Response

<b>P302+P335+P334</b>	IF ON SKIN: Brush off loose particles from skin. Immerse in cool water [or wrap in wet bandages].
<b>P370+P378</b>	In case of fire: Use alcohol resistant foam or normal protein foam to extinguish.
<b>P305+P351+P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
<b>P337+P313</b>	If eye irritation persists: Get medical advice/attention.
<b>P301+P312</b>	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider if you feel unwell.
<b>P302+P352</b>	IF ON SKIN: Wash with plenty of water.
<b>P304+P340</b>	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
<b>P330</b>	Rinse mouth.
<b>P332+P313</b>	If skin irritation occurs: Get medical advice/attention.
<b>P362+P364</b>	Take off contaminated clothing and wash it before reuse.

Precautionary statement(s) Storage

<b>P405</b>	Store locked up.
<b>P402+P404</b>	Store in a dry place. Store in a closed container.
<b>P403+P233</b>	Store in a well-ventilated place. Keep container tightly closed.

Barium, rod 22mm diameter

**Precautionary statement(s) Disposal**

<b>P501</b>	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
-------------	--

**2.3. Other hazards**

REACH - Art.57-59: The mixture does not contain Substances of Very High Concern (SVHC) at the SDS print date.

**SECTION 3 Composition / information on ingredients**

**3.1. Substances**

1. CAS No 2. EC No 3. Index No 4. REACH No	%[weight]	Name	Classification according to regulation (EC) No 1272/2008 [CLP] and amendments	SCL / M-Factor	Nanoform Particle Characteristics
Not Available	100	Barium, rod 22mm diameter	Not Applicable	Not Applicable	Not Available

**Legend:** 1. Classified by Chemwatch; 2. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI; 3. Classification drawn from C&L; \* EU IOELVs available; [e] Substance identified as having endocrine disrupting properties

**3.2. Mixtures**

See 'Information on ingredients' in section 3.1

**SECTION 4 First aid measures**

**4.1. Description of first aid measures**

<b>Eye Contact</b>	If this product comes in contact with eyes: <ul style="list-style-type: none"><li>▶ Wash out immediately with water.</li><li>▶ If irritation continues, seek medical attention.</li><li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li></ul>
<b>Skin Contact</b>	If skin or hair contact occurs: <ul style="list-style-type: none"><li>▶ Flush skin and hair with running water (and soap if available).</li><li>▶ Seek medical attention in event of irritation.</li></ul>
<b>Inhalation</b>	<ul style="list-style-type: none"><li>▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area.</li><li>▶ Other measures are usually unnecessary.</li></ul>
<b>Ingestion</b>	<ul style="list-style-type: none"><li>▶ Immediately give a glass of water.</li><li>▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.</li></ul>

**4.2 Most important symptoms and effects, both acute and delayed**

See Section 11

**4.3. Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**SECTION 5 Firefighting measures**

**5.1. Extinguishing media**

**DO NOT USE WATER, CO2 OR FOAM ON SUBSTANCE ITSELF**

For **SMALL FIRES**:

- ▶ Dry chemical, soda ash or lime.

For **LARGE FIRES**:

- ▶ DRY sand, dry chemical, soda ash;
- ▶ OR withdraw and allow fire to burn itself out.

**5.2. Special hazards arising from the substrate or mixture**

<b>Fire Incompatibility</b>	▶ Segregate from alcohol, water.
-----------------------------	----------------------------------

**5.3. Advice for firefighters**

<b>Fire Fighting</b>	<ul style="list-style-type: none"><li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li><li>▶ May be violently or explosively reactive.</li></ul>
----------------------	---

	<ul style="list-style-type: none"> <li>▶ Wear full protective clothing plus breathing apparatus.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> <li>▶ Consider evacuation (or protect in place)</li> <li>▶ <b>DO NOT</b> use water on fires.</li> </ul> <p><b>CAUTION:</b> If only water available, use flooding quantities of water or withdraw personnel.</p> <ul style="list-style-type: none"> <li>▶ <b>DO NOT</b> allow water to enter containers.</li> <li>▶ <b>DO NOT</b> approach containers suspected to be hot.</li> <li>▶ Cool fire exposed containers with flooding quantities of water from a protected location until well after fire is out.</li> <li>▶ If safe to do so, remove undamaged containers from path of fire.</li> <li>▶ If fire gets out of control withdraw personnel and warn against entry.</li> <li>▶ Equipment should be thoroughly decontaminated after use.</li> <li>▶ Fight fire from a protected position or use unmanned hose holders or monitor nozzles.</li> <li>▶ Withdraw immediately in case of rising sound from venting safety devices or discolouration of tanks.</li> <li>▶ ALWAYS stay away from tank ends.</li> </ul>
<b>Fire/Explosion Hazard</b>	<ul style="list-style-type: none"> <li>▶ May ignite on contact with air, moist air or water.</li> <li>▶ May react vigorously or explosively on contact with water.</li> <li>▶ May decompose explosively when heated or involved in fire.</li> <li>▶ May <b>REIGNITE</b> after fire is extinguished.</li> <li>▶ Gases generated after contact with water or moist air may be poisonous, corrosive or irritating.</li> <li>▶ Gases generated in fire may be poisonous, corrosive or irritating.</li> <li>▶ Containers may explode on heating.</li> <li>▶ Runoff may create multiple fire or explosion hazard.</li> </ul>

## SECTION 6 Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

See section 8

### 6.2. Environmental precautions

See section 12

### 6.3. Methods and material for containment and cleaning up

<b>Minor Spills</b>	<ul style="list-style-type: none"> <li>▶ Material from spill may be contaminated with water resulting in generation of gas which subsequently may pressure closed containers.</li> <li>▶ Hold spill material in vented containers only and plan for prompt disposal</li> <li>▶ Eliminate all ignition sources.</li> <li>▶ Cover with <b>DRY</b> earth, sand or other non-combustible material.</li> <li>▶ Then cover with plastic sheet to minimise spreading and to prevent exposure to rain or other sources of water.</li> <li>▶ Use clean, non-sparking tools to collect absorbed material and place into loosely-covered metal or plastic containers ready for disposal.</li> <li>▶ Wear gloves and safety glasses as appropriate.</li> </ul>
<b>Major Spills</b>	<ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Eliminate all ignition sources (no smoking, flares, sparks or flames)</li> <li>▶ Stop leak if safe to do so; prevent entry into waterways, drains or confined spaces.</li> <li>▶ May be violently or explosively reactive.</li> <li>▶ <b>DO NOT walk through spilled material.</b></li> <li>▶ Wear full protective clothing plus breathing apparatus.</li> <li>▶ <b>DO NOT touch damaged containers or spilled material unless wearing appropriate protective clothing.</b></li> <li>▶ Water spray may be used to knock down vapours or divert vapour clouds; <b>DO NOT allow water to enter container or come into contact with the material.</b></li> <li>▶ Cover with <b>DRY</b> earth, sand, vermiculite or other non-combustible material.</li> <li>▶ Then cover with plastic sheet to minimise spreading and to prevent exposure to rain or other sources of water.</li> <li>▶ Use clean, non-sparking tools to collect absorbed material and place into loosely-covered metal or plastic containers ready for disposal.</li> <li>▶ Alternately, the spill may be contained using <b>DRY</b> earth, sand, or vermiculite and then covered with a high boiling point mineral oil.</li> <li>▶ Recover the liquid using non-sparking appliances and place in labelled, sealable container.</li> <li>▶ Wash spill area with detergent and water and dike for later disposal.</li> <li>▶ After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.</li> <li>▶ If contamination of drains or waterways occurs, advise emergency services.</li> </ul>

### 6.4. Reference to other sections

Personal Protective Equipment advice is contained in Section 8 of the SDS.

## SECTION 7 Handling and storage

## 7.1. Precautions for safe handling

<p><b>Safe handling</b></p>	<ul style="list-style-type: none"> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of overexposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Avoid contact with moisture.</li> <li>▶ Avoid smoking, naked lights or ignition sources.</li> <li>▶ Avoid contact with incompatible materials.</li> <li>▶ <b>When handling, DO NOT eat, drink or smoke.</b></li> <li>▶ Keep containers securely sealed when not in use.</li> <li>▶ Avoid physical damage to containers.</li> <li>▶ Always wash hands with soap and water after handling.</li> <li>▶ Work clothes should be laundered separately and before re-use</li> <li>▶ Use good occupational work practice.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> <li>▶ Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.</li> </ul>
<p><b>Fire and explosion protection</b></p>	<p>See section 5</p>
<p><b>Other information</b></p>	<p><b>KEEP DRY!</b> Packages must be protected from water ingress.</p> <p><b>FOR MINOR QUANTITIES:</b></p> <ul style="list-style-type: none"> <li>▶ Store in an indoor fireproof cabinet or in a room of noncombustible construction and</li> <li>▶ provide adequate portable fire-extinguishers in or near the storage area.</li> </ul> <p><b>FOR PACKAGE STORAGE:</b></p> <ul style="list-style-type: none"> <li>▶ Store in original containers in approved flame-proof area.</li> <li>▶ No smoking, naked lights, heat or ignition sources.</li> <li>▶ <b>DO NOT store in pits, depressions, basements or areas where vapours may be trapped.</b></li> <li>▶ Keep containers securely sealed.</li> <li>▶ Store away from incompatible materials in a cool, dry well ventilated area.</li> <li>▶ Protect containers against physical damage and check regularly for leaks.</li> <li>▶ Protect containers from exposure to weather and from direct sunlight unless: (a) the packages are of metal or plastic construction; (b) the packages are securely closed and not opened for any purpose while in the area where they are stored; (c) adequate precautions are taken to ensure that rain water, which might become contaminated by the dangerous goods, is collected and disposed of safely.</li> <li>▶ Ensure proper stock-control measures are maintained to prevent prolonged storage of dangerous goods.</li> <li>▶ Automatic fire-sprinklers <b>MUST NOT</b> be installed in room or space.</li> <li>▶ The room or space must be located at least five metres from the boundaries of the premises and from other buildings unless separated by a wall with a fire resistance of at least four hours.</li> <li>▶ Observe manufacturer's storage and handling recommendations contained within this SDS.</li> </ul>

## 7.2. Conditions for safe storage, including any incompatibilities

<p><b>Suitable container</b></p>	<ul style="list-style-type: none"> <li>▶ Storage containers must be hermetically sealed; the product must be stored under an inert, dry gas.</li> </ul> <p>For low viscosity materials and solids: Drums and jerricans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure. For materials with a viscosity of at least 2680 cSt. (23 deg. C):</p> <ul style="list-style-type: none"> <li>▶ Removable head packaging and</li> <li>▶ cans with friction closures may be used.</li> </ul> <p>-</p> <p>Where combination packages are used, there must be sufficient inert absorbent material to absorb completely any leakage that may occur, unless the outer packaging is a close fitting moulded plastic box and the substances are not incompatible with the plastic. All combination packages for Packing group I and II must contain cushioning material.</p>
<p><b>Storage incompatibility</b></p>	<ul style="list-style-type: none"> <li>▶ Segregate from alcohol, water.</li> <li>▶ Moisture sensitive</li> <li>▶ Store under argon</li> </ul>
<p><b>Hazard categories in accordance with Regulation (EC) No 1272/2008</b></p>	<p>Not Available</p>
<p><b>Qualifying quantity (tonnes) of dangerous substances as referred to in Article 3(10) for the application of</b></p>	<p>Not Available</p>

## 7.3. Specific end use(s)

See section 1.2

## SECTION 8 Exposure controls / personal protection

### 8.1. Control parameters

Ingredient	DNELs Exposure Pattern Worker	PNECs Compartment
Not Available	Dermal 28.5 mg/kg bw/day (Systemic, Chronic) Inhalation 5.8 mg/m <sup>3</sup> (Systemic, Chronic) Dermal 17.1 mg/kg bw/day (Systemic, Chronic) * Inhalation 1.7 mg/m <sup>3</sup> (Systemic, Chronic) * Oral 3.7 mg/kg bw/day (Systemic, Chronic) *	114.7 µg/L (Water (Fresh)) 598.9 mg/kg sediment dw (Sediment (Fresh Water)) 207.7 mg/kg soil dw (Soil) 62.2 mg/L (STP)

\* Values for General Population

### Occupational Exposure Limits (OEL)

#### INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
Not Available	Not Available	Not Available	Not Available	Not Available	Not Available	Not Available

Not Applicable


### Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
Barium, rod 22mm diameter	Not Available	Not Available	Not Available

Ingredient	Original IDLH	Revised IDLH
Barium, rod 22mm diameter	Not Available	Not Available

### 8.2. Exposure controls

<b>8.2.1. Appropriate engineering controls</b>	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly. The design of a ventilation system must match the particular process and chemical or contaminant in use. Employers may need to use multiple types of controls to prevent employee overexposure.</p> <ul style="list-style-type: none"> <li>▸ Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.</li> <li>▸ Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.</li> <li>▸ If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:                             <ul style="list-style-type: none"> <li>(a): particle dust respirators, if necessary, combined with an absorption cartridge;</li> <li>(b): filter respirators with absorption cartridge or canister of the right type;</li> <li>(c): fresh-air hoods or masks                                     <ul style="list-style-type: none"> <li>▸ Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.</li> <li>▸ Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.</li> </ul> </li> </ul> </li> </ul> <p>Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.</p>										
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Type of Contaminant:</th> <th style="width: 30%;">Air Speed:</th> </tr> </thead> <tbody> <tr> <td>direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)</td> <td>1-2.5 m/s (200-500 ft/min)</td> </tr> <tr> <td>grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).</td> <td>2.5-10 m/s (500-2000 ft/min)</td> </tr> </tbody> </table>	Type of Contaminant:	Air Speed:	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 ft/min)	grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 ft/min)				
	Type of Contaminant:	Air Speed:									
	direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1-2.5 m/s (200-500 ft/min)									
	grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5-10 m/s (500-2000 ft/min)									
	<p>Within each range the appropriate value depends on:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Lower end of the range</th> <th style="width: 50%;">Upper end of the range</th> </tr> </thead> <tbody> <tr> <td>1: Room air currents minimal or favourable to capture</td> <td>1: Disturbing room air currents</td> </tr> <tr> <td>2: Contaminants of low toxicity or of nuisance value only</td> <td>2: Contaminants of high toxicity</td> </tr> <tr> <td>3: Intermittent, low production.</td> <td>3: High production, heavy use</td> </tr> <tr> <td>4: Large hood or large air mass in motion</td> <td>4: Small hood-local control only</td> </tr> </tbody> </table>	Lower end of the range	Upper end of the range	1: Room air currents minimal or favourable to capture	1: Disturbing room air currents	2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity	3: Intermittent, low production.	3: High production, heavy use	4: Large hood or large air mass in motion	4: Small hood-local control only
	Lower end of the range	Upper end of the range									
	1: Room air currents minimal or favourable to capture	1: Disturbing room air currents									
	2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity									
	3: Intermittent, low production.	3: High production, heavy use									
4: Large hood or large air mass in motion	4: Small hood-local control only										
<p>Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity</p>											

	<p>generally decreases with the square of distance from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 ft/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.</p>
<b>8.2.2. Individual protection measures, such as personal protective equipment</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>▶ Safety glasses with side shields</li> <li>▶ Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent]</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59].</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	<p>Wear general protective gloves, eg. light weight rubber gloves.</p> <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p> <p>Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:</p> <ul style="list-style-type: none"> <li>· frequency and duration of contact,</li> <li>· chemical resistance of glove material,</li> <li>· glove thickness and</li> <li>· dexterity</li> </ul> <p>Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739, AS/NZS 2161.1 or national equivalent).</p> <ul style="list-style-type: none"> <li>· When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.</li> <li>· When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374, AS/NZS 2161.10.1 or national equivalent) is recommended.</li> <li>· Some glove polymer types are less affected by movement and this should be taken into account when considering gloves for long-term use.</li> <li>· Contaminated gloves should be replaced.</li> </ul> <p>As defined in ASTM F-739-96 in any application, gloves are rated as:</p> <ul style="list-style-type: none"> <li>· Excellent when breakthrough time &gt; 480 min</li> <li>· Good when breakthrough time &gt; 20 min</li> <li>· Fair when breakthrough time &lt; 20 min</li> <li>· Poor when glove material degrades</li> </ul> <p>For general applications, gloves with a thickness typically greater than 0.35 mm, are recommended.</p> <p>It should be emphasised that glove thickness is not necessarily a good predictor of glove resistance to a specific chemical, as the permeation efficiency of the glove will be dependent on the exact composition of the glove material. Therefore, glove selection should also be based on consideration of the task requirements and knowledge of breakthrough times.</p> <p>Glove thickness may also vary depending on the glove manufacturer, the glove type and the glove model. Therefore, the manufacturers technical data should always be taken into account to ensure selection of the most appropriate glove for the task.</p> <p>Note: Depending on the activity being conducted, gloves of varying thickness may be required for specific tasks. For example:</p> <ul style="list-style-type: none"> <li>· Thinner gloves (down to 0.1 mm or less) may be required where a high degree of manual dexterity is needed. However, these gloves are only likely to give short duration protection and would normally be just for single use applications, then disposed of.</li> <li>· Thicker gloves (up to 3 mm or more) may be required where there is a mechanical (as well as a chemical) risk i.e. where there is abrasion or puncture potential</li> </ul> <p>Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.</p>
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ Eyewash unit.</li> <li>▶ Barrier cream.</li> <li>▶ Skin cleansing cream.</li> <li>▶ Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.</li> <li>▶ For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets).</li> <li>▶ Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground</li> </ul>



the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds. Electrical resistance must range between 0 to 500,000 ohms. Conductive shoes should be stored in lockers close to the room in which they are worn. Personnel who have been issued conductive footwear should not wear them from their place of work to their homes and return.

## Respiratory protection

Type -P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	P1 Air-line*	- -	PAPR-P1 -
up to 50 x ES	Air-line**	P2	PAPR-P2
up to 100 x ES	-	P3	-
		Air-line*	-
100+ x ES	-	Air-line**	PAPR-P3

\* - Negative pressure demand \*\* - Continuous flow

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO<sub>2</sub>), G = Agricultural chemicals, K = Ammonia(NH<sub>3</sub>), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory protection. These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU)
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

### 8.2.3. Environmental exposure controls

See section 12

## SECTION 9 Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Appearance	Grey		
Physical state	Solid	Relative density (Water = 1)	Not Available
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	Not Available	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	725	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	1640	Molecular weight (g/mol)	Not Available
Flash point (°C)	Not Available	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Available	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Applicable
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available

Continued...



Barium, rod 22mm diameter

<b>Solubility in water</b>	Not Available	<b>pH as a solution (1%)</b>	Not Available
<b>Vapour density (Air = 1)</b>	3.51	<b>VOC g/L</b>	Not Available
<b>Nanoform Solubility</b>	Not Available	<b>Nanoform Particle Characteristics</b>	Not Available
<b>Particle Size</b>	Not Available		

9.2. Other information

Not Available

SECTION 10 Stability and reactivity

<b>10.1.Reactivity</b>	See section 7.2
<b>10.2. Chemical stability</b>	<ul style="list-style-type: none"> <li>▸ May heat spontaneously</li> <li>▸ Identify and remove sources of ignition and heating.</li> <li>▸ Incompatible material, especially oxidisers, and/or other sources of oxygen may produce unstable product(s).</li> <li>▸ Avoid sources of water contamination (e.g. rain water, moisture, high humidity).</li> <li>▸ Avoid contact with oxygenated solvents/ reagents such as alcohols.</li> </ul>
<b>10.3. Possibility of hazardous reactions</b>	See section 7.2
<b>10.4. Conditions to avoid</b>	See section 7.2
<b>10.5. Incompatible materials</b>	See section 7.2
<b>10.6. Hazardous decomposition products</b>	See section 5.3

SECTION 11 Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008 Information on toxicological effects

<b>Inhaled</b>	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
<b>Ingestion</b>	The material has <b>NOT</b> been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.
<b>Skin Contact</b>	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
<b>Eye</b>	Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may cause transient discomfort characterised by tearing or conjunctival redness (as with windburn). Slight abrasive damage may also result.
<b>Chronic</b>	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

<b>Barium, rod 22mm diameter</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
	Not Available	Eye: adverse effect observed (irritating) <sup>[1]</sup>
		Skin: adverse effect observed (corrosive) <sup>[1]</sup>
		Skin: no adverse effect observed (not irritating) <sup>[1]</sup>

**Legend:** 1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances

<b>Acute Toxicity</b>	✓	<b>Carcinogenicity</b>	✗
<b>Skin Irritation/Corrosion</b>	✓	<b>Reproductivity</b>	✗
<b>Serious Eye Damage/Irritation</b>	✓	<b>STOT - Single Exposure</b>	✓
<b>Respiratory or Skin sensitisation</b>	✗	<b>STOT - Repeated Exposure</b>	✓
<b>Mutagenicity</b>	✗	<b>Aspiration Hazard</b>	✗

**Legend:** ✗ – Data either not available or does not fill the criteria for classification

Barium, rod 22mm diameter

✔ – Data available to make classification

11.2 Information on other hazards

11.2.1. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

11.2.2. Other information

See Section 11.1

SECTION 12 Ecological information

12.1. Toxicity

Barium, rod 22mm diameter	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	>1.15mg/l	2
	EC50	96h	Algae or other aquatic plants	28mg/l	4
	LC50	96h	Fish	0.6-1.3mg/l	Not Available
	NOEC(ECx)	72h	Algae or other aquatic plants	>=1.15mg/l	2
<b>Legend:</b>	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data				

12.2. Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

12.3. Bioaccumulative potential

Ingredient	Bioaccumulation
	No Data available for all ingredients

12.4. Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

12.5. Results of PBT and vPvB assessment

	P	B	T
Relevant available data	Not Available	Not Available	Not Available
PBT	✘	✘	✘
vPvB	✘	✘	✘
PBT Criteria fulfilled?	No		
vPvB	No		

12.6. Endocrine disrupting properties

No evidence of endocrine disrupting properties were found in the current literature.

12.7. Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

SECTION 13 Disposal considerations

13.1. Waste treatment methods

Product / Packaging	
	▶ Recycle wherever possible.

**Barium, rod 22mm diameter**

<b>disposal</b>	<ul style="list-style-type: none"> <li>▶ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified.</li> <li>▶ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material)</li> <li>▶ Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.</li> </ul>
<b>Waste treatment options</b>	Not Available
<b>Sewage disposal options</b>	Not Available

**SECTION 14 Transport information**

**Labels Required**

	
<b>Marine Pollutant</b>	NO
<b>HAZCHEM</b>	4W

**Land transport (ADR-RID)**

<b>14.1. UN number or ID number</b>	1400	
<b>14.2. UN proper shipping name</b>	BARIUM	
<b>14.3. Transport hazard class(es)</b>	Class	4.3
	Subsidiary risk	Not Applicable
<b>14.4. Packing group</b>	II	
<b>14.5. Environmental hazard</b>	Not Applicable	
<b>14.6. Special precautions for user</b>	Hazard identification (Kemler)	423
	Classification code	W2
	Hazard Label	4.3
	Special provisions	Not Applicable
	Limited quantity	500 g
	Tunnel Restriction Code	2 (D/E)

**Air transport (ICAO-IATA / DGR)**

<b>14.1. UN number</b>	1400	
<b>14.2. UN proper shipping name</b>	Barium	
<b>14.3. Transport hazard class(es)</b>	ICAO/IATA Class	4.3
	ICAO / IATA Subrisk	Not Applicable
	ERG Code	4W
<b>14.4. Packing group</b>	II	
<b>14.5. Environmental hazard</b>	Not Applicable	
<b>14.6. Special precautions for user</b>	Special provisions	Not Applicable
	Cargo Only Packing Instructions	490
	Cargo Only Maximum Qty / Pack	50 kg
	Passenger and Cargo Packing Instructions	484
	Passenger and Cargo Maximum Qty / Pack	15 kg
	Passenger and Cargo Limited Quantity Packing Instructions	Y475
	Passenger and Cargo Limited Maximum Qty / Pack	5 kg

Barium, rod 22mm diameter

**Sea transport (IMDG-Code / GGVSee)**

14.1. UN number	1400	
14.2. UN proper shipping name	BARIUM	
14.3. Transport hazard class(es)	IMDG Class	4.3
	IMDG Subrisk	Not Applicable
14.4. Packing group	II	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	EMS Number	F-G, S-O
	Special provisions	Not Applicable
	Limited Quantities	500 g

**Inland waterways transport (ADN)**

14.1. UN number	1400	
14.2. UN proper shipping name	BARIUM	
14.3. Transport hazard class(es)	4.3	Not Applicable
14.4. Packing group	II	
14.5. Environmental hazard	Not Applicable	
14.6. Special precautions for user	Classification code	W2
	Special provisions	Not Applicable
	Limited quantity	500 g
	Equipment required	PP, EX, A
	Fire cones number	0

**14.7. Maritime transport in bulk according to IMO instruments**

**14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code**

Not Applicable

**14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code**

Product name	Group
--------------	-------

**14.7.3. Transport in bulk in accordance with the IGC Code**

Product name	Ship Type
--------------	-----------

**SECTION 15 Regulatory information**

**15.1. Safety, health and environmental regulations / legislation specific for the substance or mixture**

This safety data sheet is in compliance with the following EU legislation and its adaptations - as far as applicable - : Directives 98/24/EC, - 92/85/EEC, - 94/33/EC, - 2008/98/EC, - 2010/75/EU; Commission Regulation (EU) 2020/878; Regulation (EC) No 1272/2008 as updated through ATPs.

**Information according to 2012/18/EU (Seveso III):**

Seveso Category	Not Available
-----------------	---------------

**15.2. Chemical safety assessment**

For further information please look at the Chemical Safety Assessment and Exposure Scenarios prepared by your Supply Chain if available.

**ECHA SUMMARY**

Not Applicable

**National Inventory Status**

National Inventory	Status
Australia - AIIC / Australia Non-Industrial Use	Not Available
Canada - DSL	Not Available
Canada - NDSL	Not Available
China - IECSC	Not Available
Europe - EINEC / ELINCS / NLP	Not Available
Japan - ENCS	Not Available
Korea - KECI	Not Available
New Zealand - NZIoC	Not Available
Philippines - PICCS	Not Available
USA - TSCA	Not Available
Taiwan - TCSI	Not Available
Mexico - INSQ	Not Available
Vietnam - NCI	Not Available
Russia - FBEPH	Not Available
<b>Legend:</b>	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

**SECTION 16 Other information**

<b>Revision Date</b>	16/09/2022
<b>Initial Date</b>	16/09/2022

**Full text Risk and Hazard codes****Other information**

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

For detailed advice on Personal Protective Equipment, refer to the following EU CEN Standards:

- EN 166 Personal eye-protection
- EN 340 Protective clothing
- EN 374 Protective gloves against chemicals and micro-organisms
- EN 13832 Footwear protecting against chemicals
- EN 133 Respiratory protective devices

**Definitions and abbreviations**

- PC - TWA: Permissible Concentration-Time Weighted Average
- PC - STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL :No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index

AIIC: Australian Inventory of Industrial Chemicals  
DSL: Domestic Substances List  
NDSL: Non-Domestic Substances List  
IECSC: Inventory of Existing Chemical Substance in China  
EINECS: European Inventory of Existing Commercial chemical Substances  
ELINCS: European List of Notified Chemical Substances  
NLP: No-Longer Polymers  
ENCS: Existing and New Chemical Substances Inventory  
KECI: Korea Existing Chemicals Inventory  
NZIoC: New Zealand Inventory of Chemicals  
PICCS: Philippine Inventory of Chemicals and Chemical Substances  
TSCA: Toxic Substances Control Act  
TCSI: Taiwan Chemical Substance Inventory  
INSQ: Inventario Nacional de Sustancias Químicas  
NCI: National Chemical Inventory  
FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

Powered by AuthorITe, from Chemwatch.