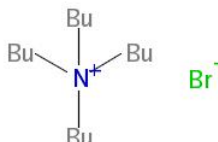


### SECTION 1: Identification

#### 1.1. Identification

Product form	: Substance
Trade name	: CatOnium TBAB
Chemical name	: TBAB
IUPAC name	: N,N,N-tributylbutan-1-aminium bromide
CAS-No.	: 1643-19-2
Formula	: C <sub>16</sub> H <sub>36</sub> BrN
Chemical structure	:



#### 1.2. Recommended use and restrictions on use

Use of the substance/mixture	: Reagent
Recommended use	: Industrial use

#### 1.3. Supplier

Vesta Chemicals B.V.	P: +31-38-4222577
Dr. van Wiechenweg 8A	F: +31-38-4222566
8025 BZ ZWOLLE	E: reach@vestachem.com
The Netherlands	I: www.vestachem.com

#### 1.4. Emergency telephone number

Emergency number	: +31 38 4222577 (Vesta Chemicals B.V.) Opening hours 9:00 am - 17:00 pm (CET) Other comment Languages of phone service; English, Dutch
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### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### GHS-US classification

Acute toxicity (oral), Category 4	Harmful if swallowed.
Skin corrosion/irritation, Category 2	Causes skin irritation.
Serious eye damage/eye irritation, Category 2	Causes serious eye irritation.
Hazardous to the aquatic environment — Chronic Hazard, Category 3	Harmful to aquatic life with long lasting effects.

#### 2.2. GHS Label elements, including precautionary statements

##### GHS US labelling

Hazard pictograms (GHS US)	:
Signal word (GHS US)	: Warning
Hazard statements (GHS US)	: Harmful if swallowed. Causes skin irritation. Causes serious eye irritation. Harmful to aquatic life with long lasting effects.
Precautionary statements (GHS US)	: Wash hands, forearms and face thoroughly after handling. Do not eat, drink or smoke when using this product Avoid release to the environment. Wear eye protection, protective clothing, protective gloves. If swallowed: Call a doctor, a POISON CENTER if you feel unwell If on skin: Wash with plenty of soap and water IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present

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and easy to do. Continue rinsing.  
Specific treatment (see supplemental first aid instruction on this label)  
Rinse mouth.  
If skin irritation occurs: Get medical advice/attention.  
If eye irritation persists: Get medical advice/attention.  
Take off contaminated clothing and wash it before reuse.  
Dispose of contents/container to an approved waste disposal plant

### 2.3. Other hazards which do not result in classification

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS-US classification
tetrabutylammonium bromide (Main constituent)	(CAS-No.) 1643-19-2	99.1 - 99.9	Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Chronic 3, H412

Full text of hazard classes and H-statements : see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First-aid measures

### 4.1. Description of first aid measures

- First-aid measures general : Call a poison center or a doctor if you feel unwell. Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.
- First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.
- First-aid measures after skin contact : Wash immediately with lots of water. Soap may be used. Do not apply (chemical) neutralizing agents. Take off contaminated clothing. If skin irritation occurs: Get medical advice/attention.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. If eye irritation persists: Get medical advice/attention.
- First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Ingestion of large quantities: immediately to hospital. Call a poison center or a doctor if you feel unwell.

### 4.2. Most important symptoms and effects (acute and delayed)

- Symptoms/effects after inhalation : AFTER INHALATION OF DUST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.
- Symptoms/effects after skin contact : Tingling/irritation of the skin. Irritation.
- Symptoms/effects after eye contact : Irritation of the eye tissue. Eye irritation.
- Symptoms/effects after ingestion : Irritation of the gastric/intestinal mucosa.

### 4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

## SECTION 5: Fire-fighting measures

### 5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Carbon dioxide. Water spray. Dry powder. Foam.
- Unsuitable extinguishing media : No unsuitable extinguishing media known.

### 5.2. Specific hazards arising from the chemical

- Fire hazard : DIRECT FIRE HAZARD. Non combustible.
- Explosion hazard : DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.

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### 5.3. Special protective equipment and precautions for fire-fighters

- |                                |   |
|--------------------------------|---|
| Precautionary measures fire    | : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.  |
| Firefighting instructions      | : Dilute toxic gases with water spray. Take account of environmentally hazardous firefighting water. Use water moderately and if possible collect or contain it.                              |
| Protection during firefighting | : Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing. |

## SECTION 6: Accidental release measures

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

- |                  |  |
|------------------|--|
| General measures | : Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Prevent soil and water pollution. Prevent spreading in sewers. Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to heat: have neighbourhood close doors and windows. In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows. |
|------------------|--|

#### 6.1.1. For non-emergency personnel

- |                                  |   |
|----------------------------------|---|
| Protective equipment             | : Gloves. Face-shield. Protective clothing. Dust cloud production: compressed air/oxygen apparatus. Dust cloud production: dust-tight suit. |
| Emergency procedures             | : Ventilate spillage area. Mark the danger area. Prevent dust cloud formation. No naked flames. Avoid contact with skin and eyes.           |
| Measures in case of dust release | : In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.                                     |

#### 6.1.2. For emergency responders

- |                      |   |
|----------------------|---|
| Protective equipment | : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
|----------------------|---|

### 6.2. Environmental precautions

Avoid release to the environment. Prevent soil and water pollution. Prevent spreading in sewers.

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

- |                         |   |
|-------------------------|---|
| For containment         | : Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray.  |
| Methods for cleaning up | : Mechanically recover the product. Stop dust cloud by covering with sand/earth. Carefully collect the spill/leftovers. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling. |
| Other information       | : Dispose of materials or solid residues at an authorized site.   |

### 6.4. Reference to other sections

See Heading 8. For further information refer to section 8 : "Exposure-controls/personal protection".

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- |                               |  |
|-------------------------------|--|
| Precautions for safe handling | : Ensure good ventilation of the work station. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Avoid raising dust. Keep away from naked flames/heat. Observe normal hygiene standards. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Avoid contact with skin and eyes. Wear personal protective equipment. |
| Hygiene measures              | : Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.   |

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

- |                              |  |
|------------------------------|--|
| Storage conditions           | : Store in a well-ventilated place. Keep cool.   |
| Heat and ignition sources    | : KEEP SUBSTANCE AWAY FROM: heat sources.  |
| Information on mixed storage | : KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. water/moisture.  |
| Storage area                 | : Store in a dry area. Keep container in a well-ventilated place. Keep only in the original container. Meet the legal requirements.                      |
| Special rules on packaging   | : SPECIAL REQUIREMENTS: closing. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers. |

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Packaging materials : SUITABLE MATERIAL: plastics. glass. MATERIAL TO AVOID: steel.

### SECTION 8: Exposure controls/personal protection

#### 8.1. Control parameters

##### CatOnium TBAB (1643-19-2)

No additional information available

#### 8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.  
Environmental exposure controls : Avoid release to the environment.

#### 8.3. Individual protection measures/Personal protective equipment

##### Personal protective equipment:

Gloves. Protective clothing. In case of dust production: protective goggles. Dust production: dust mask with filter type P2.

##### Hand protection:

Standard EN 374 - Protective gloves against chemicals. The most suitable glove must be chosen in consultation with the gloves supplier, who can inform on the breakthrough time of the glove material.

Type	Material	Permeation	Thickness (mm)	Penetration
Disposable gloves	Nitrile rubber (NBR)	6 (> 480 minutes)	0,31	

##### Eye protection:

Use eye protection according to EN 166, designed to protect against powders and dusts. Face shield. Safety glasses

##### Skin and body protection:

In case of dust production: dustproof clothing. Head/neck protection

##### Respiratory protection:

Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Dust production: dust mask with filter type P2

##### Personal protective equipment symbol(s):



##### Other information:

Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

### SECTION 9: Physical and chemical properties

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

Physical state : Solid  
Appearance : Crystalline solid. Crystalline powder.  
Colour : Colourless to white  
Odour : Amine-like odour Mild odour  
Odour threshold : No data available  
pH : No data available  
Melting point : 96.7 °C @ 101,3 kPa  
Freezing point : Not applicable  
Boiling point : 99.8 °C @ 101,3 kPa  
Flash point : Not applicable  
Relative evaporation rate (butylacetate=1) : No data available  
Flammability (solid, gas) : Non flammable.

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Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: Not applicable
Density	: 0.644 g/cm <sup>3</sup> (20°C)
Molecular mass	: 322.37 g/mol
Solubility	: Soluble in water. Water: 100 g/100ml (35°C) Organic solvent: 100 g/100ml (20°C)
Log Pow	: 1.6 (35°C)
Auto-ignition temperature	: Not applicable
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: Not applicable
Explosive properties	: No data available
Oxidising properties	: No data available

### 9.2. Other information

VOC content	: 0 %
Other properties	: Hygroscopic.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (nitrous vapours, hydrogen bromide, carbon monoxide - carbon dioxide). Reacts violently with (strong) oxidizers.

### 10.2. Chemical stability

Hygroscopic.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral)	: Harmful if swallowed.
Acute toxicity (dermal)	: Not classified
Acute toxicity (inhalation)	: Not classified

ATE US (oral)	500 mg/kg bodyweight
---------------	----------------------

Skin corrosion/irritation	: Causes skin irritation.
Serious eye damage/irritation	: Causes serious eye irritation.
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Not classified
Aspiration hazard	: Not classified
Viscosity, kinematic	: No data available

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Symptoms/effects after inhalation	: AFTER INHALATION OF DUST: Irritation of the respiratory tract. Irritation of the nasal mucous membranes.
Symptoms/effects after skin contact	: Tingling/irritation of the skin. Irritation.
Symptoms/effects after eye contact	: Irritation of the eye tissue. Eye irritation.
Symptoms/effects after ingestion	: Irritation of the gastric/intestinal mucosa.

### SECTION 12: Ecological information

#### 12.1. Toxicity

Ecology - water	: Harmful to aquatic life with long lasting effects.
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#### 12.2. Persistence and degradability

No additional information available

#### 12.3. Bioaccumulative potential

CatOnium TBAB (1643-19-2)	
Log Pow	1.6 (35°C)

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

No additional information available

### SECTION 13: Disposal considerations

#### 13.1. Disposal methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Remove waste in accordance with local and/or national regulations. Recycle/reuse. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery. Do not discharge into drains or the environment.
Additional information	: LWCA (the Netherlands): KGA category 04. Hazardous waste according to Directive 2008/98/EC.
Ecology - waste materials	: laboratory chemicals, consisting of or containing. dangerous substances, including mixtures of laboratory. Hazardous waste (91/689/EEC). Recycle/reuse. Remove to an authorized incinerator equipped with an. afterburner and a flue gas scrubber. Do not discharge into drains or the environment. packaging containing residues of or contaminated by. dangerous substances.

### SECTION 14: Transport information

#### Department of Transportation (DOT)

In accordance with DOT

Other information	: No supplementary information available.
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#### Transportation of Dangerous Goods

#### Transport by sea

Not regulated

#### Air transport

Not regulated

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

CatOnium TBAB (1643-19-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

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### 15.2. International regulations

#### CANADA

##### CatOnium TBAB (1643-19-2)

Listed on the Canadian DSL (Domestic Substances List)

#### EU-Regulations

##### National regulations

No additional information available

### 15.3. US State regulations

## SECTION 16: Other information

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Revision date	: 07/02/2019
Data sources	: according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations. according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830.
Other information	: REACH Disclaimer: This information is based on current knowledge. Consistency of data in the SDS with CSR is considered, as far as the information is available at the time of compilation (cfr Revision date and Version number). <b>DISCLAIMER OF LIABILITY</b> The information in this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, express or implied, regarding its correctness. The conditions or methods of handling, storage, use or disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. This SDS was prepared and is to be used only for this product. If the product is used as a component in another product, this SDS information may not be applicable.

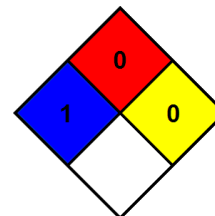
#### Abbreviations and acronyms:

CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
PBT	Persistent Bioaccumulative Toxic
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
vPvB	Very Persistent and Very Bioaccumulative
SDS	Safety Data Sheet

NFPA health hazard : 1 - Materials that, under emergency conditions, can cause significant irritation.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



#### Hazard Rating

Health : 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Personal protection : C  
C - Safety glasses, Gloves, Synthetic apron

#### Indication of changes:

Section	Changed item	Change	Comments
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	Supersedes	Modified	
	Revision date	Modified	
	Precautionary statements (GHS US)	Modified	
	Hazard statements (GHS US)	Modified	
1	Use of the substance/mixture	Added	
2.1	GHS-US classification	Modified	
4	First-aid measures general	Modified	
4	First-aid measures after skin contact	Modified	
4	First-aid measures after ingestion	Modified	
4	First-aid measures after eye contact	Modified	
8.2	Personal protective equipment	Modified	
8.2	Skin and body protection	Modified	
9	Solubility in organic solvents	Added	
9	Log Pow	Added	
9	Density	Added	
9	Melting point	Modified	
9	Boiling point	Modified	
11	LD50 dermal rat	Added	
12.1	Ecology - general	Removed	
12.1	Ecology - water	Modified	
12.3	Log Pow	Added	

SDS US (GHS HazCom 2012)

*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.*