



## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 1 / 14

**1- CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**

Identification of the product:	Espoleta
Recommended uses:	Open pit mining, quarrying and civil construction and underwater dismantle.
Restrictions on use:	Non available.
Company:	IBQ Indústrias Químicas S/A
Address:	Rodovia Régis Bittencourt (BR 116), Km 01 sem número. Bairro Florestal - Quatro Barras – Paraná
Telephone number:	55 (41) 3671-8200
Emergency telephone number:	Emergence in the application: 0800 701 0141 Emergencies during transport: 0800 0111 767 / 0800 7071 767 / 55 (19) 3467-9700 (SOS Cotec)
Fax:	55 (41) 3672-2931
E-mail:	<a href="mailto:ibq@ibq.com.br">ibq@ibq.com.br</a>

**2- HAZARDS IDENTIFICATION**

Most important hazards:	Fire or projection hazard.
<b>Product effects</b>	
Adverse effects to the human health:	Not expected.
Environmental effects:	Not expected.
Physical and chemical hazards:	Fire or projection hazard.
Chemical product-specific hazards:	Risk of explosion by friction, mechanical shock, heat or static electricity. Explosive with or without contact with air.
Important symptoms:	There are not expected symptoms following exposure to the product.
Classification of the chemical product:	Explosives – Division 1.4



## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 2 / 14

Classification system adopted: Globally Harmonized System of Classification and Labeling of Chemicals (GHS), United Nations.

**Adequate labeling elements:**

Pictograms:



Signal word:

WARNING

Hazard statement(s):

H204 Fire or projection hazard.

Precautionary statement(s):

P210 Keep away from heat, sparks, open flames and hot surfaces. No smoking.  
P240 Ground container and receiving equipment.  
P250 Do not subject to grinding, shock and friction.  
P280 Wear face protection.  
P370 + P380 In case of fire: evacuate area.  
P372 Explosion risk in case of fire.  
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 in accordance with local, regional, national and international regulations.

Outline of an anticipated emergency:

EXPLOSIVE.

**3- COMPOSITION/INFORMATION ON INGREDIENTS****MIXTURE**



## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 3 / 14

	Components	Concentration (%)	CAS number
Components contributing to the hazard:	Pentaerythritol tetranitrate	< 80%	78-11-5
	Lead azide	< 20%	13424-46-9
	Lead styphnate	< 15 %	63918-97-8

**4- FIRST-AID MEASURES****Exposure routes**

Inhalation:	It is not expected that the product presents inhalation hazard, but if the coating is damaged and the leak of the contents occurs, remove the victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, contact a TOXICOLOGICAL INFORMATION CENTRE or doctor. Take this SDS.
Skin contact:	It is not expected that the product presents skin contact hazard, but if the coating is damaged and the leak of the contents occurs, wash exposed skin with large amounts of water. Wash contaminated clothing and shoes before reuse. Seek medical attention. Take this SDS.
Eye contact:	It is not expected that the product presents eye contact hazard, but if the coating is damaged and the leak of the contents occurs, rinse thoroughly with water for several minutes. In the case of use of contact lenses, remove them, if it is easy. Continue to rinse. If eye irritation persists: consult a doctor. Take this SDS.
Ingestion:	It is not expected that the product presents ingestion hazard, but if the coating is damaged and the leak of the contents occurs, rinse the victim's mouth with water. If you feel unwell, contact a TOXICOLOGICAL INFORMATION CENTRE or doctor. Take this SDS.
Most important symptoms/effects:	There are not expected symptoms or effects following exposure to the product. Only in case of mechanical violation of the container.
Protection of first-aiders and/or special notes to a	Avoid contact with the product to help the victim. If necessary, symptomatic treatment should comprise mainly supportive measures



**SAFETY DATA SHEET**

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 4 / 14

physician: such as correction of electrolyte disturbances, metabolic, and respiratory care. In case of skin contact not rub the affected area. Inform whether the intoxication was by inhalation, ingestion or contact and quantity of product, if it's possible, that reach the victim.  
In the case of explosion the impact varies and can cause injury, bruises, fractures or burns. Check the hearing of the people who were close to the explosion.

**5- FIRE-FIGHTING MEASURES**

Extinguishing media: Do not fight fire when it reaches the load. Explosion can occur.

Specific hazards arising from the chemical product: Do not stay near the load during extinction of fire because the load can explode. Remain at a safe distance. Very dangerous when exposed to excessive heat or other sources of ignition such as sparks, open flames or burning cigarettes and matches, welding operations, pilot lamps and electric motors. The combustion of the chemical or from containers may form toxic and irritant gases such as carbon monoxide, carbon dioxide.

Specific extinguishing methods: If the fire reaches the load evacuate the area within a radius of at least 1600 meters, removing of the place, including emergency workers, because the load can explode.

Special equipment for the protection of firefighters: Respiratory protective equipment like standalone (SCBA) with positive pressure and full protective clothing.

**6- ACCIDENTAL RELEASE MEASURES**

**Personal precautions**

Removal of ignition sources: Isolate the leak from sources of ignition. Prevent sparks or flames. Do not smoke.

Dust control: It is not expected that the product releases dust, but if the coating is damaged and the leak of the contents occurs, remove the product using vacuum systems or other method that does not generate dust.

Prevention of inhalation and Do not touch damaged containers or spilled material without the use of



**SAFETY DATA SHEET**

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 5 / 14

contact with skin, eyes and mucous membranes: appropriate clothing. Avoid inhalation, contact with eyes and skin. Use personal protective equipment as described on section 8.

Environmental protection: Avoid spillage reaches watercourses and sewerage systems.

Emergency procedures and alarm systems: It is recommended the installation of fire alarm system and leak detection in storage and handling sites.

Methods and materials for cleaning up: Eliminate all sources of heat and keep away the combustible materials. Signal and isolate the area. Use only anti-sparking tools. Clean the area with the orientation of a specialist. Collect the product in containers like cardboard. Remove them to a safe place. For disposal, proceed according to Section 13 of this SDS. During the gathering of the product does not cause mechanical shock, friction, sparks, flames or sparks. Avoid static electricity.

Secondary disaster prevention: The dilution water from the fire-fighting may cause pollution.

Differences in the action of large and small leaks: In case of large spills, immediately isolate the area within a radius of at least 800 meters in all directions. For small spills isolate and signal the area in a radius of at least 100 meters.

**7- HANDLING AND STORAGE**

**Technical measures for handling**

Prevention of exposure of the handler: Handle in a ventilated area or with general ventilation/local exhaustion. Avoid dust formation. Avoid breathe the product in case of dusts formation. Avoid contact with incompatible materials. To reduce the possibility of potential risk to health, only trained personnel should handle this product. Never try to dismantle the product.

Prevention of fire and explosion: Never store or transport the product along with explosives initiators. Keep product away from heat, ignition sources, impact and electrostatic discharge. Do not rub, do not induce mechanical shock, do not store in a confined, humid, wet or exposed to weathering, subjected to high temperatures. Preventively remove all sources of ignition. - Do not smoke. Keep container tightly closed. Keep away from heat, sparks, open flames and hot surfaces. Ground the container vessel and



**SAFETY DATA SHEET**

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 6 / 14

the receiver of the product during transfer. Do not subject to abrasion, shock or friction.

Precautions for safe handling: Avoid contact with the product. Wear protective gloves, protective clothing, eye protection, face protection as specified in Section 8.

**Hygiene measures**

Suitable: Wash hands and face thoroughly after handling and before eating, drinking, smoking or using the toilet. Contaminated clothing should be changed and washed before reuse.

Unsuitable: Eat, drink or smoke when using this product.

**Technical measures of storage**

Conditions for safe storage: Store in a cool, ventilated area away from sources of heat and separated from combustible materials. Store only in specially constructed deposits for the storage of explosive material. Use electrical equipment, ventilation and lighting explosion proof. This product may react dangerously with some incompatible materials as mentioned in Section 10. In case of deteriorated or damaged product, contact the manufacturer for safe and proper disposal. Never store or transport the product along with explosives.

Conditions that must be avoided: High temperatures and ignition sources.

Incompatible substances or mixtures: Oxidizing agents, reducing agents, acids, alkalis and corrosive.

**Packaging materials**

Recommended: Similar to the original packaging.

**8- EXPOSURE CONTROLS AND PERSONAL PROTECTION**

**Permissible concentration**

Occupational exposure limit	Chemical name or common	TLV – TWA (ACGIH, 2012)
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## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 7 / 14

Lead and inorganic compounds

0,05 mg/m<sup>3</sup>

Biological limit:

- Lead:

BEI (ACGIH, 2012):

Lead in blood: 30 µg/100 mL

Note: In women of childbearing age: 10 µg/100 mL.

Engineering controls  
measures:

Promote mechanical ventilation and exhaust system directly to the outside environment. These measures help to reduce exposure to the product. It is recommended make available emergency showers and eye wash in the work area. Keep the mixture concentrations in air below occupational exposure limits indicated.

**Appropriate personal protective equipment**

Respiratory protection:

Use respiratory protection if ventilation or exhaust system is not adequate.

Hand protection:

PVC or latex gloves.

Eye protection:

Safety glasses.

Skin and body protection:

Use cotton clothing, apron with chemicals protection, safety shoes and cream to protect the hands.

Special precautions:

Avoid wearing contact lenses while using this product.

**9- PHYSICAL AND CHEMICAL PROPERTIES**

Appearance:

Cylindrical aluminum case containing primary explosive charge (initiator) and secondary explosive (reinforcing charge).

Odour:

Nonexistent.

pH:

Not available.

Melting point/freezing point:

Information related to:  
- Pentaerythritol tetranitrate:  
140°C

Boiling point, initial boiling

Not available.



## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 8 / 14

and boiling range:

Flashpoint: Not applicable.

Upper/ Lower flammability  
or explosive limits: Not available.

Vapour pressure: Not available.

Vapour density: Not available.

Density: Not available.

Solubility (ies): Insoluble in water.

n-octanol/water partition  
coefficient: Not available.

Auto-ignition temperature: Not available.

Decomposition temperature:  $> 75^{\circ}\text{C}$ 

Flammability: Not flammable.

Other information: Not applicable.

**10- STABILITY AND REACTIVITY**

Chemical stability: The product is stable under normal conditions of temperature and pressure. The product can detonate in the presence of fire, intense heat and impact.

Hazardous reactions: Product may detonate on impact, shock, flame or high heat and electrostatic charges.

Conditions to avoid: Elevated temperatures. Incompatible materials and ignition sources. Source of friction, shock, flame or excessive heat and electrostatic charges.

Incompatible materials: Explosives, acids, alkalis and corrosive agents.

Hazardous decomposition  
products: Carbon monoxide, nitrous oxides, chromates and metal oxides.





## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 9 / 14

**11- TOXICOLOGICAL INFORMATION**

Acute toxicity:	It is not expected that the product presents acute toxicity.
Skin irritation/corrosion:	It is not expected that the product presents skin irritation potential.
Eye damage/irritation:	It is not expected that the product presents eye irritation potential.
Respiratory or skin sensitization:	It is not expected that the product presents respiratory or skin sensitization potential.
Reproductive cell mutagenicity:	It is not expected that the product has reproductive cell mutagenicity.
Carcinogenicity:	<p>It is not expected that the product have carcinogenicity to humans. Only in case of mechanical violation of the container.</p> <p>Information related to:</p> <p>- <u>Lead compounds</u>:</p> <p>The inorganic lead is considered probable carcinogenic to humans (Group 2A - IARC).</p>
Reproductive toxicity:	<p>It is not expected that the product has toxicity to the reproduction. Only in case of mechanical violation of the container.</p> <p>Information related to:</p> <p>- <u>Lead compounds</u>:</p> <p>Lead is considered possible teratogenic agent to humans, can cause reduced fertility in men, women and damage in the fetal development.</p>
Specific target organ toxicity – single exposure:	<p>It is not expected that the product presents specific target organ toxicity – single exposure. Only in case of mechanical violation of the container.</p> <p>Information related to:</p> <p>- <u>Pentaerythritol tetranitrate</u>:</p> <p>The substance may cause effects on the cardiovascular system, resulting in lowering of blood pressure with fatigue, general malaise, headache and dizziness.</p>
Specific target organ toxicity – repeated exposure:	It is not expected that the product presents specific target organ toxicity – repeated exposure.



## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 10 / 14

Information related to:

- Lead compounds:

The prolonged and repeated exposure can have effects on the central nervous system, liver and kidneys, resulting in encephalopathy (e.g. convulsions), abdominal pain and renal failure.

Aspiration hazard: It is not expected that the product presents aspiration hazard.

Toxicokinetics, metabolism and distribution: No information is described on the toxicokinetics and metabolism of this product.

**12- ECOLOGICAL INFORMATION****Environmental effects, behavior and fate of the product**

Product not classified as dangerous for the aquatic environment. Only in case of mechanical violation of the container.

Information related to:

- Lead compounds:

Ecotoxicity: EC<sub>50</sub> (crustaceans, 48h): 0.60 mg/L

LC<sub>50</sub> (fish, 96h): 5.58 mg/L- Pentaerythritol tetranitrate:LC<sub>50</sub> (*Daphnia magna*, 48h): 8500 mg/L

Persistence and degradability: The product does not have persistence, and it is considered readily biodegradable.

It is not expected bioaccumulation potential in aquatic organisms. Only in case of mechanical violation of the container.

Bioaccumulative potential: Information related to:

- Lead compounds:

BCF: 5765

Mobility in soil: Not available.

Other adverse effects: There are not known other environmental effects for this product.



SAFETY DATA SHEET

Product: ESPOLETA

Revision: 01

Date: 06/26/2013

Pages: 11 /14

13- DISPOSAL CONSIDERATIONS

Methods of disposal to the chemical product, product waste and/or contaminated container and/or packaging:	Must be disposed as hazardous waste according to local regulations. The treatment and disposal should be evaluated specifically for each product. Federal, state and local laws should be consulted. Keep the remaining product in their original packaging and properly sealed. Disposal should be made as provided for the product. Do not reuse empty packaging. They may contain remnants of the product and must be closed and sent for proper disposal as required for the product.
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14- TRANSPORT INFORMATION

<b>International regulations</b>	
<b>Land:</b>	UN - United Nations Recommendations on the TRANSPORT OF DANGEROUS GOODS. Model Regulations.
UN number:	0500
Proper shipping name:	DETONATOR ASSEMBLIES, NON-ELECTRIC
Class or division:	1.4S
Subsidiary risk:	NA
Packing group:	NA
<b>Sea:</b>	IMO - International Maritime Organization International Maritime Dangerous Goods Code (IMDG Code)
UN number:	0500
Proper shipping name:	DETONATOR ASSEMBLIES, NON-ELECTRIC
Class or division:	1.1B
Subsidiary risk:	NA
Packing group:	NA
Marine pollutant:	N



## SAFETY DATA SHEET

**Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 12 / 14

EmS: F-B, S-X

**Air:** IATA - International Air Transport Association  
Dangerous Goods Regulation (DGR)

UN number: 0500

Proper shipping name: DETONATOR ASSEMBLIES, NON-ELECTRIC

Class or division: 1.4S

Subsidiary risk: NA

Packing group: NA

**15- REGULATORY INFORMATION**

Convention concerning Safety in the use of Chemicals at Work (Convention 170) - International Labour Organization, 1990.

International Organization for Standardization - ISO 11014:2009.

Directive 76/768/EEC.

*European Chemical Bureau*- European Community:

Directive **67/548/EEC** (substances).

Directive **1999/45/EC** (preparations).

**16- OTHER INFORMATION**

This information had been based on the current knowledge of the product and intended to describe safety, health and environmental hazards.

The Britanite warns that the handling of any chemical substance requires the previous knowledge of its hazards by the user. It is responsibility of the product user enterprise to promote the training of its employees and contractors about the possible risks arising from the product.

SDS in January, 2013

**Abbreviations:**

**SAFETY DATA SHEET****Product: ESPOLETA**

Revision: 01

Date: 06/26/2013

Pages: 13 /14

**ACGIH** – American Conference of Industrial Hygienists**BEI** – Biological Exposure Index**CAS** – Chemical Abstracts Service**LC<sub>50</sub>** – Lethal concentration 50%**N** – No**NA** – Not applicable**TLV** – Threshold limit value**TWA** – Time weighted average**Bibliographic references:**

ACGIH - AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS. Available at: <<http://www.acgih.org/TLV/>>. Access in: Jan. 2013.

ECB - EUROPEAN CHEMICALS BUREAU. Diretiva 67/548/EEC (substâncias); Diretiva 1999/45/EC (preparações). Available at: <<http://ecb.jrc.it/>>. Access in: Jan. 2013.

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HSDB - HAZARDOUS SUBSTANCES DATA BANK. Available at: <<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB>>. Access in: Jan. 2013.

IARC - INTERNATIONAL AGENCY FOR RESEARCH ON CANCER. Available at: <<http://monographs.iarc.fr/ENG/Classification/index.php>>. Access in: Jan. 2013.

IPCS - INTERNATIONAL PROGRAMME ON CHEMICAL SAFETY – INCHEM. Available at:



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**SAFETY DATA SHEET**

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**Product: ESPOLETA**

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Revision: 01

Date: 06/26/2013

Pages: 14 / 14

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NITE-GHS JAPAN - NATIONAL INSTITUTE OF TECHNOLOGY AND EVALUATION. Available at: <[http://www.safe.nite.go.jp/english/ghs\\_index.html](http://www.safe.nite.go.jp/english/ghs_index.html)>. Access in: Jan. 2013.

REACH - REGISTRATION, EVALUATION, AUTHORIZATION AND RESTRICTION OF CHEMICALS. Amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals Available at: <<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:164:0007:0031:EN:PDF>>. Access in; Jan. 2013.

SIRETOX/INTERTOX - SISTEMA DE INFORMAÇÕES SOBRE RISCOS DE EXPOSIÇÃO QUÍMICA. Available at: <<http://www.intertox.com.br>>. Access in: Jan. 2013.

TOXNET - TOXICOLOGY DATA NETWORKING. ChemIDplus Lite. Available at: <<http://chem.sis.nlm.nih.gov/>>. Access in: Jan. 2013.

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