

## SAFETY DATA SHEET

Product: **Britacord® (DETONATING CORD)**

SDS-0011-001

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**1- IDENTIFICATION**Product identifier: **Britacord® (DETONATING CORD)**

Recommended use of the chemical and restrictions on use: Links in takedowns primary and secondary (hot flashes) in open pit mining, underground quarries, civil works, seismographic researches, sculptural takedowns (pre and post cut) and ornamental stone cutting.

Manufactured by: ENAEX BRITANITE - Quatro Barras, Paraná – Brazil

Imported by: Davey Bickford USA, Inc. - 428 E Winchester St, Suite 202. Salt Lake City, Utah - 84107

Contact: Tel: (801) 562-3045 E-mail: Dan.francelj@enaex.com

Emergency telephone number: 800 255-3924 (CHEMTEL - USA and Canada) Contract # MIS0004602

**2- HAZARD(S) IDENTIFICATION**

Classification of the chemical: Explosives - Division 1.1

Signal Word: DANGER

Hazard statement(s): Explosive; mass explosion hazard.

Symbol(s):



Precautionary statement(s):

**PREVENTION:**

Keep away from heat, sparks, open flames and hot surfaces. - No smoking.

Keep wetted with suitable material.

Ground and bond container and receiving equipment.

Do not subject to grinding, shock and friction.

Wear face protection.

**RESPONSE:**

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In case of fire: evacuate area.  
Explosion risk in case of fire.  
Do NOT fight fire when fire reaches explosives.

**STORAGE:**

Store in accordance with local regulations.

**DISPOSAL:**

Dispose of contents/container in accordance with local regulations.

OSHA HCS 29 CFR 1910.1200

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

Other hazards which do not result in classification: Risk of explosion by friction, mechanical shock, excessive heat or flame.

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

	<b>Components</b>	<b>Concentration (%)</b>	<b>CAS Number</b>
Ingredients contributing to the classification:	Pentaerythritol tetranitrate	50 – 70	78-11-5

**4- FIRST-AID MEASURES****Description of necessary measures**

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 for remove the material. In case of irritation: Consult a doctor. Take this SDS.

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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, contact a POISON CENTER or a doctor. Rinse the victim's mouth with water. Take this SDS.

Most important symptoms and effects, acute and delayed:

There are not expected symptoms or effects following exposure to the product.

Indication of any immediate medical attention and special treatment needed:

Avoid contact with the product to help the victim. Symptomatic treatment should comprise mainly supportive measures such as correction of electrolyte disturbances, metabolic, and respiratory support. In case of skin contact do not rub the affected site. 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:

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 products or containers may form toxic and irritant gases such as carbon monoxide and carbon dioxide.

Special protective equipment and precautions for fire-fighters:

Self-contained breathing apparatus (SCBA) operated in positive pressure mode and complete protective clothing.

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**6- ACCIDENTAL RELEASE MEASURES**

Personal precautions:	Isolate leaking sources of ignition. Keep unauthorized persons away from the area. Stop the leak if this can be done without risk. Prevent sparks or flames. Do not smoke.
Protective equipment:	Use protective equipment as described in Section 8.
Emergency procedures:	It is recommended the installation of fire alarm system and leak detection in local storage and use of the product. Evacuate the area.
Methods and materials for containment and cleaning up:	Eliminate all sources of heat and keep away the combustible materials. Signal and isolate the area. Clean the area with the orientation of a specialist. Collect the product in containers like cardboard, plastic or wood. Remove them to a safe place. For disposal, proceed according to Section 13 of this SDS.

**7- HANDLING AND STORAGE**

Precautions for safe handling:	<p>Handle in a well ventilated area or with general system of ventilation/local exhaust. Avoid dusts formation. Avoid exposure to the chemical. Avoid contact with incompatible materials. Only trained personnel should handle this product. Never try to dismantle. Use personal protective equipment as indicated in section 8.</p> <p>Keep away from heat, sparks, open flames and hot surfaces. - Do not smoke. Ground the container vessel and the receiver of the product during transfer. Do not subject to abrasion, shock or friction. Do not store in a confined, humid, wet or exposed to weathering, subjected to high temperatures. Never store or transport the product along with explosives initiators. Use electrical equipment, ventilation and lighting explosion proof.</p> <p>Contaminated clothing should be changed and washed before reuse. Remove clothing and protective equipment contaminated before entering eating areas. Wash hands and face thoroughly after handling and before eating, drinking, smoking or going to the bathroom.</p>
Conditions for safe storage, including any incompatibilities:	Store in a cool, well-ventilated place away from sources of heat and separate from combustible materials. Store only in tanks made specifically for the storage of explosive material. Avoid high temperatures and sources of ignition. This product may react

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dangerously with some incompatible materials as outlined in Section 10. In case of deteriorated or damaged product, contact the manufacturer for correct and safe disposal. It is not necessary the addition of stabilizers and antioxidants to ensure the durability of the product.

Incompatible with oxidizing agents, reducing agents, acids, alkalis and corrosive.

Recommended packaging materials: Similar to the original packaging.

**8- EXPOSURE CONTROLS/PERSONAL PROTECTION****Control parameters:**

Occupational exposure limit: Not established.

Biological limit: Not established.

Appropriate engineering controls: Promote direct mechanical ventilation and exhaust system to the outside environment. These measures help reduce exposure to product.

**Individual protection measures, such as personal protective equipment**

Respiratory protection: Respiratory protection with self-contained breathing apparatus in the presence of smoke.

Hand protection: Latex or PVC safety gloves and hand protection cream.

Eye protection: Safety goggles.

Skin and body protection: Use cotton clothing, chemical protection apron and safety shoes.

**9- PHYSICAL AND CHEMICAL PROPERTIES**

Appearance (physical state, color, etc.): Flexible cable with an explosive core (pentaerythritol tetranitrate), braided with wires and covered by a coating (polyvinyl chloride).

Odor: Odorless.

Odor threshold: Not available (lack of information).

pH: Not available (lack of information).

Melting point/freezing point: Information related to:

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- Pentaerythritol tetranitrate:  
140°C

Initial boiling and boiling range: Not available (lack of information).

Flash point: Not available (lack of information).

Evaporation rate: Not available (lack of information).

Flammability (solid, gas): Not available (lack of information).

Upper/ lower flammability or explosive limits: Not available (lack of information).

Vapor pressure: Not available (lack of information).

Vapor density: Not available (lack of information).

Relative density: Not available (lack of information).

Solubility(ies): Insoluble in water.

Partition coefficient: n-octanol/water: Not available (lack of information).

Auto-ignition temperature: > 225°C

Decomposition temperature: > 150°C

Viscosity: Not available (lack of information).

Other information: Not applicable.

**10- STABILITY AND REACTIVITY**

Reactivity: The product can detonate in the presence of fire, intense heat and impact, especially in confined environment.

Chemical stability: The product is stable under normal conditions of storage and use.

Possibility of hazardous reactions: Product may detonate on impact, shock, flame or lot of heat.

Conditions to avoid: Elevated temperatures, ignition sources and contact with incompatible materials.

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Incompatible materials:	Oxidizing agents, reducing agents, acids, alkalis and corrosive.
Hazardous decomposition products:	Thermal decomposition may release nitrogen oxides and carbon monoxide.

**11- TOXICOLOGICAL INFORMATION**

Symptoms related to the physical, chemical and toxicological characteristics:	There are not expected symptoms or effects following exposure to the product.
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**Delayed and immediate effects and also chronic effects from short- and long-term exposure**

Acute toxicity:	Based on available data, does not meet the classification.
Skin corrosion/irritation:	Based on available data, does not meet the classification.
Eye damage/irritation:	Based on available data, does not meet the classification.
Sensitization - respiratory or skin:	Based on available data, does not meet the classification.
Germ cell mutagenicity:	Based on available data, does not meet the classification.
Carcinogenicity:	Based on available data, does not meet the classification.
Toxic to reproduction:	Based on available data, does not meet the classification.
Specific target organ toxicity (single exposure):	It is not expected that the product presents specific target organ toxicity after single exposure, only in case of mechanical violation of the container. Information regarding to: - <u>Pentaerythritol tetranitrate</u> : The substance may cause effects on the cardiovascular system, resulting in lowering of blood pressure with fatigue, general malaise, headache and dizziness.
Specific target organ toxicity (repeated exposure):	Based on available data, does not meet the classification.
Aspiration hazard:	Based on available data, does not meet the classification.

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**12- ECOLOGICAL INFORMATION**

Ecotoxicity:	Product not classified as dangerous for the aquatic environment. Information regarding to: - <u>Pentaerythritol tetranitrate</u> : LC <sub>50</sub> ( <i>Daphnia magna</i> , 48h): 8500 mg/L
Persistence and degradability:	The product does not have persistence, and it is considered readily biodegradable.
Bioaccumulative potential:	Due to lack of data, bioaccumulative potential is not expected in aquatic organisms.
Mobility in soil:	No data available.
Other adverse effects:	There are not known adverse environmental effects of the product.

**13- DISPOSAL CONSIDERATIONS**

Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging:	Must be disposed of as hazardous waste in compliance with local regulations. The treatment and disposal should be evaluated for each specific product. Keep the product remains in its original and properly closed. Disposal should be performed as established for the product. Do not reuse empty containers. These may contain product residues and should be kept closed and sent for proper disposal as established for the product.
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**14- TRANSPORT INFORMATION****International regulations**

Land:	U.S. DEPARTMENT OF TRANSPORTATION (DOT) Code of Federal Regulations (CFR)
UN number:	0065
UN proper shipping name:	CORD, DETONATING
Transport hazard class(es):	1.1D
Packing group:	II



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<b>Sea:</b>	IMO – International Maritime Organization International Maritime Dangerous Goods Code (IMDG Code)
UN number:	0065
UN proper shipping name:	CORD, DETONATING
Transport hazard class(es):	1.1D
Packing group:	NA
Environmental hazards:	The product is not considered a marine pollutant.
EmS:	F-B, S-X
<b>Air:</b>	IATA – International Air Transport Association Dangerous Goods Regulation (DGR)
UN number:	FORBIDDEN FOR AIR TRANSPORT.
Transport in bulk according to MARPOL 73/78, Annex II, and the IBC Code:	Consult regulations: - International Maritime Organization. MARPOL: Articles, protocols, annexes, unified interpretations of the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto, consolidated edition. IMO, London, 2006; - International Maritime Organization. IBC code: International code for the construction and equipment of shipping carrying dangerous chemicals in bulk: With Standards and guidelines relevant to the code. IMO, London, 2007.
Special precautions:	There is no need of special precautions.

**15- REGULATORY INFORMATION**

Safety, health and environmental regulations specific for the product:	International Labor Organization C170 Chemicals Convention, from June 25th, 1990: Occupational Safety and Health – Toxic Substances and Agents. Hazard Communication Standard (HCS) 29 CFR: 1910.1200 - Appendix A,B,C,D, E,F.
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**16- OTHER INFORMATION**

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This SDS was prepared based on current knowledge about the proper product handling and under normal conditions of use, in accordance with the application specified on the packaging. Any other use of the product involving their combination with other materials, and use various forms of those indicated, are the responsibility of the user. Warns that the handling of any chemical substance requires the prior knowledge of its hazards for the user. In the workplace it is for the user company's product promotes training of its collaborators about the possible risks arising from exposure to the chemical.

SDS elaborated in November, 2018.

**Abbreviations:**

**CAS** – Chemical Abstracts Service

**LC<sub>50</sub>** – Lethal Concentration 50%

**NA** – Not applicable

**SCBA** – Self Contained Breathing Apparatus

**Bibliographic references:**

AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIALS HYGIENISTS. TLVs® and BEIs®: Based on the Documentation of the Threshold Limit Values (TLVs®) for Chemical Substances and Physical Agents & Biological Exposure Indices (BEIs®). Cincinnati-USA, 2018.

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NIOSH – NATIONAL INSTITUTE OF OCCUPATIONAL AND SAFETY. International Chemical Safety Cards. Available at: <<http://www.cdc.gov/niosh/>>. Access in: November, 2018.

OSHA – OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION. Available at: <<https://www.osha.gov/dsg/hazcom/index.html>>. Access in: November, 2018.