

**PRODUCT: DIBUTYL MALEATE - DBM**

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**1. IDENTIFICATION OF THE SUBSTANCE AND COMPANY**

- Product name (label): Dibutyl Maleate.
- Name in English: Dibutyl Maleate.
- Supplier name, address and telephone number:  
Elekeiroz S.A. (Várzea Paulista-SP Plant) - Rua Dr. Edgardo de Azevedo Soares, 392  
CEP 13224-030  
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**2. COMPOSITION AND INFORMATION ON INGREDIENTS**

- Common chemical name of the substance:  
**Dibutyl Maleate**
- Synonyms:  
Dibutyl Ester of 2-Butenedioic Acid; Dibutyl Ester of Maleic Acid; Butyl Maleate; DBM.
- Register in *Chemical Abstract Service* (nº C.A.S):  
[105-76-0]
- Ingredients that contribute to risk:  
Dibutyl Maleate >95%

**3. HAZARDS IDENTIFICATION**

- Specific hazards and most important effects: Combustible product, low toxicity. Irritant. Overexposure symptom can be central nervous system depression.

**4. FIRST-AID MEASURES**

- Inhalation:  
In fumes or combustion products are inhaled, remove to fresh air, lay the patient down, keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed immediately, where possible, prior to initiating first aid procedures. If breathing is shallow or has stopped, ensure clear airway and apply resuscitation, preferably with demand valve resuscitator, bag-valve mask device or pocket mask, if the person is trained. Apply cardio-pulmonar resuscitation, if necessary. Send the victim to a doctor.
- Contact with skin:  
Wash them immediately with plenty of water and soap.

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- Contact with eyes:  
Flush them immediately with fresh running water, keeping the eyes open. Ensure complete irrigation of the eye by keeping eyelids apart. Removal of contact lenses after an eye injury only be undertaken by skilled personnel.
- Ingestion:  
DO NOT induce to vomit. If vomit occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully. Never give liquid to a person showing signs of being sleepy or with reduced awareness. Give water (or milk) to rinse out mouth, then provide liquid slowly and as much as he/she can comfortably drink.  
  
Obs.: in every case, patient should be sent to emergency medical treatment.
- Note to physicians:  
Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

- Proper extinguishing media:  
Large fires only: foam, chemical powder, CO<sub>2</sub>, water spray or fog.
- Specific hazards:  
Combustible product. Risk of fire if exposed to flame or heat. The heating can cause expansion or decomposition, leading to violent burst of the containers. It can release toxic fumes of Carbon Monoxide or irritant smoke. Mists with combustible products can be explosive. Avoid reactions with oxidizing agents.
- Special methods and firemen protection:  
Wear breathing apparatus plus protective gloves. Prevent, by any means, spillage from entering drains or waterways. Use water delivered as a fine spray to control fire and cool adjacent area. Avoid spraying water onto liquid pools. Do not approach containers suspect to be hot. Cool fire-exposed containers with water spray from a protected location. If safe to do so, remove containers from path of fire.

**6. ACCIDENTAL RELEASE MEASURES**

- Special precautions:  
Small spills: Clean up spills immediately. Wear impervious gloves and safety glasses. Slippery when spilled.  
  
Large spills: Clear area of personnel. Wear protective clothing, impervious gloves and safety glasses. Shut off all possible sources of ignition and increase ventilation.

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- Precautions to environment: In case of little spills, wipe up and absorb small quantities with vermiculite or other absorbent material. Place spilled material in clean, dry, sealable, labeled container. For large spills, absorb or cover spill with sand, earth, inert material or vermiculite. Collect residues and seal in labeled drums for disposal. Wash spill area with large quantities of water.
- Cleaning methods:  
Follow the recommendations above mentioned.

**7. HANDLING AND STORAGE**

- Handling (technical measures):  
Avoid breathing mist and vapor, especially at high temperatures. Use in a well-ventilated area. Avoid prolonged and repeated skin contact. Avoid contact with eyes. Keep containers securely sealed when not in use. Wash hands with soap and water after handling.
- Storage (technical measures):  
In bulk, stainless steel or carbon steel, aluminium or reinforced plastic tanks with vent. Check if the containers are clearly labeled.

**8. EXPOSURE CONTROLS AND PERSONAL PROTECTION**

- Specific control parameters:  
-ACGIH-TLV/TWA(revision 2005) = not applicable.
- Personal Protective Equipment:  
Eyes: No special equipment when handling small quantities. Otherwise safety glasses with side shields. Contact lenses pose a special hazard. Soft lenses can absorb irritants and all lenses concentrate them.  
Hands: Wear chemical protective gloves, i.e. PVC gloves with polyethylene liner or latex.  
Feet: safety shoes.  
Trunk: PVC, trevira or equivalent apron.  
  
- Keep in the area where the product is handled, emergency shower and eyewash unit.
- Other information:
  - General exhaustion is adequate under normal operating conditions. Local exhaust ventilation may be required in specific circumstances. If risk of overexposure exists, semifacial respirator with filter for organic vapours. Provide adequate ventilation in warehouse or closed storage areas.

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**9. CHEMICAL AND PHYSICAL PROPERTIES**

- Physical state: colorless oily liquid.
- pH: not applicable.
- Specific temperatures at which occur physical state changes:
  - Boiling point: 300°C
- Flash point:  
Open cup: 140°C.
- Auto ignition temperature: not available.
- Explosion limits:  
Lower: Not available  
Upper: Not available
- Vapour pressure (kPa): 0,002 kPa at 25°C
- Vapour density (air=1): 7,22
- Liquid density (water = 1, at 4°C): 0,993 – 0,999.
- Molecular weight: 228
- Refraction index, 20°C: 1,445 ± 0,002
- Viscosity, 20°C: 7 cP
- Chemical formula: C<sub>12</sub>H<sub>20</sub>O<sub>4</sub>

**10. REACTIVITY AND STABILITY**

- Specific conditions:  
Product is considered stable under normal handling conditions.
- Incompatible substances:  
-Avoid reaction with oxidizing agents. Avoid strong bases.
- Conditions to be avoided:  
Product is considered stable under normal handling conditions. Hazardous polymerization will not occur.
- Hazardous products of decomposition:  
Under combustion it can release toxic fumes of Carbon Monoxide.

**11. TOXICOLOGICAL INFORMATION**

- Acute toxicity and local effects:  
Contact with skin:  
Product can be slightly uncomfortable to the skin. Sensitization can result as a response of allergic dermatitis including eruptions, itching, urticaria or ends swelling. Material can produce skin irritation after prolonged or repeated exposure and can produce contact dermatitis (non allergic) This form of dermatitis is often characterized by redness and skin swelling, than can evolve to vesicles

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formation, scale and epidermis swelling. Hystologically, it can occur intercelular edema of the spongy layer and intracelular edema of epidermis.

**Contact with eyes:**

Material can be slyghtly uncomfortable to eyes and is capable of causing slight, temporary conjunctiva reddeness (similar to those burns caused by wind), temporary damages to vision and/or other transient ulcerations/damages. It can be irritant to eyes, prolonged contact can cause inflammation. Repeated or prolonged exposure to irritants can produce conjunctivitis.

**Inhalation:**

Normally, it does not pose a risk due to non-volatile nature of the product. Vapours inhalation is more probable at elevated temperatures than to normal ones. The vapour is slightly uncomfortable to upper respiratory tract and to lungs. The main effects of aliphatic esters are narcosis and irritation and anesthesia at more elevated concentrations. These effects are aggravated as the molecular weigths and boiling points increase. Central nervous system depression, headaches, sleepiness, dizziness, coma and neurobehavioral changes can also be sympton of overexposure. The involvement of respiratory tract can produce irritation of mucous membrane, dipnea and tachpnea, pharyngitis, bronchitis, pneumonitis and, massive exposures, pulmonar edema (than can be retarded). Gastrointestinal effects include nausea, vomit, diarrhea and abdominal cramps. Damage to liver and kidneys can result from massive exposures.

**Ingestion:**

Material can be uncomfortable to gastrointestinal tract and can be harmful if swallowed in large amounts. Considered as an improbable entry route in commercial/industrial environments.

- **Chronic toxicity**

There are no available data about human exposure. For this reason, the effects over health are based in the experience with chemically similar materials.

- **Medical conditions aggravated by overexposure:**

- **Toxicological parameters:**

Oral (rats) LD<sub>50</sub>: 3730 mg/kg

Skin (rabbit) LD<sub>50</sub>: 10000 mg/kg

Intraperitoneal (mouse) LD<sub>50</sub>: 150 mg/kg

**Irritation**

Skin (rabbit): 500 mg (open) – mild

Eyes (rabbit): 500 mg/24 hours – mild

Eyes (rabbit): 500 mg (open)

Consult NIOSH, RTECS ONO875000, for additional data.

- **Target organs: skin, eyes, respiratory tract, central nervous system (CNS)**

Primary entry routes: accidental contact with skin and eyes, and through vapours inalation, specially at more elevated temperatures.

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**12. ECOLOGICAL INFORMATION**

- Environmental effects, behavior and impacts of the product:  
No data found.
- Ecotoxicity, behavior and impacts of the product:  
No data found.

**13. DISPOSAL CONSIDERATIONS**

- Treatment and disposal methods of the product, wastes and used packages:  
Any waste treatment should be according to local and national regulations.  
Do not release the product or waste to bodies of water or to sewage galleries.

**14. TRANSPORT INFORMATION**

- IATA (international, aerial): non listed.
- IMO (international, maritime): non listed.

**15. REGULATORY INFORMATION**

- EPA regulation: NTP – non listed; IARC – non listed; OSHA – non listed; NIOSH – non listed; ACGIH – non listed; EPA – non listed; MAK – non listed

**EPA** – Environmental Protection Agency**SARA** - Superfund Amendments and Reauthorization Act**RCRA** - Resource Conservation and Recovery Act**CERCLA** - Comprehensive Environmental Response, Compensation, and Liability Act**TSCA** - Toxic Substances Control Act**16. OTHER INFORMATION**

References:

-MSDS - GENIUM PUBLISHING CORP. (sheet n.º DIB8150, issue jul/2004)

Observation:

The information contained in this MSDS are offered in good faith and as orientation instrument. The company cannot be liable for improper use of the product or of the information in this document. If additional information is needed, consult the supplier.