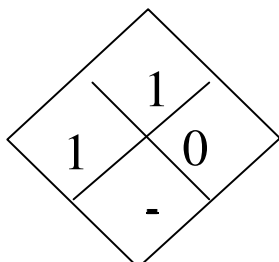


RISK DIAMMOND

1 – Fire hazard in case of strong heating

1 – Health: minimum hazard

0 – No reaction hazard under normal conditions

1. PRODUCT AND COMPANY IDENTIFICATION

- Product name (label):
Diocetyl Phthalate
- Supplier name, address and telephone number:
Elekeiroz S.A. (Várzea Paulista-SP Unit) - Rua Dr. Edgardo de Azevedo Soares, 392
CEP 13224-030
Phone: **(0xx11) 4596-8800 (24 h)**. Fax: (0xx11) 4596-8979
Elekeiroz S.A. (Camaçari-BA Unit) - Rua João Úrsulo, 1261, Pólo Petroquímico do Nordeste
CEP 42810-000
Phone: **(0xx71) 3632-7711 (24 h)**
Fax: (0xx71) 3632-2110
E-mail (customer service):
elisabete.moskalenko@elekeiroz.com.br
carlos.villani@elekeiroz.com.br

2. COMPOSITION AND INFORMATION ABOUT INGREDIENTS

- Common chemical name of the substance:
Diocetyl Phthalate
- Synonyms:
DOP, Di (2 - Ethyl Hexyl) Phthalate, Di (2 - Ethyl Hexyl) Phthalic Acid Ester DEHP, Di (2 – Ethyl Hexyl) Ester of Benzene Dicarboxylic 1,2 Acid.
- Register in *Chemical Abstract Service* (nº C.A.S):
[0117-81-7]
- Ingredients that contribute to hazard:
Diocetyl Phthalate 99%

3. HAZARDS IDENTIFICATION

- Hazards and most important effects:
It can cause irritation (skin, eyes and mucous membranes), affects gastrointestinal tract.

4. FIRST AID MEASURES

- Contact with the skin:
Remove contaminated clothing and shoes and wash the affected area with plenty of water (during 15 minutes). Wash the affected area with water and soap.
- Contact with eyes:
Wash the eyes immediately with plenty of water, including under eyelids (during 15 minutes), including under eyelids (during 15 minutes). Remove contact lenses, if it's the case, with medical help.
- Inhalation:
Remove the victim from the area. Watch respiratory conditions. If occurs respiratory arrest, apply artificial respiration, by qualified person. If the respiration is difficult, apply oxygen, by qualified person.
- Ingestion:
Do not induce to vomit. If the victim is conscious and alert, wash the mouth with water and give him/her large amounts of water to drink.

Obs.: in all cases, it should be provided emergency medical assistance.

- Notes to physician:
In case of inhalation: oxygentherapy and induced respiration, if necessary. Symptomatic treatment.
Ingestion: aspiration with nasogastric probe taking care to do not induce to vomits. Symptomatic treatment. There is no specific antidote.

5. FIREFIGHTING MEASURES

- Proper extinguishing media:
-Light fire: dry powder/pó químico, mechanical foam, CO₂ and water fog.
-Fogo intenso: espuma mecânica ou neblina d'água.
- Special firefighting/firemen protection procedures:
Remove containers from fire area, if this can be done without risk. Use water to cool containers sides exposed to flames, until the fire is well extinguished. The personnel involved in firefighting should wear selfcontained breathing apparatus and full protection clothing.

6. MEASURES FOR ACCIDENTAL SPILLS/LEAKAGE

- **Personal precautions:**
In you are in the product manufacturer unit, notify Safety personnel and people responsible for the department. Keep away combustible and flammable materials. If necessary, sound emergency alarm. Isolate the area, provide ventilation/exhaustion for the area. Keep downwind and keep away from low areas. There is no dust formation. Prevent product contact with the skin, eyes and respiratory ways, with personal protective equipment, mentioned in item 8.
- **Environmental precautions / cleaning methods:**
Remove all ignition sources from the surroundings of the area where the spill occurred. Avoid contact with bodies of water and sewage galleries.
 - Little spills: absorb with sand, earth or other absorbant and non combustible material, put in drums for later disposal.
 - Large spills: confine the flow, away from spill area, avoid bodies of water.

7. HANDLING AND STORAGE

- **Handling:**
Chemical products should be handled only for those who are trained about risks during the handling of hazardous materials. Do not smoke, drink or eat in places where the product is handled. Use recommended PPE's (see item 8). Keep good personal hygiene, specially before eating, drinking, smoking or using toilet. Wear always clean clothing. Avoid prolonged contact with the product. Avoid inhaling vapours.
- **Storage:**
The place should be dry, ventilated/arejado, free from ignition sources. The product should be stored, when in bulk, in stainless steel, aluminum or reinforced polyester resin tanks, closed and with vent, outdoors, isolately, avoiding always storing them with incompatible substances (oxidizing agents, see item 10).
To prevent static electricity discharges, ground all containers and equipment that involve loading, unloading and transfer operations in production and storage areas. Protect containers against physical damages. When the product is stored in drums, they should be in perfect conditions, non contaminated. The drums should be kept upright, avoiding physical damages. Maximum recommended piling is of 3 drums (height), considering adequate palletization, preferably of non combustible material. The drum should be firmly sealed.
- **Safe materials for recommended packages:**
 - Fractioned: drum with fixed cover of carbon steel, volumetric capacity 200 liters.
 - minitep made of stainless steel, 100 liters capacity.
- **Transportation:**
 - Fractioned load: open vehicle, protected with tarpaulin; or van type.
 - Bulk load: stainless steel tank.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

- Controls parameters:
It's not comprised by Decree 3214/78, Regulatory Standard NR-15, chart I.
ACGIH = 5 mg/m³ (TWA); Phthalate of di(2-ethylhexyl).
- Personal Protective Equipment:
 - Natural rubber (látex) or PVC gloves;
 - Safety full vision glasses;
 - PVC or trevira apron;
 - Semifacial respirator or panoramic mask with cartridge for organic vapours.

9. PHYSICAL-CHEMICAL PROPERTIES

- Physical state: colorless viscous liquid.
- Color: Colorless.
- Odour: light and characteristic.
- pH: not available information.
- Specific temperatures at which occur physical states changes:
 - Boiling point: 370°C, at 760 mm Hg.
 - Melting point: - 50°C.
- Flash point: 218 °C.
- Ignition point: 241 °C.
- Explosion limits: lower: 0.3 % V/V (at 245°C). Upper: not available information.
- Vapour pressure: < 0.01 mmHg at 20°C. 1.20 mmHg at 200°C.
- Vapour density: 16 (Air=1)
- Density (specific gravity): 0.982 ± 0.003 (25/4°C). H₂O = 1.
- Solubility: soluble in water: < 0.01 %, in weight at 25°C; soluble in ketone, n-Butanol, Carbon Tetrachloride, Ethyl Acetate, Éther, Methanol, Methyl Ethyl Ketone, Toluene, mineral oils, Gasoline; partially soluble in Glycols, Glicerine, some amines. Note: these values are found in literature, however, do not represent implicit assurance about the product.
- Evaporation rate: 0 (buthyl acrilate = 1).
- Chemical formula: C₂₄H₃₈O₄
- Molecular weight: 390.56.

10. STABILITY AND REACTIVITY

- Specific conditions:
 - Stable at ambient temperature and under normal conditions. It does not occur polymerization.
 - Reacts with strong oxidizing agents.

- Conditions to be avoided:
-Avoid flames and ignition sources.
- Decomposition hazardous products:
-Oxidative thermal decomposition can produce irritant fumes, including CO₂ and Carbon Monoxide.

11. TOXICOLOGICAL INFORMATION

- Acute toxicity and effects:
moderately toxic via intraperitoneal. Moderately toxic by ingestion and contact with skin and eyes.
- Inhalation:
Normally, it is not a risk because the product is naturally volatile. Inhalation risk increases at high temperatures. The fog is uncomfortable to respiratory tract. Concentrated fog inhalation can cause coughs, sneezings, severe irritations, vertigo, headache and nausea.
- Eyes: the liquid can produce nuisance and cause visual capacity reduction or temporary ocular inflammation, ulceration. The fog is moderately uncomfortable to eyes. The product can be irritant to eyes, during prolonged contact, causing inflammation. Repeated and prolonged exposure can produce conjunctivitis.
- Skin: liquid is moderately uncomfortable to the skin if the exposure is prolonged and can cause skin dryness, which can induce to dermatitis. Irritation and skin reactions are possible for sensitive skins. Contact with the product can stress any pre-existing dermatitis condition. Product can produce skin irritation after repeated and prolonged exposure and can produce contact dermatitis (non allergic). This form of dermatitis is characterized by redness (erythema) and swelling (edema), which can evolve to vesiculation, scaling or epidermis thickening engrossamento da epiderme.
- Ingestion: Considered as an improbable entry route in commercial and industrial environments. The liquid is uncomfortable to gastrointestinal tract and can be harmful is ingested in large quantities. Ingestion can cause nausea, abdominal irritation, pain and vomit.
- Carcinogenicity: ACGIH – Class A3, animal carcinogenic confirmed with unknown relevance for human beings.

Toxicity:

Oral (rat) LD₅₀: 30,000 mg/kg;

Oral (human) TD_{LO}: 143 mg/kg;

Oral (mouse) LD₅₀: 1,500 mg/kg;

Oral (rabbit) LD₅₀: 34,000 mg/kg;

Skin (rabbit) LD₅₀: 25,000 mg/kg;

Intraperitoneal (rabbit) LD₅₀: > 31 mL/kg;

Oral (guinea pig) LD₅₀: 26,000 mg/kg;

Skin (guinea pig) LD₅₀: 10,000 mg/kg.

- Irritation:
Skin (rabbit): 500 mg/24 hr (moderate);
Eyes (rabbit): 500 mg/24h (moderate).

12. ECOLOGICAL INFORMATION

- Environmental effects, behaviors and product impacts:
In the water, it will biodegrade (half life of 2-3 weeks). Vapours in the atmosphere will be carried to long distances and will be removed by rain.
- Ecotoxicity:
LC₅₀ (*Gammarus pseudolimnaeus*) above 32 mg/l/96 h at 21°C.
LC₅₀ (*Ictalurus punctatus*) above 100 mg/l/96h at 20°C.
EC₅₀ (*Oncorhynchus kisutch (coho salmon)*) above 100 mg/l/96 h at 16°C.
LC₅₀ (*Daphnia magna*) 1,000-5,000 ug/l/48 h.
LC₅₀ (*Chironomus plumosus (Midge)*) > 18,000 ug/l/48 h.
- Henry Law constant: 1×10^{-4} .
- Bioaccumulation factor: 2 (fish)
- DBO (Oxygen Biochemical Demand): acclimated microorganism < 1 lb/lb, 5 days.
- Partition coefficient octanol/water: log K_{ow} = 4,89.
- Absorption partition coefficient in soil: K_{oc} = 4 to 5.

13. CONSIDERATIONS ABOUT DISPOSAL

- Treatment and disposal methods for product, wastes and used packages:
Any wastes treatment should be in accordance with local and national regulation.

14. INFORMAÇÃO PARA TRANSPORTE

- Not classified as hazardous product according to UM list issued in the Hazardous Goods Road Transportation Regulation according to Decree n° 96044, 05/18/88 and Resolution ANTT 420/04; and Mercosur according to decree n° 1797, 01/25/96; and their updatings.

- IATA (aerial international): not classified as hazardous product.
- IMO (marine international): not classified as hazardous product.

15. CONTROLS INFORMATION

Transportation: follow item 14.
Consult related national and international regulation.
Consult Brazilian Standards related to product.

EPA Regulation:

- RCRA 40 CFR: listed as toxic waste U028.
- CERCLA 40 CFR 302.4: listed by RCRA, section 3001; by CWA, section 307(a) 100 lb (45.35 kg)
- SARA 40 CFR 372.65: listed.
- SARA EHS 40 CFR 355: not listed.
- TSCA: 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. (record DIE8100 12/04);
- International Chemical Safety Cards, nº 271 (IPCS, CEC, 1993),
- MSDS – CITY CHEMICAL CORP. (Revision jan/97).
- MSDS – MALLINCKKODT BAKER, INC. Record 07520 (June/97)
- Elekeiroz Specification, code EKPL-PR.01, issue 05/03/2002, revision 1.
- IATA/DGR – International Air Transport Association – Edition 2006.
- IMO/IMDG – International Maritime Dangerous Goods – Edition 2004.
- Manual ACGIH, Portuguese version, 2005 (translation: ABHO).
- Commented Regulatory Standards – Occupational Health and Safety Regulation Volume I – Press GVC 2005.



MSDS

**MATERIAL SAFETY DATA
SHEET**

PRODUCT: DIOCTYL PHTHALATE

ISSUE: 10.16.91 REVISION: 02/23/07

MSDS Nº: 48 REV. Nº 6: PAGE: 8/8

Observation:

The information contained in this MSDS are offered in good faith and as guide tool, without incurring expressed or implicit liability. If clearings or additional information are needed, consult the manufacturer.