



# SAFETY DATA SHEET

## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Product Description:** Dibutyl maleate

**CAS No** 105-76-0  
**EC No** 203-328-4  
**Molecular Formula** C<sub>12</sub> H<sub>20</sub> O<sub>4</sub>

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Laboratory chemicals.  
**Uses advised against** No Information available

### 1.3. Details of the supplier of the safety data sheet

**Company** Bio-Chem Chemicals  
5455, Nicholson Road Science Market , Ambala Cantt.133001 Haryana(India)  
+91-82952 41953  
info@biofinechemical.com - www.biofinechemical.com

**1.4. Emergency telephone number** : +91 99921 51495 (10.00am - 06.30pm) (Office Hours)

## SECTION 2: HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

**CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567**

#### **Physical hazards**

Based on available data, the classification criteria are not met

#### **Health hazards**

Skin Sensitization

Category 1 (H317)

|                                                      |                   |
|------------------------------------------------------|-------------------|
| Specific target organ toxicity - (repeated exposure) | Category 2 (H373) |
| <b><u>Environmental hazards</u></b>                  |                   |
| Acute aquatic toxicity                               | Category 1 (H400) |

Full text of Hazard Statements: see section 16

## 2.2. Label elements



Signal Word

Warning

### Hazard Statements

- H317 - May cause an allergic skin reaction
- H373 - May cause damage to organs through prolonged or repeated exposure
- H400 - Very toxic to aquatic life

### Precautionary Statements

- P280 - Wear protective gloves/protective clothing
- P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
- P314 - Get medical advice/attention if you feel unwell
- P333 + P313 - If skin irritation or rash occurs: Get medical advice/attention
- P362 + P364 - Take off contaminated clothing and wash it before reuse

## 2.3. Other hazards

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB)

This product does not contain any known or suspected endocrine disruptors

## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substances

| Component                  | CAS No   | EC No             | Weight % | CLP Classification - According to GB-CLP Regulations UK SI 2019/720 and UK SI 2020/1567 |
|----------------------------|----------|-------------------|----------|-----------------------------------------------------------------------------------------|
| Maleic acid, dibutyl ester | 105-76-0 | EEC No. 203-328-4 | <=100    | Skin Sens. 1 (H317)<br>STOT RE 2 (H373)<br>Aquatic Acute 1 (H400)                       |

Full text of Hazard Statements: see section 16

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## SECTION 4: FIRST AID MEASURES

### 4.1. Description of first aid measures

|                                           |                                                                                                                                                  |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General Advice</b>                     | If symptoms persist, call a physician.                                                                                                           |
| <b>Eye Contact</b>                        | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.                                  |
| <b>Skin Contact</b>                       | Wash off immediately with plenty of water for at least 15 minutes. If skin irritation persists, call a physician.                                |
| <b>Ingestion</b>                          | Clean mouth with water and drink afterwards plenty of water.                                                                                     |
| <b>Inhalation</b>                         | Remove to fresh air. If not breathing, give artificial respiration. Get medical attention if symptoms occur.                                     |
| <b>Self-Protection of the First Aider</b> | Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. |

### 4.2. Most important symptoms and effects, both acute and delayed

None reasonably foreseeable. May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing

### 4.3. Indication of any immediate medical attention and special treatment needed

|                           |                        |
|---------------------------|------------------------|
| <b>Notes to Physician</b> | Treat symptomatically. |
|---------------------------|------------------------|

## SECTION 5: FIREFIGHTING MEASURES

### 5.1. Extinguishing media

#### **Suitable Extinguishing Media**

Water spray. Carbon dioxide (CO<sub>2</sub>). Dry chemical. Chemical foam.

#### **Extinguishing media which must not be used for safety reasons**

No information available.

### 5.2. Special hazards arising from the substance or mixture

Do not allow run-off from fire-fighting to enter drains or water courses.

#### **Hazardous Combustion Products**

Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>).

### 5.3. Advice for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## SECTION 6: ACCIDENTAL RELEASE MEASURES

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

Ensure adequate ventilation. Use personal protective equipment as required.

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## **6.2. Environmental precautions**

Do not flush into surface water or sanitary sewer system. Do not allow material to contaminate ground water system. Prevent product from entering drains. Local authorities should be advised if significant spillages cannot be contained.

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

Keep in suitable, closed containers for disposal. Soak up with inert absorbent material.

## **6.4. Reference to other sections**

Refer to protective measures listed in Sections 8 and 13.

# **SECTION 7: HANDLING AND STORAGE**

## **7.1. Precautions for safe handling**

Wear personal protective equipment/face protection. Ensure adequate ventilation. Do not get in eyes, on skin, or on clothing. Avoid ingestion and inhalation.

### **Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice. Keep away from food, drink and animal feeding stuffs. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Wash hands before breaks and after work.

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

Keep containers tightly closed in a dry, cool and well-ventilated place.

**Technical Rules for Hazardous Substances (TRGS) 510**      Class 10  
**Storage Class (LGK) (Germany)**

## **7.3. Specific end use(s)**

Use in laboratories

# **SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

## **8.1. Control parameters**

### **Exposure limits**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

### **Biological limit values**

This product, as supplied, does not contain any hazardous materials with biological limits established by the region specific regulatory bodies

### **Derived No Effect Level (DNEL) / Derived Minimum Effect Level (DMEL)**

See table for values

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| Component                                       | Acute effects local (Dermal) | Acute effects systemic (Dermal) | Chronic effects local (Dermal) | Chronic effects systemic (Dermal) |
|-------------------------------------------------|------------------------------|---------------------------------|--------------------------------|-----------------------------------|
| Maleic acid, dibutyl ester<br>105-76-0 ( ≤100 ) |                              | DNEL = 24.2mg/kg<br>bw/day      | DNEL = 4.12mg/cm <sup>2</sup>  | DNEL = 0.42mg/kg<br>bw/day        |

| Component                                       | Acute effects local (Inhalation) | Acute effects systemic (Inhalation) | Chronic effects local (Inhalation) | Chronic effects systemic (Inhalation) |
|-------------------------------------------------|----------------------------------|-------------------------------------|------------------------------------|---------------------------------------|
| Maleic acid, dibutyl ester<br>105-76-0 ( ≤100 ) |                                  |                                     | DNEL = 5.28mg/m <sup>3</sup>       | DNEL = 5.28mg/m <sup>3</sup>          |

#### Predicted No Effect Concentration (PNEC)

See values below.

## 8.2. Exposure controls

### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

Wherever possible, engineering control measures such as the isolation or enclosure of the process, the introduction of process or equipment changes to minimise release or contact, and the use of properly designed ventilation systems, should be adopted to control hazardous materials at source

### Personal protective equipment

#### Eye Protection

Goggles (European standard - EN 166)

#### Hand Protection

Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Nitrile rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Neoprene       | recommendations   |                 |             |                       |
| Natural rubber |                   |                 |             |                       |
| PVC            |                   |                 |             |                       |

#### Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

#### Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.  
To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly

#### Large scale/emergency use

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced  
**Recommended Filter type:** Organic gases and vapours filter Type A Brown conforming to EN14387

#### Small scale/Laboratory use

Use a NIOSH/MSHA or European Standard EN 149:2001 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended half mask:-** Valve filtering: EN405; or; Half mask: EN140; plus filter, EN 141

When RPE is used a face piece Fit Test should be conducted

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|                                        |                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Environmental exposure controls</b> | Prevent product from entering drains. Do not allow material to contaminate ground water system. Local authorities should be advised if significant spillages cannot be contained. |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

|                                                |                                 |                                          |
|------------------------------------------------|---------------------------------|------------------------------------------|
| <b>Physical State</b>                          | Viscous liquid                  | Liquid                                   |
| <b>Appearance</b>                              | Clear                           |                                          |
| <b>Odor</b>                                    | Strong                          |                                          |
| <b>Odor Threshold</b>                          | No data available               |                                          |
| <b>Melting Point/Range</b>                     | -85 °C / -121 °F                |                                          |
| <b>Softening Point</b>                         | No data available               |                                          |
| <b>Boiling Point/Range</b>                     | 274 - 277 °C / 525.2 - 530.6 °F |                                          |
| <b>Flammability (liquid)</b>                   | No data available               |                                          |
| <b>Flammability (solid,gas)</b>                | Not applicable                  | Liquid                                   |
| <b>Explosion Limits</b>                        | No data available               |                                          |
| <b>Flash Point</b>                             | 120 °C / 248 °F                 | <b>Method -</b> No information available |
| <b>Autoignition Temperature</b>                | 280 °C / 536 °F                 |                                          |
| <b>Decomposition Temperature</b>               | No data available               |                                          |
| <b>pH</b>                                      | Not applicable                  |                                          |
| <b>Viscosity</b>                               | No data available               |                                          |
| <b>Water Solubility</b>                        | Insoluble                       |                                          |
| <b>Solubility in other solvents</b>            | No information available        |                                          |
| <b>Partition Coefficient (n-octanol/water)</b> |                                 |                                          |
| <b>Component</b>                               | <b>log Pow</b>                  |                                          |
| Maleic acid, dibutyl ester                     | 3.39                            |                                          |
| <b>Vapor Pressure</b>                          | No data available               |                                          |
| <b>Density / Specific Gravity</b>              | 0.990                           |                                          |
| <b>Bulk Density</b>                            | Not applicable                  | Liquid                                   |
| <b>Vapor Density</b>                           | No data available               | (Air = 1.0)                              |
| <b>Particle characteristics</b>                | Not applicable (liquid)         |                                          |

### 9.2. Other information

|                          |            |
|--------------------------|------------|
| <b>Molecular Formula</b> | C12 H20 O4 |
| <b>Molecular Weight</b>  | 228.29     |

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

None known, based on information available

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

|                                 |                               |
|---------------------------------|-------------------------------|
| <b>Hazardous Polymerization</b> | No information available.     |
| <b>Hazardous Reactions</b>      | None under normal processing. |

### 10.4. Conditions to avoid

Incompatible products.

### 10.5. Incompatible materials

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Strong oxidizing agents. Strong bases.

**10.6. Hazardous decomposition products**

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>).

**SECTION 11: TOXICOLOGICAL INFORMATION**

**11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008**

**Product Information**

**(a) acute toxicity;**

**Oral**

Based on available data, the classification criteria are not met

**Dermal**

Based on available data, the classification criteria are not met

**Inhalation**

Based on available data, the classification criteria are not met

| Component                  | LD50 Oral                 | LD50 Dermal               | LC50 Inhalation |
|----------------------------|---------------------------|---------------------------|-----------------|
| Maleic acid, dibutyl ester | LD50 = 3730 mg/kg ( Rat ) | LD50 > 2000 mg/kg ( Rat ) | -               |

**(b) skin corrosion/irritation;**

No data available

**(c) serious eye damage/irritation;**

No data available

**(d) respiratory or skin sensitization;**

**Respiratory**

No data available

**Skin**

Category 1

No information available

**(e) germ cell mutagenicity;**

No data available

**(f) carcinogenicity;**

No data available

There are no known carcinogenic chemicals in this product

**(g) reproductive toxicity;**

No data available

**(h) STOT-single exposure;**

No data available

**(i) STOT-repeated exposure;**

Category 2

**Target Organs**

No information available.

**(j) aspiration hazard;**

No data available

**Other Adverse Effects**

The toxicological properties have not been fully investigated.

**Symptoms / effects, both acute and delayed**

Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, lightheadedness, chest pain, muscle pain or flushing.

**11.2. Information on other hazards**

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**Endocrine Disrupting Properties** Assess endocrine disrupting properties for human health. This product does not contain any known or suspected endocrine disruptors.

## SECTION 12: ECOLOGICAL INFORMATION

### 12.1. Toxicity

#### **Ecotoxicity effects**

The product contains following substances which are hazardous for the environment. Very toxic to aquatic organisms.

| Component                  | Freshwater Fish                                    | Water Flea                           | Freshwater Algae                                |
|----------------------------|----------------------------------------------------|--------------------------------------|-------------------------------------------------|
| Maleic acid, dibutyl ester | LC50: = 0.6 mg/L, 96h static (Oncorhynchus mykiss) | EC50: = 21 mg/L, 48h (Daphnia magna) | EC50: = 6.2 mg/L, 72h (Scenedesmus subspicatus) |

### 12.2. Persistence and degradability

#### **Persistence Degradation in sewage treatment plant**

Readily biodegradable  
Persistence is unlikely.  
Contains substances known to be hazardous to the environment or not degradable in waste water treatment plants.

### 12.3. Bioaccumulative potential

Bioaccumulation is unlikely

| Component                  | log Pow | Bioconcentration factor (BCF) |
|----------------------------|---------|-------------------------------|
| Maleic acid, dibutyl ester | 3.39    | No data available             |

### 12.4. Mobility in soil

Spillage unlikely to penetrate soil The product is insoluble and floats on water . Is not likely mobile in the environment due its low water solubility.

### 12.5. Results of PBT and vPvB assessment

Substance is not considered persistent, bioaccumulative and toxic (PBT) / very persistent and very bioaccumulative (vPvB).

### 12.6. Endocrine disrupting properties

#### **Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

### 12.7. Other adverse effects

#### **Persistent Organic Pollutant Ozone Depletion Potential**

This product does not contain any known or suspected substance  
This product does not contain any known or suspected substance

## SECTION 13: DISPOSAL CONSIDERATIONS

### 13.1. Waste treatment methods

#### **Waste from Residues/Unused Products**

Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations. Should not be released into the environment.

#### **Contaminated Packaging**

Dispose of this container to hazardous or special waste collection point.

#### **European Waste Catalogue (EWC)**

According to the European Waste Catalog, Waste Codes are not product specific, but application specific.

#### **Other Information**

Do not flush to sewer. Waste codes should be assigned by the user based on the

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application for which the product was used. Do not empty into drains. Do not let this chemical enter the environment.

## SECTION 14: TRANSPORT INFORMATION

### IMDG/IMO

**14.1. UN number** UN3082  
**14.2. UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
**Technical Shipping Name** Dibutyl maleate  
**14.3. Transport hazard class(es)** 9  
**14.4. Packing group** III

### ADR

**14.1. UN number** UN3082  
**14.2. UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
**Technical Shipping Name** Dibutyl maleate  
**14.3. Transport hazard class(es)** 9  
**14.4. Packing group** III

### IATA

**14.1. UN number** UN3082  
**14.2. UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
**Technical Shipping Name** Dibutyl maleate  
**14.3. Transport hazard class(es)** 9  
**14.4. Packing group** III

**14.5. Environmental hazards** Dangerous for the environment  
Product is a marine pollutant according to the criteria set by IMDG/IMO

**14.6. Special precautions for user** No special precautions required.

**14.7. Maritime transport in bulk according to IMO instruments** Not applicable, packaged goods

## SECTION 15: REGULATORY INFORMATION

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### International Inventories

Europe (EINECS/ELINCS/NLP), China (IECSC), Taiwan (TCSI), Korea (KECL), Japan (ENCS), Japan (ISHL), Canada (DSL/NDSL), Australia (AICS), New Zealand (NZIoC), Philippines (PICCS). US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

| Component                  | CAS No   | EINECS    | ELINCS | NLP | IECSC | TCSI | KECL     | ENCS | ISHL |
|----------------------------|----------|-----------|--------|-----|-------|------|----------|------|------|
| Maleic acid, dibutyl ester | 105-76-0 | 203-328-4 | -      | -   | X     | X    | KE-03914 | X    | X    |

| Component                  | CAS No   | TSCA | TSCA Inventory notification - Active-Inactive | DSL | NDSL | AICS | NZIoC | PICCS |
|----------------------------|----------|------|-----------------------------------------------|-----|------|------|-------|-------|
| Maleic acid, dibutyl ester | 105-76-0 | X    | ACTIVE                                        | X   | -    | X    | X     | X     |

**Legend:** X - Listed '-' - Not Listed

**KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

**Authorisation/Restrictions according to EU REACH**

Not applicable

| Component                  | CAS No   | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|----------------------------|----------|---------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Maleic acid, dibutyl ester | 105-76-0 | -                                                                   | -                                                                             | -                                                                                                     |

**Seveso III Directive (2012/18/EC)**

| Component                  | CAS No   | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements |
|----------------------------|----------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| Maleic acid, dibutyl ester | 105-76-0 | Not applicable                                                                            | Not applicable                                                                           |

**Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals**

Not applicable

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**

Not applicable

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

**National Regulations****UK** - Take note of Control of Substances Hazardous to Health Regulations (COSHH) 2002 and 2005 Amendment**WGK Classification**

See table for values

| Component                  | Germany - Water Classification (AwSV) | Germany - TA-Luft Class |
|----------------------------|---------------------------------------|-------------------------|
| Maleic acid, dibutyl ester | WGK2                                  |                         |

**15.2. Chemical safety assessment**

A Chemical Safety Assessment/Report (CSA/CSR) has not been conducted

**SECTION 16: OTHER INFORMATION****Full text of H-Statements referred to under sections 2 and 3**

H317 - May cause an allergic skin reaction

H373 - May cause damage to organs through prolonged or repeated exposure

H400 - Very toxic to aquatic life

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**CAS** - Chemical Abstracts Service

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**IECSC** - Chinese Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**ENCS** - Japanese Existing and New Chemical Substances

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

**WEL** - Workplace Exposure Limit

**ACGIH** - American Conference of Governmental Industrial Hygienists

**DNEL** - Derived No Effect Level

**RPE** - Respiratory Protective Equipment

**LC50** - Lethal Concentration 50%

**NOEC** - No Observed Effect Concentration

**PBT** - Persistent, Bioaccumulative, Toxic

**TWA** - Time Weighted Average

**IARC** - International Agency for Research on Cancer  
Predicted No Effect Concentration (PNEC)

**LD50** - Lethal Dose 50%

**EC50** - Effective Concentration 50%

**POW** - Partition coefficient Octanol:Water

**vPvB** - very Persistent, very Bioaccumulative

**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road

**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code

**OECD** - Organisation for Economic Co-operation and Development

**BCF** - Bioconcentration factor

**Key literature references and sources for data**

<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association

**MARPOL** - International Convention for the Prevention of Pollution from Ships

**ATE** - Acute Toxicity Estimate

**VOC** - (Volatile Organic Compound)

### Training Advice

Chemical incident response training.

**Revision Date**

29-Sep-2023

**Revision Summary**

SDS sections updated.

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