

**Material Safety Data Sheet**

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|---------------------|---------------------------|
| <b>Product Name</b> | <b><u>Maleic acid</u></b> |
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**SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****1.1. Product identification:****Product Description:** Maleic acid**Synonyms:** (Z)-Butenedioic acid; cis-Butenedioic acid; Malenic acid; Toxilic acid**CAS-No:** 110-16-7**EC-No.:** 203-742-5**Molecular Formula:** C<sub>4</sub>H<sub>4</sub>O<sub>4</sub>

**REACH Registration No:** A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration, or the registration is envisaged for a later registration deadline.

**Relevant identified uses of the substance or mixture and uses advised against:****Identified Uses:** Laboratory chemicals, Manufacture of substances**1.2. Details of the supplier of the safety data sheet:**

- **Company** **Finar Limited**  
184-186/P, Chacharwadi Vasna,  
Sarkhej-Bavla Highway,  
Ta.: Sanand, Dist.: Ahmedabad,  
Email: [info@finarchemicals.com](mailto:info@finarchemicals.com)  
Web: [www.finarchemicals.com](http://www.finarchemicals.com)
- **E-mail Address** [safety@finarchemicals.com](mailto:safety@finarchemicals.com); [info@finarchemicals.com](mailto:info@finarchemicals.com)

**1.3. Emergency telephone number:**

- For Emergency contact No: +91 - 2717 - 616 717
- Registered office No: +91 - 79 - 40040085

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### SECTION 2: HAZARDS IDENTIFICATION

#### 2.1. Classification of the substance or mixture:

##### Classification according to Regulation (EC) No 1272/2008

Acute toxicity, Oral (Category 4), H302

Acute toxicity, Dermal (Category 4), H312

Skin corrosion (Sub-category 1B), H314

Skin irritation (Category 2), H315

Skin sensitisation (Category 1), H317

Serious eye damage (Category 1), H318

Specific target organ toxicity - single exposure (Category 3), Respiratory system, H335

For the full text of the H-Statements mentioned in this Section, see Section 16.

#### 2.2. Label elements:

##### Labelling according Regulation (EC) No 1272/2008

##### Pictogram



**Signal Word:** Danger

##### Hazard Statements:

H302 + H312 - Harmful if swallowed or in contact with skin.

H314 - Causes severe skin burns and eye damage.

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction.

H318 - Causes serious eye damage.

H335 - May cause respiratory irritation.

##### Precautionary Statements:

P260 - Do not breathe dust or mist.

P280 - Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P312 + P330 - IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

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P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305 + P351 + P338 + 310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/doctor.

**Supplemental Hazard Information (EU):** None

### 2.3. Other hazards:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## **SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

3.1. **Substances:** Maleic acid

3.2. **Mixtures:**

| Component   | CAS-No   | EC-No.    | Weight % |
|-------------|----------|-----------|----------|
| Maleic acid | 110-16-7 | 203-742-5 | 100 %    |

## **SECTION 4: FIRST AID MEASURES**

4.1. **Description of first aid measures:**

**General advice:** Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye Contact:** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.

**Skin Contact:** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. Call a physician or poison control centre immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

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**Ingestion:** Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person.

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

Causes burns by all exposure routes. May cause allergic skin reaction. Symptoms of allergic reaction may include rash, itching, swelling, trouble breathing, tingling of the hands and feet, dizziness, light headedness, chest pain, muscle pain or flushing: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or oesophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

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

No data available

### **SECTION 5: FIRE FIGHTING MEASURES**

#### 5.1. Extinguishing media:

**Suitable extinguishing media:** Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Do not use water jet.

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

Carbon oxides

#### 5.3. Advice for firefighters:

Wear self-contained breathing apparatus for firefighting if necessary.

#### 5.4 Further Information:

Prevent fire extinguishing water from contaminating surface water or the ground water system.

### **SECTION 6: ACCIDENTAL RELEASE MEASURES**

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

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

For personal protection see section 8.

#### 6.2. Environmental precautions:

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

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

Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

### 6.4. Reference to other sections:

For disposal see section 13.

## SECTION 7: HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Keep locked up. Keep container dry. Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the residue under a fume hood. Ground all equipment containing material. Do not ingest. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, metals, alkalis.

For precautions see section 2.2.

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

Keep container tightly closed in a dry and well-ventilated place.

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

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters:

Components with workplace control parameters

### 8.2. Exposure controls:

#### Appropriate engineering controls

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location. Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

#### Personal protective equipment:

**Eye/Face Protection** Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

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### **Skin protection**

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. and dry hands.

### **Full contact**

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

### **Splash contact**

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: Dermatril® (KCL 740 / Aldrich Z677272, Size M)

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

### **Body Protection**

Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

### **Respiratory protection**

Where risk assessment shows air-purifying respirators are appropriate use a fullface particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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### Control of environmental exposure

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

- **Appearance:** Form: Powder  
Colour: White
- **Physical State:** Solid
- **Odor:** No data available
- **Odor Threshold:** No data available
- **pH:** 1.3 at 100 g/l at 20 °C
- **Melting Point/Freezing Point:** 138.5°C
- **Initial Boiling point and Boiling range:** 157.8 °C
- **Flash Point:** 127 °C (260.6 °F)
- **Auto-Ignition Temperature:** No data available
- **Minimum Ignition Energy:** > 30 - < 100 mJ
- **Upper Explosive Limit:** No data available
- **Lower Explosive Limit:** No data available
- **Decomposition Temperature:** > 135 °C (275°F)
- **Vapor Pressure:** < 0,1 hPa at 20 °C - OECD Test Guideline 104
- **Vapor Density:** 4 (Air = 1.0)
- **Relative Density:** 1.59 g/mL at 25 °C
- **Bulk Density:** 750 - 800 kg/m<sup>3</sup>
- **Volatility:** No data available
- **Water/Oil Dist. Co eff.:** No data available
- **Ionicity (in Water):** No data available
- **Specific Gravity:** 1.59 (Water = 1)
- **Water Solubility:** 478.8 g/l at 20 °C - OECD Test Guideline 105 – Completely soluble
- **Partition coefficient: n-octanol/water:** log Pow: -1,3 at 20 °C - OECD Test Guideline 107 - Bioaccumulation is not expected.

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### 9.2. Other information:

**Molecular Formula:** C<sub>4</sub>H<sub>4</sub>O<sub>4</sub>

**Molecular Weight:** 116.07 g/mol

## SECTION 10: STABILITY AND REACTIVITY

### 10.1. Reactivity:

Risk of dust explosion.

### 10.2. Chemical stability:

The product is chemically stable under standard ambient conditions (room temperature).

### 10.3. Possibility of hazardous reactions:

Violent reactions possible with: Oxidizing agents, Bases, Reducing agents

### 10.4. Conditions to avoid:

Strong heating (decomposition)

### 10.5. Incompatible materials:

Strong Oxidizing agents

### 10.6. Hazardous decomposition products:

Other decomposition products - No data available

Hazardous decomposition products formed under fire conditions. - Carbon oxides

In the event of fire: see section 5

## SECTION 11: TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects:

#### Acute Oral toxicity

LD50 Oral - Rat – male and female – 1.090 mg/kg

(OECD Test Guideline 401)

Remarks: (in analogy to similar compounds)

#### Skin corrosion/irritation

Skin – In vitro study

Result: Causes burns

(OECD Test Guideline 435)



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### **Serious eye damage/eye irritation**

Causes serious eye damage. (Regulation (EC) No 1272/2008, Annex VI)

### **Respiratory or skin Sensitization**

Maximisation Test - Guinea pig

Result: positive

(OECD Test Guideline 406)

Local lymph node assay (LLNA) - Mouse

Result: positive

(OECD Test Guideline 429)

(Regulation (EC) No 1272/2008, Annex VI)

### **Germ cell mutagenicity**

No data available

### **Carcinogenicit**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

### **Reproductive toxicity**

No data available

### **Specific target organ toxicity - single exposure**

May cause respiratory irritation. - Respiratory system

Acute oral toxicity - Vomiting, Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity - mucosal irritations, Cough, Shortness of breath, Possible damages: damage of respiratory tract, Lung oedema, Symptoms may be delayed.

### **Specific target organ toxicity - repeated exposure**

No data available

### **Aspiration hazard**

No data available

### **Additional Information**

RTECS: No data available

Gastrointestinal disturbance

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

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After absorption:

Allergic reactions, Cough, Irritations, Shortness of breath, Vomiting, Lung oedema

Possible effects:

Damage to respiratory tract

Other dangerous properties cannot be excluded.

Handle in accordance with good industrial hygiene and safety practice.

### **SECTION 12: ECOLOGICAL INFORMATION**

#### **12.1. Toxicity:**

Toxicity to fish: static test LC50 - Oncorhynchus mykiss (rainbow trout): 75 mg/l; 96 h

Toxicity to daphnia and other aquatic invertebrates:

Static test EC50 - Daphnia magna (Water flea) – 42.81 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae: static test ErC50 - Pseudokirchneriella subcapitata (green algae) – 74.35 mg/l - 72 h

Analytical monitoring: yes (OECD Test Guideline 201)

Toxicity to bacteria static test EC10 - Pseudomonas putida – 44.6 mg/l - 18 h

(DIN 38 412 Part 8)

Remarks: (in analogy to similar products)

#### **12.2. Persistence and degradability Persistence:**

Biodegradability: aerobic - Exposure time 28 d

Result: 97.08 % - Readily biodegradable.

(OECD Test Guideline 301B)

Theoretical oxygen demand: 830 mg/g

Remarks: (Lit)

Ratio BOD/ThBOD: 77%

Remarks: (Lit)

#### **12.3. Bio accumulative potential:**

Partition coefficient: n-octanol/water

log Pow: -1.3 (20 °C)

OECD Test Guideline 107

#### **12.4. Mobility in soil:**

No data available

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### 12.5. Results of PBT and vPvB assessment:

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### 12.6. Other adverse effects:

Harmful to aquatic life.

Discharge into the environment must be avoided.

## **SECTION 13: DISPOSAL CONSIDERATIONS**

### 13.1. Waste treatment methods:

#### **Product**

Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Waste material must be disposed of in accordance with the Directive on waste 2008/98/EC as well as other national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

#### **Contaminated packaging**

Dispose of as unused product.

## **SECTION 14: TRANSPORT INFORMATION**

|  | <b>Land transport<br/>(ADR/RID)</b>                               | <b>Air transport<br/>(IATA)</b> | <b>Sea transport<br/>(IMDG)</b> |
|--|---|---------------------------------|---------------------------------|
| <b>14.1 UN number</b>  | 3261  | 3261                            | 3261                            |
| <b>14.2 Proper shipping name</b>   | Corrosive solid, acidic, organic, n.o.s. ((Z)-2-Butenedioic acid) |                                 |                                 |
| <b>14.3 Class</b>  | 8   | 8                               | 8                               |
| <b>14.4 Packing group</b>  | II  | II                              | II                              |
| <b>14.5 Environmentally hazardous</b>  | No  | No                              | No                              |
| <b>14.6 Special precautions for user</b>   | No data available   | No data available               | No data available               |
| <b>14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b> |   |                                 |                                 |
| Not Relevant   |   |                                 |                                 |

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### **SECTION 15: REGULATORY INFORMATION**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:**

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

**15.2 Chemical safety assessment:**

For this product, a chemical safety assessment is not carried out.

### **SECTION 16: OTHER INFORMATION**

- **Full text of H-Statements referred to under sections 2 and 3:**

- H302 Harmful if swallowed.
- H302 + H312 Harmful if swallowed or in contact with skin.
- H312 Harmful in contact with skin.
- H314 Causes severe skin burns and eye damage.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H335 May cause respiratory irritation.

- **Full text of R-phrases referred to under sections 2 and 3**

- R21/22 Harmful in contact with skin and if swallowed.
- R37/38 Irritating to respiratory system and skin.
- R41 Risk of serious damage to eyes.
- R43 May cause sensitisation by skin contact.

**References:** Not available

**Created on :** 08/01/2021

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