1 Identification

· Product identifier
  · Trade name: MALEIC ACID
  · Article number: 18150
  · CAS Number: 110-16-7
  · EC number: 203-742-5
  · Index number: 607-095-00-3

· Relevant identified uses of the substance or mixture and uses advised against
  No further relevant information available.

· Application of the substance / the mixture
  Laboratory chemicals

· Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    Electron Microscopy Sciences
    1560 Industry Road
    USA-Hatfield, PA 19440
    Tel: 215-412-8400  Fax: 215-412-8450
    email: sgkck@aol.com
    www.emsdiasum.com

  · Information department: Product safety department
  · Emergency telephone number:
    ChemTrec 1-800-424-9300 Contract CCN7661
    1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture
  GHS07
  Acute Tox. 4 H302 Harmful if swallowed.
  Skin Irrit. 2 H315 Causes skin irritation.
  Eye Irrit. 2 H319 Causes serious eye irritation.
  Skin Sens. 1 H317 May cause an allergic skin reaction.
  STOT SE 3 H335 May cause respiratory irritation.

· Classification according to Directive 67/548/EEC or Directive 1999/45/EC
  Harmful
  Harmful if swallowed.

  Irritant
  Irritating to eyes, respiratory system and skin. May cause sensitisation by skin contact.

· Information concerning particular hazards for human and environment: Not applicable.

· Label elements
  · Labelling according to EU guidelines:
    The product has been classified and marked in accordance with directives on hazardous materials.
Trade name: MALEIC ACID

· Code letter and hazard designation of product:

  Harmful

· Risk phrases:
  Harmful if swallowed.
  Irritating to eyes, respiratory system and skin.
  May cause sensitisation by skin contact.

· Safety phrases:
  Keep out of the reach of children.
  Avoid contact with skin.
  Wear suitable gloves.
  If swallowed, seek medical advice immediately and show this container or label.

· Classification system:
  · NFPA ratings (scale 0 - 4)
    Health = 1
    Fire = 0
    Reactivity = 0
  · HMIS-ratings (scale 0 - 4)
    HEALTH
    Health = 1
    FIRE
    Fire = 0
    REACTIVITY
    Reactivity = 0

· Other hazards
  · Results of PBT and vPvB assessment
    · PBT: Not applicable.
    · vPvB: Not applicable.

3 Composition/information on ingredients

· Chemical characterization: Substances
  · CAS No. Description
    110-16-7 MALEIC ACID
  · Identification number(s)
    · EC number: 203-742-5
    · Index number: 607-095-00-3

4 First-aid measures

· Description of first aid measures
  · General information:
    Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  · After inhalation:
    Supply fresh air and to be sure call for a doctor.
    In case of unconsciousness place patient stably in side position for transportation.
  · After skin contact: Immediately wash with water and soap and rinse thoroughly.
Trade name: MALEIC ACID

- After eye contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- After swallowing: Immediately call a doctor.
- Most important symptoms and effects, both acute and delayed: No further relevant information available.
- Indication of any immediate medical attention and special treatment needed: No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
- Suitable extinguishing agents: CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
- Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up: Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.
- Reference to other sections
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

7 Handling and storage

- Precautions for safe handling: No special precautions are necessary if used correctly.
- Information about protection against explosions and fires: No special measures required.
- Conditions for safe storage, including any incompatibilities
- Storage:
  - Requirements to be met by storerooms and receptacles: No special requirements.
  - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions: Keep receptacle tightly sealed.
- Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical systems: No further data; see item 7.
- Control parameters
- Components with limit values that require monitoring at the workplace: Not required.
- Additional information: The lists that were valid during the creation were used as basis.
- Exposure controls
- Personal protective equipment:
  - General protective and hygienic measures: Keep away from foodstuffs, beverages and feed.
9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**
  - **Form:** Solid
  - **Color:** Not determined.
  - **Odor:** Characteristic
  - **Odour threshold:** Not determined.
- **pH-value:** Not applicable.
- **Change in condition**
  - **Melting point/Melting range:** 139-140 °C (282-284 °F)
  - **Boiling point/Boiling range:** 160 °C (320 °F)
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Product is not flammable.
- **Ignition temperature:**
  - **Decomposition temperature:** Not determined.
  - **Auto igniting:** Not determined.
- **Danger of explosion:** Product does not present an explosion hazard.
### 10 Stability and reactivity

**Reactivity**

- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

### 11 Toxicological information

**Information on toxicological effects**

- **Acute toxicity:**

<table>
<thead>
<tr>
<th>Route</th>
<th>LD50</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral</td>
<td>708 mg/kg (rat)</td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td>1560 mg/kg (rabbit)</td>
<td></td>
</tr>
</tbody>
</table>

- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Irritating effect.
  - **Sensitization:** Sensitization possible through skin contact.

**Additional toxicological information:**

- **Carcinogenic categories**
  - IARC (International Agency for Research on Cancer) Substance is not listed.
  - NTP (National Toxicology Program) Substance is not listed.
  - OSHA-Ca (Occupational Safety Health Administration) Substance is not listed.
12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.

- Additional ecological information:
  - General notes:
    Water hazard class 1 (Assessment by list): slightly hazardous for water
    Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

- Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - Recommendation:
    Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

- Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, ADR, IMDG, IATA: UN1759

- UN proper shipping name
  - DOT: Corrosive solids, n.o.s. (MALEIC ACID)
  - ADR: 1759 Corrosive solids, n.o.s. (MALEIC ACID)
  - IMDG, IATA: CORROSIVE SOLID, N.O.S. (MALEIC ACID)

- Transport hazard class(es)
  - DOT
    - Class: 8 Corrosive substances
    - Label: 8

- ADR, IMDG, IATA
  - Class: 8 Corrosive substances
Safety Data Sheet
acc. to OSHA HCS

Trade name: MALEIC ACID

- Label: 8
- Packing group: DOT, ADR, IMDG, IATA
- DOT, ADR, IMDG, IATA: III
- Environmental hazards: No
- Special precautions for user: Warning: Corrosive substances
- Danger code (Kemler): 80
- EMS Number: F-A,S-B
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.
- Transport/Additional information:
  - DOT
    - Quantity limitations: On passenger aircraft/rail: 25 kg
      On cargo aircraft only: 100 kg
    - Hazardous substance: 5000 lbs, 2270 kg
  - ADR
    - Excepted quantities (EQ): Code: E1
      Maximum net quantity per inner packaging: 30 g
      Maximum net quantity per outer packaging: 1000 g
  - IMDG
    - Limited quantities (LQ): 5 kg
    - Excepted quantities (EQ): Code: E1
      Maximum net quantity per inner packaging: 30 g
      Maximum net quantity per outer packaging: 1000 g
- UN "Model Regulation": UN1759, Corrosive solids, n.o.s. (MALEIC ACID), 8, III

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara
- Section 355 (extremely hazardous substances): Substance is not listed.
- Section 313 (Specific toxic chemical listings): Substance is not listed.
- TSCA (Toxic Substances Control Act): Substance is listed.
- Proposition 65
- Chemicals known to cause cancer: Substance is not listed.
- Chemicals known to cause reproductive toxicity for females: Substance is not listed.
- Chemicals known to cause reproductive toxicity for males: Substance is not listed.
- Chemicals known to cause developmental toxicity: Substance is not listed.
- Carcinogenic categories
- EPA (Environmental Protection Agency) Substance is not listed.
- TLV (Threshold Limit Value established by ACGIH) Substance is not listed.
- NIOSH-Ca (National Institute for Occupational Safety and Health) Substance is not listed.
- Product related hazard informations:
  The product has been classified and marked in accordance with directives on hazardous materials.

(Contd. on page 8)
Trade name: MALEIC ACID

- **Hazard symbols:**
  - Harmful

- **Risk phrases:**
  - Harmful if swallowed.
  - Irritating to eyes, respiratory system and skin.
  - May cause sensitisation by skin contact.

- **Safety phrases:**
  - Keep out of the reach of children.
  - Avoid contact with skin.
  - Wear suitable gloves.
  - If swallowed, seek medical advice immediately and show this container or label.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- **Date of preparation / last revision** 05/27/2015 / -
- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - Acute Tox. 4: Acute toxicity, Hazard Category 4
  - Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  - Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  - Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
  - STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3

USA
1 Identification of the substance/mixture and of the company/undertaking

- **Product identifier**
  - **Trade name:** MALEIC ACID
  - **Article number:** 18150
  - **CAS Number:** 110-16-7
  - **EC number:** 203-742-5
  - **Index number:** 607-095-00-3

- **Relevant identified uses of the substance or mixture and uses advised against**
  - No further relevant information available.

- **Application of the substance / the mixture**
  - Laboratory chemicals

- **Details of the supplier of the safety data sheet**
  - **Manufacturer/Supplier:** Electron Microscopy Sciences
    1560 Industry Road
    USA-Hatfield, PA 19440
    Tel: 215-412-8400  Fax: 215-412-8450
    email: sgkceck@aol.com
    www.emsdiasum.com
  - **ProSciTech Pty Ltd**
    11 Carlton Street, Kirwan QLD 4817 Australia
    Telephone Number: (07) 4773 9444 - 8:30am - 5:00pm, Monday to Friday (excluding Public Holidays)
    Emergency Contact: (07) 4773 9444 - 8:30am - 5:00pm, Monday to Friday (excluding Public Holidays)
  - **Emgrid Australia Pty. Ltd.**
    P.O. Box 118
    The Patch VIC 3792
    Australia
    Tel: 03 9752 1785
    Fax: 03 9752 1784
    Website: www.emgrid.com.au

- **Further information obtainable from:** Product safety department
- **Emergency telephone number:** ChemTrec 1-800-424-9300 Contract CCN7661 1-703-527-3887

2 Hazards identification

- **Classification of the substance or mixture**
  - **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**
    - ![Harmful](image)
      - Harmful
      - Harmful if swallowed.
    - ![Irritant](image)
      - Irritating to eyes, respiratory system and skin.
    - ![Sensitising](image)
      - May cause sensitisation by skin contact.

- **Information concerning particular hazards for human and environment:** Not applicable.
Safety data sheet
according to 1907/2006/EC, Article 31

Printing date 27.05.2015  Revision: 27.05.2015

Trade name: MALEIC ACID

- Label elements
  - Labelling according to EU guidelines:
    The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials.
  - Code letter and hazard designation of product:
    Harmful

- Risk phrases:
  Harmful if swallowed.
  Irritating to eyes, respiratory system and skin.
  May cause sensitisation by skin contact.

- Information concerning particular hazards for human and environment:
  - Safety phrases:
    Keep out of the reach of children.
    Avoid contact with skin.
    Wear suitable gloves.
    If swallowed, seek medical advice immediately and show this container or label.

- Other hazards
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.

3 Composition/information on ingredients

- Chemical characterisation: Substances
- CAS No. Description
  110-16-7 MALEIC ACID
- Identification number(s)
  - EC number: 203-742-5
  - Index number: 607-095-00-3

4 First aid measures

- Description of first aid measures
- General information:
  Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
- After inhalation:
  Supply fresh air and to be sure call for a doctor.
  In case of unconsciousness place patient stably in side position for transportation.
- After skin contact:
  Immediately wash with water and soap and rinse thoroughly.
- After eye contact:
  Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- After swallowing:
  Call for a doctor immediately.
- Most important symptoms and effects, both acute and delayed
  No further relevant information available.

(Contd. of page 1)
5 Firefighting measures

- Extinguishing media
- Suitable extinguishing agents:
  - CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- Special hazards arising from the substance or mixture: No further relevant information available.
- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures: Not required.
- Environmental precautions: Do not allow to enter sewers/surface or ground water.
- Methods and material for containment and cleaning up:
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- Reference to other sections
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

7 Handling and storage

- Precautions for safe handling: No special precautions are necessary if used correctly.
- Information about fire - and explosion protection: No special measures required.
- Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: No special requirements.
    - Information about storage in one common storage facility: Not required.
    - Further information about storage conditions: Keep container tightly sealed.
  - Specific end use(s): No further relevant information available.

8 Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.
- Control parameters
  - Ingredients with limit values that require monitoring at the workplace: Not required.
- Additional information: The lists valid during the making were used as basis.
- Exposure controls
  - Personal protective equipment:
    - General protective and hygienic measures:
      - Keep away from foodstuffs, beverages and feed.
      - Immediately remove all soiled and contaminated clothing
      - Wash hands before breaks and at the end of work.
      - Avoid contact with the eyes and skin.
Safety data sheet  
according to 1907/2006/EC, Article 31

Printing date 27.05.2015  
Revision: 27.05.2015

Trade name: MALEIC ACID

- Respiratory protection:  
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

- Protection of hands:
  Protective gloves

  The glove material has to be impermeable and resistant to the product/the substance/the preparation.  
  Due to missing tests no recommendation to the glove material can be given for the product/the preparation/the chemical mixture.  
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- Material of gloves  
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- Penetration time of glove material  
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

- Eye protection:  
  Tightly sealed goggles

9 Physical and chemical properties

- Information on basic physical and chemical properties  
- General Information
  - Appearance:
    Form: Solid
    Colour: Not determined.
  - Odour:
    Odour: Characteristic
    Odour threshold: Not determined.
  - pH-value: Not applicable.

- Change in condition
  Melting point/Melting range: 139-140 °C
  Boiling point/Boiling range: 160 °C

- Flash point: Not applicable.

- Flammability (solid, gaseous): Product is not flammable.

- Ignition temperature:
  Decomposition temperature: Not determined.
  Self-igniting: Not determined.

- Danger of explosion: Product does not present an explosion hazard.

- Explosion limits:
  Lower: Not determined.
  Upper: Not determined.
10 Stability and reactivity

- Reactivity
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

- Information on toxicological effects
- Acute toxicity:
  - LD/LC50 values relevant for classification:
    | Oral     | LD50     | 708 mg/kg (rat) |
    | Dermal   | LD50     | 1560 mg/kg (rabbit) |
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritating effect.
    - Sensitisation: Sensitisation possible through skin contact.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
  - Additional ecological information:
  - General notes:
    - Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water
    - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Safety data sheet
according to 1907/2006/EC, Article 31

Trade name: MALEIC ACID

Results of PBT and vPvB assessment
- PBT: Not applicable.
- vPvB: Not applicable.
- Other adverse effects No further relevant information available.

13 Disposal considerations
- Waste treatment methods
  - Recommendation
    Must not be disposed together with household garbage. Do not allow product to reach sewage system.
- Uncleaned packaging:
  - Recommendation: Disposal must be made according to official regulations.
  - Recommended cleansing agents: Water, if necessary together with cleansing agents.

14 Transport information
- UN-Number
  - ADG, IMDG, IATA UN1759
- UN proper shipping name
  - ADG 1759 CORROSIVE SOLID, N.O.S. (MALEIC ACID)
  - IMDG, IATA CORROSIVE SOLID, N.O.S. (MALEIC ACID)
- Transport hazard class(es)
  - ADG, IMDG, IATA 8 Corrosive substances.
  - Class 8
  - Label
- Packing group
  - ADG, IMDG, IATA III
- Environmental hazards:
  - Marine pollutant: No
- Special precautions for user
  - Warning: Corrosive substances.
  - Danger code (Kemler): 80
  - EMS Number: F-A.S-B
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.
- Transport/Additional information:
  - ADG
    - Limited quantities (LQ) 5 kg
    - Excepted quantities (EQ) Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g
    - Transport category 3

(Contd. of page 5)

(Contd. on page 7)
15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Australian Inventory of Chemical Substances Substance is listed.
  - Standard for the Uniform Scheduling of Medicines and Poisons Substance is not listed.

- Labelling according to EU guidelines:
  The product has been classified and marked in accordance with EU Directives / Ordinance on Hazardous Materials.

- Code letter and hazard designation of product:
  ![Harmful]

- Risk phrases:
  Harmful if swallowed.
  Irritating to eyes, respiratory system and skin.
  May cause sensitisation by skin contact.

- Safety phrases:
  Keep out of the reach of children.
  Avoid contact with skin.
  Wear suitable gloves.
  If swallowed, seek medical advice immediately and show this container or label.

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.
1 Identification

· Product identifier

· Trade name: MALEIC ACID

· Article number: 18150

· CAS Number:
  110-16-7

· EC number:
  203-742-5

· Index number:
  607-095-00-3

· Relevant identified uses of the substance or mixture and uses advised against
  No further relevant information available.

· Application of the substance / the mixture
  Laboratory chemicals

· Details of the supplier of the safety data sheet

· Manufacturer/Supplier:
  Electron Microscopy Sciences
  1560 Industry Road
  USA-Hatfield, PA 19440
  Tel: 215-412-8400  Fax: 215-412-8450
  email: sgkck@aol.com
  www.emsdiasum.com

· Information department: Product safety department

· Emergency telephone number:
  ChemTrec 1-800-424-9300 Contract  CCN7661
  1-703-527-3887

2 Hazard(s) identification

· Classification of the substance or mixture

![GHS07]

Acute Tox. 4 H302 Harmful if swallowed.
Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2 H319 Causes serious eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.
STOT SE 3 H335 May cause respiratory irritation.

· Classification according to Directive 67/548/EEC or Directive 1999/45/EC

![Harmful]

Harmful if swallowed.

![Irritant]

Irritating to eyes, respiratory system and skin. May cause sensitisation by skin contact.

· Information concerning particular hazards for human and environment: Not applicable.

· Label elements

· Labelling according to EU guidelines:
  The product has been classified and marked in accordance with directives on hazardous materials.
Trade name: MALEIC ACID

- **Code letter and hazard designation of product:**

  Harmful

- **Risk phrases:**
  Harmful if swallowed.
  Irritating to eyes, respiratory system and skin.
  May cause sensitisation by skin contact.

- **Safety phrases:**
  Keep out of the reach of children.
  Avoid contact with skin.
  Wear suitable gloves.
  If swallowed, seek medical advice immediately and show this container or label.

- **Hazard description:**

- **WHMIS-symbols:**
  D2B - Toxic material causing other toxic effects
  E - Corrosive material

- **Classification system:**

- **NFPA ratings (scale 0 - 4)**

  Health = 1
  Fire = 0
  Reactivity = 0

- **HMIS-ratings (scale 0 - 4)**

  Health = 1
  Fire = 0
  Reactivity = 0

- **Other hazards**

- **Results of PBT and vPvB assessment**
  PBT: Not applicable.
  vPvB: Not applicable.

### 3 Composition/information on ingredients

- **Chemical characterization: Substances**

- **CAS No. Description**
  110-16-7 MALEIC ACID

- **Identification number(s)**
  EC number: 203-742-5
  Index number: 607-095-00-3
4 First-aid measures

- **Description of first aid measures**
  - **General information:**
    Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
  - **After inhalation:**
    Supply fresh air and to be sure call for a doctor.
    In case of unconsciousness place patient stably in side position for transportation.
  - **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
  - **After eye contact:**
    Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
  - **After swallowing:**
    Immediately call a doctor.

- **Most important symptoms and effects, both acute and delayed**
  No further relevant information available.

- **Indication of any immediate medical attention and special treatment needed**
  No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
  - Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

- **Special hazards arising from the substance or mixture**
  No further relevant information available.

- **Advice for firefighters**
  - **Protective equipment:**
    No special measures required.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
  Not required.

- **Environmental precautions:**
  Do not allow to enter sewers/ surface or ground water.

- **Methods and material for containment and cleaning up**
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.

- **Reference to other sections**
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

- **Precautions for safe handling**
  No special precautions are necessary if used correctly.

- **Information about protection against explosions and fires**
  No special measures required.

- **Conditions for safe storage, including any incompatibilities**

- **Storage**
  - **Requirements to be met by storerooms and receptacles:**
    No special requirements.
  - **Information about storage in one common storage facility:**
    Not required.
  - **Further information about storage conditions:**
    Keep receptacle tightly sealed.
  - **Specific end use(s)**
    No further relevant information available.

(Contd. on page 4)
8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

· Control parameters

· Components with limit values that require monitoring at the workplace: Not required.

· Additional information: The lists that were valid during the creation were used as basis.

· Exposure controls

· Personal protective equipment:

· General protective and hygienic measures:
  Keep away from foodstuffs, beverages and feed.
  Immediately remove all soiled and contaminated clothing.
  Wash hands before breaks and at the end of work.
  Avoid contact with the eyes and skin.

· Breathing equipment:
  In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· Protection of hands:

  Protective gloves

  The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
  Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
  Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· Material of gloves
  The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· Penetration time of glove material
  The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection:

  Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:
  Form: Solid
  Color: Not determined.
  Odor: Characteristic
  Odour threshold: Not determined.

· pH-value: Not applicable.

· Change in condition
  Melting point/Melting range: 139-140 °C
10 Stability and reactivity

Reactivity
- Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Possibility of hazardous reactions: No dangerous reactions known.
- Conditions to avoid: No further relevant information available.
- Incompatible materials: No further relevant information available.
- Hazardous decomposition products: No dangerous decomposition products known.

11 Toxicological information

Information on toxicological effects
- Acute toxicity:
- LD/LC50 values that are relevant for classification:
  - Oral LD50 708 mg/kg (rat)
  - Dermal LD50 1560 mg/kg (rabbit)

Primary irritant effect:
- on the skin: Irritant to skin and mucous membranes.
- on the eye: Irritating effect.
- Sensitization: Sensitization possible through skin contact.
Trade name: MALEIC ACID

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Bioaccumulative potential: No further relevant information available.
  - Mobility in soil: No further relevant information available.
  - Additional ecological information:
    - General notes:
      Water hazard class 1 (Assessment by list): slightly hazardous for water
      Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
  - Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
  - Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - Recommendation:
    Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- Uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.
  - Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- UN-Number
  - DOT, TDG, IMDG, IATA: UN1759
- UN proper shipping name
  - DOT: Corrosive solids, n.o.s. (MALEIC ACID)
  - TDG: 1759 Corrosive solids, n.o.s. (MALEIC ACID)
  - IMDG, IATA: CORROSIVE SOLID, N.O.S. (MALEIC ACID)
- Transport hazard class(es)
  - DOT
    - Class: 8 Corrosive substances
### 15 Regulatory information

- **Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - **Sara**
  - **Section 355 (extremely hazardous substances):** Substance is not listed.
  - **Section 313 (Specific toxic chemical listings):** Substance is not listed.
  - **TSCA (Toxic Substances Control Act):** Substance is listed.
  - **Proposition 65**
  - **Chemicals known to cause cancer:** Substance is not listed.
  - **Chemicals known to cause reproductive toxicity for females:** Substance is not listed.
  - **Chemicals known to cause reproductive toxicity for males:** Substance is not listed.
  - **Chemicals known to cause developmental toxicity:** Substance is not listed.
  - **Carcinogenic categories**
  - **EPA (Environmental Protection Agency) Substance is not listed.**
Trade name: MALEIC ACID

- TLV (Threshold Limit Value established by ACGIH) Substance is not listed.
- NIOSH-Ca (National Institute for Occupational Safety and Health) Substance is not listed.
- Canadian substance listings:
  - Canadian Domestic Substances List (DSL) Substance is listed.
  - Canadian Ingredient Disclosure list (limit 0.1%) Substance is not listed.
  - Canadian Ingredient Disclosure list (limit 1%) Substance is listed.

- Product related hazard informations:
The product has been classified and marked in accordance with directives on hazardous materials.

- Hazard symbols:
  - Harmful

- Risk phrases:
  harmful if swallowed.
  irritating to eyes, respiratory system and skin.
  may cause sensitisation by skin contact.

- Safety phrases:
  keep out of the reach of children.
  avoid contact with skin.
  wear suitable gloves.
  if swallowed, seek medical advice immediately and show this container or label.

- Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Date of preparation / last revision 05/27/2015 / -
- Abbreviations and acronyms:
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  WHMIS: Workplace Hazardous Materials Information System (Canada)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  Acute Tox. 4: Acute toxicity, Hazard Category 4
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
  STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

- Trade name: MALEIC ACID
- Article number: 18150
- CAS Number: 110-16-7
- EC number: 203-742-5
- Index number: 607-095-00-3

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

No further relevant information available.

Application of the substance / the mixture
- Laboratory chemicals

1.3 Details of the supplier of the safety data sheet

- Manufacturer/Supplier: Electron Microscopy Sciences
  1560 Industry Road
  USA-Hatfield, PA 19440
  Tel: 215-412-8400  Fax: 215-412-8450
  email: sgkcck@aol.com
  www.emsdiasum.com

- Further information obtainable from: Product safety department

1.4 Emergency telephone number:
- ChemTrec 1-800-424-9300 Contract CCN7661
  1-703-527-3887

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

- Acute Tox. 4 H302 Harmful if swallowed.
- Skin Irrit. 2 H315 Causes skin irritation.
- Eye Irrit. 2 H319 Causes serious eye irritation.
- Skin Sens. 1 H317 May cause an allergic skin reaction.
- STOT SE 3 H335 May cause respiratory irritation.

2.2 Label elements

- Labelling according to Regulation (EC) No 1272/2008
  The substance is classified and labelled according to the CLP regulation.

- Hazard pictograms

- Signal word Warning
- Hazard statements
  H302 Harmful if swallowed.

(Contd. on page 2)
Trade name: MALEIC ACID

H315 Causes skin irritation.
H319 Causes serious eye irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.

Precautionary statements
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321 Specific treatment (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards
Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Chemical characterisation: Substances
CAS No. Description
110-16-7 MALEIC ACID
Identification number(s)
EC number: 203-742-5
Index number: 607-095-00-3

SECTION 4: First aid measures

4.1 Description of first aid measures
General information:
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
After inhalation:
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
After skin contact: Immediately wash with water and soap and rinse thoroughly.
After eye contact:
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
After swallowing: Call for a doctor immediately.

4.2 Most important symptoms and effects, both acute and delayed
No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
Suitable extinguishing agents:
CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

5.2 Special hazards arising from the substance or mixture
No further relevant information available.

(Contd. of page 1)
**SECTION 6: Accidental release measures**

- **6.1** Personal precautions, protective equipment and emergency procedures: Not required.
- **6.2** Environmental precautions: Do not allow to enter sewers/surface or ground water.
- **6.3** Methods and material for containment and cleaning up:
  - Dispose contaminated material as waste according to item 13.
  - Ensure adequate ventilation.
- **6.4** Reference to other sections
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

**SECTION 7: Handling and storage**

- **7.1** Precautions for safe handling: No special precautions are necessary if used correctly.
- **7.2** Conditions for safe storage, including any incompatibilities
  - **Storage:**
  - **Requirements to be met by storerooms and receptacles:** No special requirements.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:** Keep container tightly sealed.
- **7.3** Specific end use(s): No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

- **8.1** Control parameters
  - **Ingredients with limit values that require monitoring at the workplace:** Not required.
  - **Additional information:** The lists valid during the making were used as basis.
- **8.2** Exposure controls
  - **Personal protective equipment:**
    - **General protective and hygienic measures:**
      - Keep away from foodstuffs, beverages and feed.
      - Immediately remove all soiled and contaminated clothing.
      - Wash hands before breaks and at the end of work.
      - Avoid contact with the eyes and skin.
    - **Respiratory protection:**
      - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
  - **Protection of hands:**
    - **Protective gloves**
      - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- **Material of gloves**
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.
- **Penetration time of glove material**
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **Eye protection:**

Tightly sealed goggles

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**SECTION 9: Physical and chemical properties**

- **9.1 Information on basic physical and chemical properties**

  **General Information**

  - **Appearance:**
    - Form: Solid
    - Colour: Not determined.
  - **Odour:** Characteristic
  - **Odour threshold:** Not determined.

  **pH-value:** Not applicable.

- **Change in condition**
  - Melting point/Melting range: 139-140 °C
  - Boiling point/Boiling range: 160 °C

- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Product is not flammable.

- **Ignition temperature:**
  - Decomposition temperature: Not determined.
  - Self-igniting: Not determined.

- **Danger of explosion:**
  - Product does not present an explosion hazard.

- **Explosion limits:**
  - Lower: Not determined.
  - Upper: Not determined.

- **Vapour pressure:** Not applicable.

- **Density at 20 °C:** 1.59 g/cm³
- **Relative density** Not determined.
- **Vapour density** Not applicable.
- **Evaporation rate** Not applicable.

- **Solubility in / Miscibility with water at 20 °C:** 788 g/l

- **Partition coefficient (n-octanol/water):** Not determined.
SECTION 10: Stability and reactivity

- 10.1 Reactivity
- 10.2 Chemical stability
- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- 10.3 Possibility of hazardous reactions: No dangerous reactions known.
- 10.4 Conditions to avoid: No further relevant information available.
- 10.5 Incompatible materials: No further relevant information available.
- 10.6 Hazardous decomposition products: No dangerous decomposition products known.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
- Acute toxicity:
- LD/LC50 values relevant for classification:
  - Oral: LD50 708 mg/kg (rat)
  - Dermal: LD50 1560 mg/kg (rabbit)
- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
  - Sensitisation: Sensitisation possible through skin contact.

SECTION 12: Ecological information

- 12.1 Toxicity
  - Aquatic toxicity: No further relevant information available.
  - 12.2 Persistence and degradability: No further relevant information available.
  - 12.3 Bioaccumulative potential: No further relevant information available.
  - 12.4 Mobility in soil: No further relevant information available.
  - Additional ecological information:
    - General notes:
      Water hazard class 1 (German Regulation) (Assessment by list): slightly hazardous for water
      Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
    - 12.5 Results of PBT and vPvB assessment
      - PBT: Not applicable.
      - vPvB: Not applicable.
    - 12.6 Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
  - Recommendation
    Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Trade name: MALEIC ACID

- Uncleaned packaging:
- Recommendation: Disposal must be made according to official regulations.
- Recommended cleansing agents: Water, if necessary together with cleansing agents.

SECTION 14: Transport information

- 14.1 UN-Number
  - ADR, IMDG, IATA UN1759
- 14.2 UN proper shipping name
  - ADR 1759 CORROSIVE SOLID, N.O.S. (MALEIC ACID)
  - IMDG, IATA CORROSIVE SOLID, N.O.S. (MALEIC ACID)
- 14.3 Transport hazard class(es)
  - ADR, IMDG, IATA
    - Class 8 Corrosive substances.
    - Label 8
- 14.4 Packing group
  - ADR, IMDG, IATA III
- 14.5 Environmental hazards:
  - Marine pollutant: No
- 14.6 Special precautions for user
  - Warning: Corrosive substances.
  - Danger code (Kemler): 80
  - EMS Number: F-A,S-B
- 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.

- Transport/Additional information:
  - ADR
    - Limited quantities (LQ) 5 kg
    - Excepted quantities (EQ) Code: E1
      Maximum net quantity per inner packaging: 30 g
      Maximum net quantity per outer packaging: 1000 g
  - Transport category 3
  - Tunnel restriction code E
  - IMDG
    - Limited quantities (LQ) 5 kg
    - Excepted quantities (EQ) Code: E1
      Maximum net quantity per inner packaging: 30 g
      Maximum net quantity per outer packaging: 1000 g
  - UN "Model Regulation": UN1759, CORROSIVE SOLID, N.O.S. (MALEIC ACID), 8, III

(Contd. on page 7)
SECTION 15: Regulatory information

· 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
   No further relevant information available.

· 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Abbreviations and acronyms:
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  IATA: International Air Transport Association
  GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  EINECS: European Inventory of Existing Commercial Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  Acute Tox. 4: Acute toxicity, Hazard Category 4
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
  STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
Veiligheidsinformatieblad
volgens 1907/2006/EG, Artikel 31

datum van de druk: 27.05.2015
Hersiening van: 27.05.2015

RUBRIEK 1: Identificatie van de stof of het mengsel en van de vennootschap/onderneming

- 1.1 Productidentificatie

  - Handelsnaam: maleïnezuur
  - Artikelenummer: 18150
  - CAS-nummer: 110-16-7
  - EC-nummer: 203-742-5
  - Catalogusnummer: 607-095-00-3

- 1.2 Relevant geïdentificeerd gebruik van de stof of het mengsel en ontraden gebruik

  Geen verdere relevante informatie verkrijgbaar.

- 1.3 Details betreffende de verstrekker van het veiligheidsinformatieblad

  - Fabrikant/leverancier:
    Electron Microscopy Sciences
    1560 Industry Road
    USA-Hatfield, PA 19440
    Tel: 215-412-8400  Fax: 215-412-8450
    email: sgkcck@aol.com
    www.emsdiasum.com
  
  - Inlichtingengevende sector: Product safety department
  
- 1.4 Telefoonnummer voor noodgevallen:

  ChemTrec 1-800-424-9300 Contract CCN7661
  1-703-527-3887

RUBRIEK 2: Identificatie van de gevaren

- 2.1 Indeling van de stof of het mengsel

  - Indeling overeenkomstig Verordening (EG) nr. 1272/2008

    GHS07

    Acute Tox. 4  H302  Schadelijk bij inslikken.
    Skin Irrit. 2  H315  Veroorzaakt huidirritatie.
    Eye Irrit. 2  H319  Veroorzaakt ernstige oogirritatie.
    Skin Sens. 1  H317  Kan een allergische huidreactie veroorzaken.
    STOT SE 3  H335  Kan irritatie van de luchtwegen veroorzaken.

- 2.2 Etiketteringselementen

  - Etikettering overeenkomstig Verordening (EG) nr. 1272/2008

    De stof product is geclassificeerd en geëtiketteerd volgens de CLP-verordening.

(Vervolg op blz. 2)
Veiligheidsinformatieblad
volgens 1907/2006/EG, Artikel 31

Handelsnaam: maleïnezuur

- Gevarenpictogrammen

![GHS07]

- Signaalwoord Waarschuwing
- Gevarenaanduidingen
  H302 Schadelijk bij inslikken.
  H315 Veroorzaakt huidirritatie.
  H319 Veroorzaakt ernstige oogirritatie.
  H335 Kan irritatie van de luchtwegen veroorzaken.

- Voorzorgsmaatregelen
  P261 Inademing van stof/rook/gas/nevel/damp/spuitnevel vermijden.
  P280 Beschermende handschoenen/beschermende kleding/oogbescherming/gelaatsbescherming dragen.
  P305+P351+P338 BIJ CONTACT MET DE OGEN: voorzichtig afspoelen met water gedurende een aantal minuten; contactlenzen verwijderen, indien mogelijk; blijven spoelen.
  P321 Specifieke behandeling vereist (zie op dit etiket).
  P405 Achter slot bewaren.
  P501 De inhoud en de verpakking verwerken volgens de plaatselijke/regionale/nationale/internationale voorschriften.

- 2.3 Andere gevaren
- Resultaten van PBT- en zPzB-beoordeling
  - PBT: Niet bruikbaar.
  - zPzB: Niet bruikbaar.

RUBRIEK 3: Samenstelling en informatie over de bestanddelen

- 3.1 Chemische karakterisering: Stoffen
  - CAS-Nr. omschrijving: 110-16-7 maleïnezuur
  - Identificatienummer(s)
    - EC-nummer: 203-742-5
    - Catalogusnummer: 607-095-00-3

RUBRIEK 4: Eerstehulpmaatregelen

- 4.1 Beschrijving van de eerstehulpmaatregelen
  - Algemene informatie:
    Het is mogelijk dat vergiftigingssymptomen pas na vele uren optreden. Om deze reden is medische controle gedurende minstens 48 uur na een ongeval noodzakelijk.
  - Na het inademen:
    Veel verse lucht toedienen en voor alle zekerheid een arts raadplegen.
    Bij bewusteloosheid ligging en vervoer in stabiele zijligging.
  - Na huidcontact:
    Onmiddellijk met water en zeep afwassen en goed naspoelen.
  - Na oogcontact:
    De ogen gedurende verscheidene minuten onder stromend water afspoelen terwijl de oogspleet geopend blijft. Bij aanhoudende klachten een dokter raadplegen.
  - Na inslikken:
    Onmiddellijk arts raadplegen.
Veiligheidsinformatieblad  
volgens 1907/2006/EG, Artikel 31

datum van de druk: 27.05.2015  
Herziening van: 27.05.2015

Handelsnaam: maleïnezuur

- 4.2 Belangrijkste acute en uitgestelde symptomen en effecten Geen verdere relevante informatie verkrijgbaar.
- 4.3 Vermelding van de vereiste onmiddellijke medische verzorging en speciale behandeling Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 5: Brandbestrijdingsmaatregelen

- 5.1 Blusmiddelen
  · Geschikte blusmiddelen: CO2, bluspoeder of waterstraal. Grotere brand met waterstraal bestrijden of met schuim, dat tegen alcohol bestand is.
- 5.2 Speciale gevaren die door de stof of het mengsel worden veroorzaakt
  Geen verdere relevante informatie verkrijgbaar.
- 5.3 Advies voor brandweerlieden
  · Speciale beschermende kleding: Geen bijzondere maatregelen nodig.

RUBRIEK 6: Maatregelen bij het accidenteel vrijkomen van de stof of het mengsel

- 6.1 Persoonlijke voorzorgsmaatregelen, beschermdne uitrusting en noodprocedures Niet nodig.
- 6.2 Milieuvoorzorgsmaatregelen: Niet in de riolering/het oppervlaktewater/het grondwater laten terechtkomen.
- 6.3 Inslitings- en reinigingsmethoden en -materiaal:
  Besmet materiaal zoals afval volgens punt 13 verwijderen.
  Voor voldoende ventilatie zorgen.
- 6.4 Verwijzing naar andere rubrieken
  Informatie inzake veilig gebruik - zie hoofdstuk 7.
  Informatie inzake persoonlijke beschermingsuitrusting - zie hoofdstuk 8.
  Informatie inzake berging - zie hoofdstuk 13.

RUBRIEK 7: Hantering en opslag

- 7.1 Voorzorgsmaatregelen voor het veilig hanteren van de stof of het mengsel
  Bij een deskundig gebruik zijn geen bijzondere maatregelen vereist.
  · Informatie m.b.t. brand- en ontploffingsgevaar: Geen bijzondere maatregelen noodzakelijk.
- 7.2 Voorwaarden voor een veilige opslag, met inbegrip van incompatibele producten
  · Op slag:
    · Eien ten opzichte van opslagruimte en tanks: Geen bijzondere eisen.
    · Informatie m.b.t. gezamenlijke opslag: Niet noodzakelijk.
    · Verdere inlichtingen over eien m.b.t. de opslag: Tanks ondoorgrondbaar gesloten houden.
- 7.3 Specifiek eindgebruik
  Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 8: Maatregelen ter beheersing van blootstelling/persoonlijke bescherming

- Aanvullende gegevens m.b.t. de inrichting van technische installaties: Geen aanvullende gegevens. Zie 7.
- 8.1 Controleparameters
  · Bestanddelen met grenswaarden die m.b.t. de werkruiumte in acht genomen moeten worden: Vervalt.
  · Aanvullende gegevens: Als basis dienden lijsten die bij opstelling geldig waren.
- 8.2 Maatregelen ter beheersing van blootstelling
  · Persoonlijke beschermingsvoorzieningen:
    · Algemene beschermings- en gezondheidsmaatregelen:
      Verwijderd houden van eet- en drinkwaren.
Handelsnaam: maleïnezuur

Verontreinigde kleding onmiddellijk uittrekken.  
Vóór de pauze en aan het einde van werktijd handen wassen.  
Aanraking met de ogen en de huid vermijden.

· Ademhalingsbescherming:  
Bij korte of geringe belasting ademfiltertoestel; bij intensieve resp. langdurige expositie een van de omringende lucht onafhankelijk ademhalingstoestel gebruiken.

· Handbescherming:

Veiligheidshandschoenen

Het handschoenmateriaal moet ondoorlatend en bestand zijn tegen het product / de stof / de bereiding.  
Op grond van falende testen kan geen aanbeveling voor handschoenmateriaal voor het product / de bereiding / het chemicaliën mengsel afgegeven worden.  
Kies handschoenmateriaal rekening houdend met de penetratietijden, de permeatiegraden en de degradatie.

· Handschoenmateriaal
De keuze van een geschikte handschoen is niet alleen afhankelijk van het materiaal, maar ook van andere kwaliteitskenmerken en verschilt van fabrikant tot fabrikant.

· Doordringingstijd van het handschoenmateriaal
De precieze penetratietijd kunt u te weten komen bij de handschoenfabrikant; houd er rekening mee.

· Oogbescherming:

Nauw aansluitende veiligheidsbril

---

**RUBRIEK 9: Fysische en chemische eigenschappen**

<table>
<thead>
<tr>
<th>· 9.1 Informatie over fysische en chemische basiseigenschappen</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Algemene gegevens</td>
</tr>
<tr>
<td>Voorkomen:</td>
</tr>
<tr>
<td>Vorm: Vast</td>
</tr>
<tr>
<td>Kleur: Niet bepaald.</td>
</tr>
<tr>
<td>Reuk: Karakteristiek</td>
</tr>
<tr>
<td>Geurdrempelwaarde: Niet bepaald.</td>
</tr>
<tr>
<td>pH-waarde: Niet bruikbaar.</td>
</tr>
<tr>
<td>Toestandsverandering:</td>
</tr>
<tr>
<td>Smeltpunt/smeltbereik: 139-140 °C</td>
</tr>
<tr>
<td>Kookpunt/kookpuntbereik: 160 °C</td>
</tr>
<tr>
<td>Vlampunt: Niet bruikbaar.</td>
</tr>
<tr>
<td>Ontvlambaarheid (vast, gasvormig): De stof is niet ontvlambaar.</td>
</tr>
<tr>
<td>Ontstekingstemperatuur:</td>
</tr>
<tr>
<td>Ontbindingstemperatuur: Niet bepaald.</td>
</tr>
<tr>
<td>Zelfonsteking: Niet bepaald.</td>
</tr>
<tr>
<td>Ontploffingsgevaar: Het produkt is niet ontploffingsgevaarlijk.</td>
</tr>
<tr>
<td>Ontploffingsgrenzen: Onderste: Niet bepaald.</td>
</tr>
</tbody>
</table>
Handelsnaam: maleïnezuur

Bovenste: Niet bepaald.

- Dampspanning: Niet bruikbaar.
- Dichtheid bij 20 °C: 1,59 g/cm³
- Relatieve dichtheid: Niet bepaald.
- Dampdichtheid: Niet bruikbaar.
- Verdampingssnelheid: Niet bruikbaar.

- Oplosbaarheid in mengbaarheid met Water bij 20 °C: 788 g/l
- Verdelingscoëfficiënt (n-octanol/water): Niet bepaald.

- Viscositeit
  - Dynamisch: Niet bruikbaar.
  - Kinematisch: Niet bruikbaar.

- 9.2 Overige informatie Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 10: Stabiliteit en reactiviteit

- 10.1 Reactiviteit
- 10.2 Chemische stabiliteit
  - Thermische afbraak / te vermijden omstandigheden: Geen afbraak bij gebruik volgens voorschrift.
- 10.3 Mogelijke gevaarlijke reacties Geen gevaarlijke reacties bekend.
- 10.4 Te vermijden omstandigheden Geen verdere relevante informatie verkrijgbaar.
- 10.5 Chemisch op elkaar inwerkende materialen: Geen verdere relevante informatie verkrijgbaar.
- 10.6 Gevaarlijke ontledingsproducten: Geen gevaarlijke ontbindingsprodukten bekend.

RUBRIEK 11: Toxicologische informatie

- 11.1 Informatie over toxicologische effecten
- Acute toxiciteit:
  - Indelingsrelevantie LD/LC50-waarden:
    | Oraal  | LD50 | 708 mg/kg (rat) |
    | Dermaal| LD50 | 1560 mg/kg (rabbit) |
  - Primaire aandoening:
    - op de huid: Prikkelt de huid en de slijmvliezen.
    - aan het oog: Prikkeling
  - Overgevoeligheid: Kan overgevoeligheid veroorzaken bij contact met de huid.

RUBRIEK 12: Ecologische informatie

- 12.1 Toxiciteit
- Aquatische toxiciteit: Geen verdere relevante informatie verkrijgbaar.
- 12.2 Persistentie en afbreekbaarheid Geen verdere relevante informatie verkrijgbaar.
- 12.3 Bioaccumulatie Geen verdere relevante informatie verkrijgbaar.
- 12.4 Mobilitéit in de bodem Geen verdere relevante informatie verkrijgbaar.
- Verdere ecologische informatie:
  - Algemene informatie:
    - Waterbezwaarlijkheid (NL) 10: Kan in het aquatisch milieu op lange termijn schadelijke effecten veroorzaken.
    - Gevaar voor water klasse 1 (D) (Lijstclassificatie): gevaar voor water klein

(Vervolg op blz. 6)
Veiligheidsinformatieblad volgens 1907/2006/EG, Artikel 31

Handelsnaam: maleïnezuur

(Vervolg van blz. 5)

12.5 Resultaten van PBT- en zPzB-beoordeling
- PBT: Niet bruikbaar.
- zPzB: Niet bruikbaar.

12.6 Andere schadelijke effecten
Geen verdere relevante informatie verkrijgbaar.

RUBRIEK 13: Instructies voor verwijdering

- 13.1 Afvalverwerkingsmethoden
  - Aanbeveling: Mag niet tesamen met huisvuil gestort worden of in de riolering terechtkomen.

- Niet gereinigde verpakkingen:
  - Aanbeveling: Afvalverwijdering volgens overheidsbepalingen.
  - Aanbevolen reinigingsmiddel: Water, eventueel met toevoeging van reinigingsmiddelen.

RUBRIEK 14: Informatie met betrekking tot het vervoer

- 14.1 VN-nummer
  - ADR, IMDG, IATA: UN1759

- 14.2 Juiste ladingnaam overeenkomstig de modelreglementen van de VN
  - ADR: 1759 BIJTENDE VASTE STOF, N.E.G. (maleïnezuur)
  - IMDG, IATA: CORROSIVE SOLID, N.O.S. (MALEIC ACID)

- 14.3 Transportgevarenklasse(n)
  - ADR, IMDG, IATA: III

- 14.4 Verpakkingsgroep:
  - ADR, IMDG, IATA: III

- 14.5 Milieugevaren:
  - Marine pollutant: Neen

- 14.6 Bijzondere voorzorgen voor de gebruiker
  - Waarschuwing: Bijtende stoffen
  - Kemler-getal: 80
  - EMS-nummer: F-A,S-B

- 14.7 Vervoer in bulk overeenkomstig bijlage II bij MARPOL 73/78 en de IBC-code
  - Niet bruikbaar.

- Transport/verdere gegevens:
  - ADR
    - Beperkte hoeveelheden (LQ): 5 kg
    - Uitgezonderde hoeveelheden (EQ): Code: E1
      Grootste netto hoeveelheid per binnenverpakking: 30 g
      Grootste netto hoeveelheid per buitenverpakking: 1000 g
    - Vervoerscategorie: 3

(Vervolg op blz. 7)
Handelsnaam: maleïnezuur

<table>
<thead>
<tr>
<th>· Tunnelbeperkingscode</th>
<th>E</th>
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<tbody>
<tr>
<td>· IMDG</td>
<td>5 kg</td>
</tr>
<tr>
<td>· Limited quantities (LQ)</td>
<td>Code: E1</td>
</tr>
<tr>
<td>· Excepted quantities (EQ)</td>
<td>Maximum net quantity per inner packaging: 30 g</td>
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<tr>
<td></td>
<td>Maximum net quantity per outer packaging: 1000 g</td>
</tr>
<tr>
<td>· VN &quot;Model Regulation&quot;:</td>
<td>UN1759, BIJTENDE VASTE STOF, N.E.G. (maleïnezuur), 8, III</td>
</tr>
</tbody>
</table>

RUBRIEK 15: Regelgeving

· 15.1 Specifieke veiligheids-, gezondheids- en milieureglementen en -wetgeving voor de stof of het mengsel
   · SZW-lijst van kankerverwekkende stoffen De stof is niet aanwezig.
   · SZW-lijst van mutagene stoffen De stof is niet aanwezig.
   · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Vruchtbaarheid De stof is niet aanwezig.
   · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Ontwikkeling De stof is niet aanwezig.
   · NIET-limitatieve lijst van voor de voortplanting giftige stoffen - Borstvoeding De stof is niet aanwezig.

· Nationale voorschriften:
   · Gevaarklasse v. water: Waterbezwaarlijkheid (NL) 10: Saneringsinspanning A
   · 15.2 Chemischeveiligheidsbeoordeling: Een chemische veiligheidsbeoordeling is niet uitgevoerd.

RUBRIEK 16: Overige informatie

Deze gegevens zijn gebaseerd op de huidige stand van onze kennis. Zij beschrijven echter geen garantie van produktie eigenschappen en vestigen geen contractuele rechtsbetrekking.

· Afkortingen en acroniemen:
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  IATA: International Air Transport Association
  GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  EINECS: European Inventory of Existing Commercial Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  Acute Tox. 4: Acute toxicity, Hazard Category 4
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
  STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
SECTION 1: Identification de la substance/du mélange et de la société/l'entreprise

1.1 Identificateur de produit
- Nom du produit: acide maléique
- Code du produit: 18150
- No CAS: 110-16-7
- Numéro CE: 203-742-5
- Numéro index: 607-095-00-3

1.2 Utilisations identifiées pertinentes de la substance ou du mélange et utilisations déconseillées
Pas d'autres informations importantes disponibles.

1.3 Renseignements concernant le fournisseur de la fiche de données de sécurité
- Producteur/fournisseur: Electron Microscopy Sciences
  1560 Industry Road
  USA-Hatfield, PA 19440
  Tel: 215-412-8400  Fax: 215-412-8450
  email: sgkcck@aol.com
  www.emsdiasum.com
- Service chargé des renseignements: Product safety department
- 1.4 Numéro d'appel d'urgence:
  ChemTrec 1-800-424-9300 Contract CCN7661
  1-703-527-3887

SECTION 2: Identification des dangers

2.1 Classification de la substance ou du mélange
- Classification selon le règlement (CE) n° 1272/2008

Acute Tox. 4 H302 Nocif en cas d'ingestion.
Skin Irrit. 2 H315 Provoque une irritation cutanée.
Eye Irrit. 2 H319 Provoque une sévère irritation des yeux.
Skin Sens. 1 H317 Peut provoquer une allergie cutanée.
STOT SE 3 H335 Peut irriter les voies respiratoires.

2.2 Éléments d'étiquetage
- Etiquetage selon le règlement (CE) n° 1272/2008 La substance est classifiée et étiquetée selon le règlement CLP.
- Pictogrammes de danger

Mention d'avertissement Attention
Mentions de danger
H302 Nocif en cas d'ingestion.
H315 Provoque une irritation cutanée.
Nom du produit: acide maléique

H319 Provoque une sévère irritation des yeux.
H317 Peut provoquer une allergie cutanée.
H335 Peut irriter les voies respiratoires.

Conseils de prudence
- P261 Éviter de respirer les poussières/fumées/gaz/brouillards/vapeurs/aérosols.
- P280 Porter des gants de protection/des vêtements de protection/un équipement de protection des yeux/du visage.
- P305+P351+P338 EN CAS DE CONTACT AVEC LES YEUX: rincer avec précaution à l'eau pendant plusieurs minutes. Enlever les lentilles de contact si la victime en porte et si elles peuvent être facilement enlevées. Continuer à rincer.
- P321 Traitements spécifiques (voir sur cette étiquette).
- P405 Garder sous clef.
- P501 Éliminer le contenu/récipient conformément à la réglementation locale/régionale/nationale/internationale.

- 2.3 Autres dangers
- Résultats des évaluations PBT et vPvB
  - PBT: Non applicable.
  - vPvB: Non applicable.

SECTION 3: Composition/informations sur les composants

- 3.1 Caractérisation chimique: Substances
  - No CAS Désignation
    110-16-7 acide maléique
  - Code(s) d'identification
    - Numéro CE: 203-742-5
    - Numéro index: 607-095-00-3

SECTION 4: Premiers secours

- 4.1 Description des premiers secours
  - Remarques générales:
    Les symptômes d'intoxication peuvent apparaître après de nombreuses heures seulement; une surveillance médicale est donc nécessaire au moins 48 heures après un accident.
  - Après inhalation:
    Donner de l'air frais en abondance et consulter un médecin pour plus de sécurité.
    En cas d'inconscience, coucher et transporter la personne en position latérale stable.
  - Après contact avec la peau:
    Laver immédiatement à l'eau et au savon et bien rincer.
  - Après contact avec les yeux:
    Rincer les yeux, pendant plusieurs minutes, sous l'eau courante en écartant bien les paupières. Si les troubles persistent, consulter un médecin.
  - Après ingestion:
    Consulter immédiatement un médecin.

- 4.2 Principaux symptômes et effets, aigus et différés
  Pas d'autres informations importantes disponibles.

- 4.3 Indication des éventuels soins médicaux immédiats et traitements particuliers nécessaires
  Pas d'autres informations importantes disponibles.
Fiche de données de sécurité
selon 1907/2006/CE, Article 31
Date d'impression : 27.05.2015
Révision: 27.05.2015
Nom du produit: acide maléique

SECTION 5: Mesures de lutte contre l'incendie

- 5.1 Moyens d'extinction
  · Moyens d'extinction:
    CO2, poudre d'extinction ou eau pulvérisée. Combattre les foyers importants avec de l'eau pulvérisée ou de la mousse résistant à l'alcool.
- 5.2 Dangers particuliers résultant de la substance ou du mélange
  Pas d'autres informations importantes disponibles.
- 5.3 Conseils aux pompiers
  · Equipement spécial de sécurité: Aucune mesure particulière n'est requise.

SECTION 6: Mesures à prendre en cas de dispersion accidentelle

- 6.1 Précautions individuelles, équipement de protection et procédures d'urgence Pas nécessaire.
- 6.2 Précautions pour la protection de l'environnement:
  Ne pas rejeter dans les canalisations, dans les eaux de surface et dans les nappes d'eau souterraines.
- 6.3 Méthodes et matériel de confinement et de nettoyage:
  Evacuer les matériaux contaminés en tant que déchets conformément au point 13. Assurer une aération suffisante.
- 6.4 Référence à d'autres sections
  Afin d'obtenir des informations pour une manipulation sûre, consulter le chapitre 7.
  Afin d'obtenir des informations sur les équipements de protection personnels, consulter le chapitre 8.
  Afin d'obtenir des informations sur l'élimination, consulter le chapitre 13.

SECTION 7: Manipulation et stockage

- 7.1 Précautions à prendre pour une manipulation sans danger
  Aucune mesure particulière n'est nécessaire en cas de bonne utilisation.
- 7.2 Conditions d'un stockage sûr, y compris d'éventuelles incompatibilités
  · Stockage:
    · Exigences concernant les lieux et conteneurs de stockage: Aucune exigence particulière.
    · Indications concernant le stockage commun: Pas nécessaire.
    · Autres indications sur les conditions de stockage: Tenir les emballages hermétiquement fermés.
- 7.3 Utilisation(s) finale(s) particulière(s) Pas d'autres informations importantes disponibles.

SECTION 8: Contrôles de l'exposition/protection individuelle

- Indications complémentaires pour l'agencement des installations techniques:
  Sans autre indication, voir point 7.
- 8.1 Paramètres de contrôle
  · Composants présentant des valeurs-seuil à surveiller par poste de travail: Néant
- Remarques supplémentaires:
  Le présent document s'appuie sur les listes en vigueur au moment de son élaboration.
- 8.2 Contrôles de l'exposition
  · Equipement de protection individuel:
    · Mesures générales de protection et d'hygiène:
      Tenir à l'écart des produits alimentaires, des boissons et de la nourriture pour animaux.
      Retirer immédiatement les vêtements souillés ou humectés.
      Se laver les mains avant les pauses et en fin de travail.
**Nom du produit: acide maléique**

*Eviter tout contact avec les yeux et avec la peau.*

- **Protection respiratoire:**
  En cas d’exposition faible ou de courte durée, utiliser un filtre respiratoire; en cas d’exposition intense ou durable, utiliser un appareil de respiration indépendant de l’air ambiant.

- **Protection des mains:**
  Le matériau des gants doit être imperméable et résistant au produit / à la substance / à la préparation.
  A cause du manque de tests, aucune recommandation pour un matériau de gants pour le produit / la préparation / le mélange de produits chimiques ne peut être donnée.
  Choix du matériau des gants en fonction des temps de pénétration, du taux de perméabilité et de la dégradation.

- **Matériau des gants**
  Le choix de gants appropriés ne dépend pas seulement du matériau, mais également d’autres critères de qualité qui peuvent varier d’un fabricant à l’autre.

- **Temps de pénétration du matériel des gants**
  Le temps de pénétration exact est à déterminer par le fabricant des gants de protection et à respecter.

- **Protection des yeux:**
  Lunettes de protection hermétiques

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**SECTION 9: Propriétés physiques et chimiques**

- **9.1 Informations sur les propriétés physiques et chimiques essentielles**

- **Indications générales**

  - **Aspect:**
    - Forme: Solide
    - Couleur: Non déterminé.

  - **Odeur:** Caractéristique

  - **Seuil olfactif:** Non déterminé.

  - **valeur du pH:** Non applicable.

- **Changement d’état**
  - **Point de fusion:** 139-140 °C
  - **Point d’ébullition:** 160 °C

- **Point d’éclair**
  - Non applicable.

- **Inflammabilité (solide, gazeux):** La substance n’est pas inflammable.

- **Température d’inflammation:**

  - **Température de décomposition:** Non déterminé.

  - **Auto-inflammation:** Non déterminé.

  - **Danger d'explosion:** Le produit n’est pas explosif.

- **Limites d’explosion:**
  - Inférieure: Non déterminé.
  - Supérieure: Non déterminé.
Fiche de données de sécurité
selon 1907/2006/CE, Article 31

Date d'impression : 27.05.2015
Révision: 27.05.2015

Nom du produit: acide maléique

· Pression de vapeur: Non applicable.
· Densité à 20 °C: 1,59 g/cm³
· Densité relative: Non déterminé.
· Densité de vapeur: Non applicable.
· Vitesse d’évaporation: Non applicable.
· Solubilité dans/miscibilité avec l’eau à 20 °C: 788 g/l
· Coefficient de partage (n-octanol/eau): Non déterminé.
· Viscosité:
  - Dynamique: Non applicable.
  - Cinématique: Non applicable.
· 9.2 Autres informations: Pas d’autres informations importantes disponibles.

SECTION 10: Stabilité et réactivité

· 10.1 Réactivité
· 10.2 Stabilité chimique
· Décomposition thermique/conditions à éviter: Pas de décomposition en cas d’usage conforme.
· 10.3 Possibilité de réactions dangereuses: Aucune réaction dangereuse connue.
· 10.4 Conditions à éviter: Pas d’autres informations importantes disponibles.
· 10.5 Matières incompatibles: Pas d’autres informations importantes disponibles.
· 10.6 Produits de décomposition dangereux: Pas de produits de décomposition dangereux connus.

SECTION 11: Informations toxicologiques

· 11.1 Informations sur les effets toxicologiques
· Toxicité aiguë:
· Valeurs LD/LC50 déterminantes pour la classification:
  Oral LD50 708 mg/kg (rat)
  Dermique LD50 1560 mg/kg (lapin)
· Effet primaire d’irritation:
  - de la peau: Irrite la peau et les muqueuses.
  - des yeux: Effet d’irritation.
· Sensibilisation: Sensibilisation possible par contact avec la peau.

SECTION 12: Informations écologiques

· 12.1 Toxicité
· Toxicité aquatique: Pas d’autres informations importantes disponibles.
· 12.2 Persistance et dégradabilité: Pas d’autres informations importantes disponibles.
· 12.3 Potentiel de bioaccumulation: Pas d’autres informations importantes disponibles.
· 12.4 Mobilité dans le sol: Pas d’autres informations importantes disponibles.
· Autres indications écologiques:
· Indications générales:
  Catégorie de pollution des eaux 1 (D) (classification selon liste): peu polluant
  Ne pas laisser le produit, non dilué ou en grande quantité, pénétrer la nappe phréatique, les eaux ou les canalisations.

(suite page 6)
Nom du produit: acide maléique

- 12.5 Résultats des évaluations PBT et VPvB
- PBT: Non applicable.
- VPvB: Non applicable.
- 12.6 Autres effets néfastes Pas d'autres informations importantes disponibles.

**SECTION 13: Considérations relatives à l'élimination**

- 13.1 Méthodes de traitement des déchets
  - Recommandation: Ne doit pas être évacué avec les ordures ménagères. Ne pas laisser pénétrer dans les égouts.
- Emballages non nettoyés:
  - Recommandation: Évacuation conformément aux prescriptions légales.
- Produit de nettoyage recommandé: Eau, éventuellement avec des produits de nettoyage

**SECTION 14: Informations relatives au transport**

- 14.1 No ONU
  - ADR, IMDG, IATA  UN1759

- 14.2 Nom d'expédition des Nations unies
  - ADR
  - IMDG, IATA  1759 SOLIDE CORROSIF, N.S.A. (acide maléique)  CORROSIVE SOLID, N.O.S. (MALEIC ACID)

- 14.3 Classe(s) de danger pour le transport
  - ADR, IMDG, IATA

  - Classe 8 Matières corrosives.
  - Étiquette 8

- 14.4 Groupe d'emballage
  - ADR, IMDG, IATA  III

- 14.5 Dangers pour l'environnement:
  - Marine Pollutant: Non

- 14.6 Précautions particulières à prendre par l'utilisateur
  - Indice Kemler: 80
  - No EMS: F-A.S-B

- 14.7 Transport en vrac conformément à l'annexe II de la convention Marpol 73/78 et au recueil IBC
  - Indications complémentaires de transport:
    - ADR
      - Quantités limitées (LQ) 5 kg
      - Quantités exceptées (EQ) Code: E1
      - Quantité maximale nette par emballage intérieur: 30 g
      - Quantité maximale nette par emballage extérieur: 1000 g
    - Catégorie de transport 3

(suite page 7)
Nom du produit: acide maléique

<table>
<thead>
<tr>
<th>Code de restriction en tunnels</th>
<th>E</th>
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<tbody>
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<td>IMDG</td>
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<tr>
<td>Limited quantities (LQ)</td>
<td>5 kg</td>
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<tr>
<td>Excepted quantities (EQ)</td>
<td>Code: E1</td>
</tr>
<tr>
<td>Maximum net quantity per inner packaging: 30 g</td>
<td></td>
</tr>
<tr>
<td>Maximum net quantity per outer packaging: 1000 g</td>
<td></td>
</tr>
<tr>
<td>&quot;Règlement type&quot; de l'ONU:</td>
<td>UN1759, SOLIDE CORROSIF, N.S.A. (acide maléique), 8, III</td>
</tr>
</tbody>
</table>

SECTION 15: Informations réglementaires

15.1 Réglementations/législation particulières à la substance ou au mélange en matière de sécurité, de santé et d'environnement
Pas d'autres informations importantes disponibles.

15.2 Évaluation de la sécurité chimique: Une évaluation de la sécurité chimique n'a pas été réalisée.

SECTION 16: Autres informations

Ces indications sont fondées sur l'état actuel de nos connaissances, mais ne constituent pas une garantie quant aux propriétés du produit et ne donnent pas lieu à un rapport juridique contractuel.

Acronymes et abréviations:
ADR: Accord européen sur le transport des marchandises dangereuses par Route
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
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Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
ABSCHNITT 1: Bezeichnung des Stoffs bzw. des Gemischs und des Unternehmens

1.1 Produktidentifikator

- Handelsname: Maleinsäure
- Artikelnummer: 18150
- CAS-Nummer: 110-16-7
- EG-Nummer: 203-742-5
- Indexnummer: 607-095-00-3

1.2 Relevante identifizierte Verwendungen des Stoffs oder Gemischs und Verwendungen, von denen abgeraten wird

Keine weiteren relevanten Informationen verfügbar.

1.3 Einzelheiten zum Lieferanten, der das Sicherheitsdatenblatt bereitstellt

- Hersteller/Lieferant:
  Electron Microscopy Sciences
  1560 Industry Road
  USA-Hatfield, PA 19440
  Tel: 215-412-8400  Fax: 215-412-8450
  email: sgkcck@aol.com
  www.emsdiasum.com

Science Services GmbH
Unterhachinger Str. 75
81737 München Germany
Tel: +49(0)89 18 93 668-0
safety@scienceservices.de

24h Giftnotruf Munchen: +49 (0)89 19240
Toxikologische Abteilung der II. Medizinischen Klinik
rechts der Isar, Munchen. - www.toxinfo.org

- Auskunftgebender Bereich: Product safety department
- Notrufnummer:
  ChemTrec 1-800-424-9300 Contract CCN7661
  1-703-527-3887

ABSCHNITT 2: Mögliche Gefahren

2.1 Einstufung des Stoffs oder Gemischs

Einstufung gemäß Verordnung (EG) Nr. 1272/2008

GHS07

Acute Tox. 4 H302 Gesundheitsschädlich bei Verschlucken.
Skin Irrit. 2 H315 Verursacht Hautreizungen.
Eye Irrit. 2 H319 Verursacht schwere Augenreizung.
Skin Sens. 1 H317 Kann allergische Hautreaktionen verursachen.
STOT SE 3 H335 Kann die Atemwege reizen.

2.2 Kennzeichnungselemente

Kennzeichnung gemäß Verordnung (EG) Nr. 1272/2008
Der Stoff ist gemäß CLP-Verordnung eingestuft und gekennzeichnet.
Sicherheitsdatenblatt
gemäß 1907/2006/EG, Artikel 31

Druckdatum: 27.05.2015
überarbeitet am: 27.05.2015

Handelsname: Maleinsäure

- Gefahrenpiktogramme

[![GHS07](image)]

- Signalwort Achtung

- Gefahrenhinweise
  H302 Gesundheitsschädlich bei Verschlucken.
  H315 Verursacht Hautreizungen.
  H319 Verursacht schwere Augenreizung.
  H317 Kann allergische Hautreaktionen verursachen.
  H335 Kann die Atemwege reizen.

- Sicherheitshinweise
  P261 Einatmen von Staub/Rauch/Gas/Nebel/Dampf/Aerosol vermeiden.
  P280 Schutzhandschuhe/Schutzkleidung/Augenschutz/Gesichtsschutz tragen.
  P321 Besondere Behandlung (siehe auf diesem Kennzeichnungsetikett).
  P405 Unter Verschluss aufbewahren.

- 2.3 Sonstige Gefahren
  - Ergebnisse der PBT- und vPvB-Beurteilung
    - PBT: Nicht anwendbar.
    - vPvB: Nicht anwendbar.

ABSCHNITT 3: Zusammensetzung/Angaben zu Bestandteilen

- 3.1 Chemische Charakterisierung: Stoffe
  - CAS-Nr. Bezeichnung
    110-16-7 Maleinsäure
  - Identifikationsnummer(n)
    EG-Nummer: 203-742-5
    Indexnummer: 607-095-00-3

ABSCHNITT 4: Erste-Hilfe-Maßnahmen

- 4.1 Beschreibung der Erste-Hilfe-Maßnahmen
  - Allgemeine Hinweise:
    Vergiftungssymptome können erst nach vielen Stunden auftreten, deshalb ärztliche Überwachung mindestens 48 Stunden nach einem Unfall.
  - Nach Einatmen:
    Reichlich Frischluftzufuhr und sicherheitshalber Arzt aufsuchen.
    Bei Bewusstlosigkeit Lagerung und Transport in stabiler Seitenlage.
  - Nach Hautkontakt: Sofort mit Wasser und Seife abwaschen und gut nachspülen.
  - Nach Augenkontakt:
    Augen mehrere Minuten bei geöffnetem Lidspalt unter fließendem Wasser spülen. Bei anhaltenden Beschwerden Arzt konsultieren.
  - Nach Verschlucken: Sofort Arzt aufsuchen.
Sicherheitsdatenblatt
gemäß 1907/2006/EG, Artikel 31

Handelsname: Maleinsäure

4.2 Wichtigste akute und verzögert auftretende Symptome und Wirkungen
Keine weiteren relevanten Informationen verfügbar.

4.3 Hinweise auf ärztliche Soforthilfe oder Spezialbehandlung
Keine weiteren relevanten Informationen verfügbar.

ABSCHNITT 5: Maßnahmen zur Brandbekämpfung

5.1 Löschmittel
- Geeignete Löschmittel:
  CO2, Löschpulver oder Wassersprühstrahl. Größeren Brand mit Wassersprühstrahl oder alkoholbeständigem
  Schaum bekämpfen.

5.2 Besondere vom Stoff oder Gemisch ausgehende Gefahren
Keine weiteren relevanten Informationen verfügbar.

5.3 Hinweise für die Brandbekämpfung
- Besondere Schutzausrüstung: Keine besonderen Maßnahmen erforderlich.

ABSCHNITT 6: Maßnahmen bei unbeabsichtigter Freisetzung

6.1 Personenbezogene Vorsichtsmaßnahmen, Schutzausrüstungen und in Notfällen anzuwendende Verfahren
Nicht erforderlich.

6.2 Umweltschutzmaßnahmen: Nicht in die Kanalisation/Oberflächenwasser/Grundwasser gelangen lassen.

6.3 Methoden und Material für Rückhaltung und Reinigung:
- Kontaminiertes Material als Abfall nach Abschnitt 13 entsorgen.
  Für ausreichende Lüftung sorgen.

6.4 Verweis auf andere Abschnitte
- Informationen zur sicheren Handhabung siehe Abschnitt 7.
- Informationen zur persönlichen Schutzausrüstung siehe Abschnitt 8.
- Informationen zur Entsorgung siehe Abschnitt 13.

ABSCHNITT 7: Handhabung und Lagerung

7.1 Schutzmaßnahmen zur sicheren Handhabung
Bei sachgemäß Verwendung keine besonderen Maßnahmen erforderlich.

- Hinweise zum Brand- und Explosionsschutz: Keine besonderen Maßnahmen erforderlich.

7.2 Bedingungen zur sicheren Lagerung unter Berücksichtigung von Unverträglichkeiten
- Lagerung:
  - Anforderung an Lagerräume und Behälter: Keine besonderen Anforderungen.
  - Zusammenlagerungshinweise: Nicht erforderlich.
  - Weitere Angaben zu den Lagerbedingungen: Behälter dicht geschlossen halten.

7.3 Spezifische Endanwendungen Keine weiteren relevanten Informationen verfügbar.

ABSCHNITT 8: Begrenzung und Überwachung der Exposition/Persönliche Schutzausrüstungen

- Zusätzliche Hinweise zur Gestaltung technischer Anlagen: Keine weiteren Angaben, siehe Abschnitt 7.

- 8.1 Zu überwachende Parameter
  - Bestandteile mit arbeitsplatzbezogenen, zu überwachenden Grenzwerten: Entfällt.
Handelsname: Maleinsäure

- Zusätzliche Hinweise: Als Grundlage dienten die bei der Erstellung gültigen Listen.

- 8.2 Begrenzung und Überwachung der Exposition
  - Persönliche Schutzausrüstung:
  - Allgemeine Schutz- und Hygienemaßnahmen:
    Von Nahrungsmitteln, Getränken und Futtermitteln fernhalten.
    Beschmutzte, getränkte Kleidung sofort ausziehen.
    Vor den Pausen und bei Arbeitende Hände waschen.
    Berührung mit den Augen und der Haut vermeiden.
  - Atemschutz:
    Bei kurzzeitiger oder geringer Belastung Atemfiltergerät; bei intensiver bzw. längerer Exposition umluftunabhängiges Atemschutzgerät verwenden.
  - Handschutz:
    Schutzhandschuhe

Das Handschuhmaterial muss undurchlässig und beständig gegen das Produkt / den Stoff / die Zubereitung sein. Aufgrund fehlender Tests kann keine Empfehlung zum Handschuhmaterial für das Produkt / die Zubereitung / das Chemikaliengemisch abgegeben werden.

Auswahl des Handschuhmaterials unter Beachtung der Durchbruchzeiten, Permeationsraten und der Degradation.
- Handschuhmaterial
  Die Auswahl eines geeigneten Handschuhs ist nicht nur vom Material, sondern auch von weiteren Qualitätsmerkmalen abhängig und von Hersteller zu Hersteller unterschiedlich.

ABSCHNITT 9: Physikalische und chemische Eigenschaften

- 9.1 Angaben zu den grundlegenden physikalischen und chemischen Eigenschaften
  - Allgemeine Angaben
  - Aussehen:
    Form: Fest
    Farbe: Nicht bestimmt.
  - Geruch:
    Charakteristisch
    Geruchsschwelle: Nicht bestimmt.
  - pH-Wert: Nicht anwendbar.

- Zustandsänderung
  - Schmelzpunkt/Schmelzbereich: 139-140 °C
  - Siedepunkt/Siedebereich: 160 °C

- Flammpunkt: Nicht anwendbar.

- Entzündlichkeit (fest, gasförmig): Der Stoff ist nicht entzündlich.
**Handelsname: Maleinsäure**

<table>
<thead>
<tr>
<th>Eigenschaft</th>
<th>Wert/Lenkung</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zündtemperatur:</td>
<td>Nicht bestimmt.</td>
</tr>
<tr>
<td>Zersetzungstemperatur:</td>
<td>Nicht bestimmt.</td>
</tr>
<tr>
<td>Selbstzündlichkeit:</td>
<td>Nicht bestimmt.</td>
</tr>
<tr>
<td>Explosionsgefahr:</td>
<td>Das Produkt ist nicht explosionsgefährlich.</td>
</tr>
<tr>
<td>Explosionsgrenzen:</td>
<td>Untere: Nicht bestimmt.</td>
</tr>
<tr>
<td></td>
<td>Obere: Nicht bestimmt.</td>
</tr>
<tr>
<td>Dampfdruck:</td>
<td>Nicht anwendbar.</td>
</tr>
<tr>
<td>Dichte bei 20 °C:</td>
<td>1,59 g/cm³</td>
</tr>
<tr>
<td>Relative Dichte:</td>
<td>Nicht bestimmt.</td>
</tr>
<tr>
<td>Dampfdichte:</td>
<td>Nicht anwendbar.</td>
</tr>
<tr>
<td>Verdampfungsgeschwindigkeit</td>
<td>Nicht anwendbar.</td>
</tr>
<tr>
<td>Löschlichkeit in / Mischbarkeit mit Wasser bei 20 °C:</td>
<td>788 g/l</td>
</tr>
<tr>
<td>Verteilungskoeffizient (n-Octanol/Wasser):</td>
<td>Nicht bestimmt.</td>
</tr>
<tr>
<td>Viskosität:</td>
<td>Dynamisch: Nicht anwendbar.</td>
</tr>
<tr>
<td></td>
<td>Kinematisch: Nicht anwendbar.</td>
</tr>
<tr>
<td>9.2 Sonstige Angaben</td>
<td>Keine weiteren relevanten Informationen verfügbar.</td>
</tr>
</tbody>
</table>

**ABSCHNITT 10: Stabilität und Reaktivität**

- 10.1 Reaktivität
- 10.2 Chemische Stabilität
- Thermische Zersetzung / zu vermeidende Bedingungen: Keine Zersetzung bei bestimmungsgemäßer Verwendung.
- 10.3 Möglichkeit gefährlicher Reaktionen Keine gefährlichen Reaktionen bekannt.
- 10.4 Zu vermeidende Bedingungen Keine weiteren relevanten Informationen verfügbar.
- 10.5 Unverträgliche Materialien: Keine weiteren relevanten Informationen verfügbar.
- 10.6 Gefährliche Zersetzungsprodukte: Keine gefährlichen Zersetzungsprodukte bekannt.

**ABSCHNITT 11: Toxikologische Angaben**

- 11.1 Angaben zu toxikologischen Wirkungen
- Akute Toxizität:

  - Einstufungsrelevante LD/LC50-Werte:
    | Art      | LD50 (mg/kg) |
    |----------|-------------|
    | Oral     | 708         |
    | Dermal   | 1560        |

  - Primäre Reizwirkung: an der Haut: Reizt die Haut und die Schleimhäute.
  - am Auge: Reizwirkung.
  - Sensibilisierung: Durch Hautkontakt Sensibilisierung möglich.
ABSCHNITT 12: Umweltbezogene Angaben

· 12.1 Toxizität
  · Aquatische Toxizität: Keine weiteren relevanten Informationen verfügbar.
· 12.2 Persistenz und Abbaubarkeit Keine weiteren relevanten Informationen verfügbar.
· 12.3 Bioakkumulationspotenzial Keine weiteren relevanten Informationen verfügbar.
· 12.4 Mobilität im Boden Keine weiteren relevanten Informationen verfügbar.
· Weitere ökologische Hinweise:
  · Allgemeine Hinweise:
    Wassergefährdungsklasse 1 (Listeneinstufung): schwach wassergefährdend
    Nicht unverdünnt bzw. in größeren Mengen in das Grundwasser, in Gewässer oder in die Kanalisation gelangen lassen.
· 12.5 Ergebnisse der PBT- und vPvB-Beurteilung
  · PBT: Nicht anwendbar.
  · vPvB: Nicht anwendbar.
· 12.6 Andere schädliche Wirkungen Keine weiteren relevanten Informationen verfügbar.

ABSCHNITT 13: Hinweise zur Entsorgung

· 13.1 Verfahren der Abfallbehandlung
  · Empfehlung: Darf nicht zusammen mit Hausmüll entsorgt werden. Nicht in die Kanalisation gelangen lassen.
  · Ungereinigte Verpackungen:
    · Empfehlung: Entsorgung gemäß den behördlichen Vorschriften.
    · Empfohlenes Reinigungsmittel: Wasser, gegebenenfalls mit Zusatz von Reinigungsmitteln.

ABSCHNITT 14: Angaben zum Transport

· 14.1 UN-Nummer
  · ADR, IMDG, IATA UN1759
· 14.2 Ordnungsgemäße UN-Versandbezeichnung
  · ADR 1759 ÄTZENDER FESTER STOFF, N.A.G. (Maleinsäure)
  · IMDG, IATA CORROSIVE SOLID, N.O.S. (MALEIC ACID)
· 14.3 Transportgefahrenklassen
  · ADR, IMDG, IATA
    · Klasse 8 Ätzende Stoffe
    · Gefahrzettel 8
· 14.4 Verpackungsgruppe
  · ADR, IMDG, IATA III
· 14.5 Umweltgefahren:
  · Marine pollutant: Nein
· 14.6 Besondere Vorsichtsmaßnahmen für den Verwender
  · Achtung: Ätzende Stoffe
  · Kemler-Zahl: 80

(Fortsetzung auf Seite 7)
Handelsname: Maleinsäure

| · EMS-Nummer: | F-A,S-B |
| · 14.7 Massengutbeförderung gemäß Anhang II des MARPOL-Übereinkommens 73/78 und gemäß IBC-Code | Nicht anwendbar. |

| · Transport/weitere Angaben: | |
| · ADR | |
| · Begrenzte Menge (LQ) | 5 kg |
| · Freigestellte Mengen (EQ) | Code: E1 |
| Höchste Nettomenge je Innenverpackung: 30 g | Höchste Nettomenge je Außenverpackung: 1000 g |

| · Beförderungskategorie | 3 |
| · Tunnelbeschränkungscode | E |

| · IMDG | |
| · Limited quantities (LQ) | 5 kg |
| · Exempted quantities (EQ) | Code: E1 |
| Maximum net quantity per inner packaging: 30 g | Maximum net quantity per outer packaging: 1000 g |

| · UN "Model Regulation": | UN1759, ÄTZENDER FESTER STOFF, N.A.G. (Maleinsäure), 8, III |

**ABSCHNITT 15: Rechtsvorschriften**

15.1 Vorschriften zu Sicherheit, Gesundheits- und Umweltschutz/spezifische Rechtsvorschriften für den Stoff oder das Gemisch

- Nationale Vorschriften:
- Klassifizierung nach Betriebssicherheitsverordnung (BetrSichV):
- Wassergefährdungsklasse: WGK 1 (Listeneinstufung): schwach wassergefährdend.
- 15.2 Stoffsicherheitsbeurteilung: Eine Stoffsicherheitsbeurteilung wurde nicht durchgeführt.

**ABSCHNITT 16: Sonstige Angaben**

Die Angaben stützen sich auf den heutigen Stand unserer Kenntnisse, sie stellen jedoch keine Zusicherung von Produkteigenschaften dar und begründen kein vertragliches Rechtsverhältnis.

- Abkürzungen und Akronymen:
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  - IMDG: International Maritime Code for Dangerous Goods
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - EINECS: European Inventory of Existing Commercial Chemical Substances
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - Acute Tox. 4: Acute toxicity, Hazard Category 4
  - Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  - Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  - Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
  - STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
SEZIONE 1: Identificazione della sostanza o della miscela e della società/impresa

- 1.1 Identificatore del prodotto
- Denominazione commerciale: acido maleico
- Articolo numero: 18150
- Numero CAS: 110-16-7
- Numeri CE: 203-742-5
- Numero indice: 607-095-00-3

1.2 Usi pertinenti identificati della sostanza o miscela e usi sconsigliati
Non sono disponibili altre informazioni.

1.3 Informazioni sul fornitore della scheda di dati di sicurezza
- Produttore/fornitore: Electron Microscopy Sciences
  1560 Industry Road
  USA-Hatfield, PA 19440
  Tel: 215-412-8400 Fax: 215-412-8450
  email: sgkccck@aol.com
  www.emsdiasum.com

- Societa Italiana Chimici
  Via Rio Nell Ellba 140
  00138 Rome, Italy
  Tel: 39 06 8800211
  Fax: 39 30 06 8815313
  Web: www.sichim.com

- Informazioni fornite da: Product safety department
- 1.4 Numero telefonico di emergenza:
  ChemTrec 1-800-424-9300 Contract CCN7661
  1-703-527-3887

SEZIONE 2: Identificazione dei pericoli

- 2.1 Classificazione della sostanza o della miscela
- Classificazione secondo il regolamento (CE) n. 1272/2008

GHS07

Acute Tox. 4 H302 Nocivo se ingerito.
Skin Irrit. 2 H315 Provoca irritazione cutanea.
Eye Irrit. 2 H319 Provoca grave irritazione oculare.
Skin Sens. 1 H317 Può provocare una reazione allergica cutanea.
STOT SE 3 H335 Può irritare le vie respiratorie.

- 2.2 Elementi dell’etichetta
- Etichettatura secondo il regolamento (CE) n. 1272/2008
La sostanza è classificata ed etichettata conformemente al regolamento CLP.

(continua a pagina 2)
Scheda di dati di sicurezza
ai sensi del regolamento 1907/2006/CE, Articolo 31

Stampato il: 27.05.2015
Revisione: 27.05.2015

Denominazione commerciale: acido maleico

- Pittogrammi di pericolo

![GHS07]

- Avvertenza Attenzione
- Indicazioni di pericolo
H302 Nocivo se ingerito.
H315 Provoca irritazione cutanea.
H319 Provoca grave irritazione oculare.
H317 Può provocare una reazione allergica cutanea.
H335 Può irritare le vie respiratorie.
- Consigli di prudenza
P261 Evitare di respirare la polvere/i fumi/i gas/la nebbia/i vapori/gli aerosol.
P280 Indossare guanti/indumenti protettivi/Proteggere gli occhi/il viso.
P305+P351+P338 IN CASO DI CONTATTO CON GLI OCCHI: sciaccquare accuratamente per parecchi minuti. Togliere le eventuali lenti a contatto se è agevole farlo. Continuare a sciaccquare.
P321 Trattamento specifico (vedere su questa etichetta).
P405 Conservare sotto chiave.
P501 Smaltire il prodotto/recipiente in conformità con le disposizioni locali / regionali / nazionali / internazionali.

- 2.3 Altri pericoli
- Risultati della valutazione PBT e vPvB
- PBT: Non applicabile.
- vPvB: Non applicabile.

SEZIONE 3: Composizione/informazioni sugli ingredienti

- 3.1 Caratteristiche chimiche: Sostanze
- Numero CAS
110-16-7 acido maleico
- Numero/i di identificazione
- Numeri CE: 203-742-5
- Numero indice: 607-095-00-3

SEZIONE 4: Misure di primo soccorso

- 4.1 Descrizione delle misure di primo soccorso
- Indicazioni generali:
I sintomi di avvelenamento possono comparire dopo molte ore, per tale motivo è necessaria la sorveglianza di un medico nelle 48 ore successive all’incidente.
- Inalazione:
Portare il soggetto in zona molto ben areata e per sicurezza consultare un medico.
Se il soggetto è svenuto provvedere a tenerlo durante il trasporto in posizione stabile su un fianco.
- Contatto con la pelle: Lavare immediatamente con acqua e sapone sciaccquare accuratamente.
- Contatto con gli occhi: Lavare con acqua corrente per diversi minuti tenendo le palpebre ben aperte. Se persiste il dolore consultare il medico.
- Ingestione: Chiamare subito il medico.
- 4.2 Principali sintomi ed effetti, sia acuti che ritardati Non sono disponibili altre informazioni.
SEZIONE 5: Misure antincendio

- 5.1 Mezzi di estinzione
  - Mezzi di estinzione idonei: CO2, polvere o acqua nebulizzata. Estinguere gli incendi di grosse dimensioni con acqua nebulizzata o con schiuma resistente all'alcool.
- 5.2 Pericoli speciali derivanti dalla sostanza o dalla miscela Non sono disponibili altre informazioni.
- 5.3 Raccomandazioni per gli addetti all'estinzione degli incendi
  - Mezzi protettivi specifici: Non sono richiesti provvedimenti particolari.

SEZIONE 6: Misure in caso di rilascio accidentale

- 6.1 Precauzioni personali, dispositivi di protezione e procedure in caso di emergenza Non necessario.
- 6.2 Precauzioni ambientali: Impedire infiltrazioni nella fognatura/nelle acque superficiali/nelle acque freatiche.
- 6.3 Metodi e materiali per il contenimento e per la bonifica:
  - Smaltimento del materiale contaminato conformemente al punto 13.
  - Provvedere ad una sufficiente areazione.
- 6.4 Riferimento ad altre sezioni
  - Per informazioni relative ad un manipolazione sicura, vedere capitolo 7.
  - Per informazioni relative all'equipaggiamento protettivo ad uso personale vedere Capitolo 8.
  - Per informazioni relative allo smaltimento vedere Capitolo 13.

SEZIONE 7: Manipolazione e immagazzinamento

- 7.1 Precauzioni per la manipolazione sicura Per un uso corretto non sono necessari provvedimenti particolari.
- 7.2 Condizioni per l'immagazzinamento sicuro, comprese eventuali incompatibilità
  - Stoccaggio:
    - Requisiti dei magazzini e dei recipienti: Non sono richiesti requisiti particolari.
    - Indicazioni sullo stoccaggio misto: Non necessario.
    - Ulteriori indicazioni relative alle condizioni di immagazzinamento: Mantenere i recipienti ermeticamente chiusi.
- 7.3 Usi finali specifici Non sono disponibili altre informazioni.

SEZIONE 8: Controllo dell'esposizione/protezione individuale

- Ulteriori indicazioni sulla struttura di impianti tecnici: Nessun dato ulteriore, vedere punto 7.
- 8.1 Parametri di controllo
  - Componenti i cui valori limite devono essere tenuti sotto controllo negli ambienti di lavoro: Non Necessario.
  - Ulteriori indicazioni: Le liste valide alla data di compilazione sono state usate come base.
- 8.2 Controlli dell'esposizione
  - Mezzi protettivi individuali:
    - Norme generali protettive e di igiene del lavoro:
      - Tenere lontano da cibo, bevande e foraggi.
      - Togliere immediatamente gli abiti contaminati.
      - Lavarsi le mani prima dell'intervallo o a lavoro terminato.
      - Evitare il contatto con gli occhi e la pelle.
**SEZIONE 9: Proprietà fisiche e chimiche**

| 9.1 Informazioni sulle proprietà fisiche e chimiche fondamentali |
|-----------------------------|-----------------------------|
| **Indicazioni generali**   |                             |
| **Aspetto**                 |                             |
| Forma:                      | Solido                     |
| Colore:                     | Non definito.              |
| Odore:                      | Caratteristico             |
| Soglia olfattiva:           | Non definito.              |
| **valori di pH**            | Non applicabile.           |
| **Cambiamento di stato**    |                             |
| Temperatura di fusione/ambito di fusione: | 139-140 °C |
| Temperatura di ebollizione/ambito di ebollizione: | 160 °C |
| **Punto di infiammabilità:** | Non applicabile.           |
| **Infiammabilità (solido, gassoso):** | Sostanza non infiammabile. |
| **Temperatura di accensione:** |                             |
| Temperatura di decomposizione: | Non definito.             |
| Autoaccensione:             | Non definito.              |
| **Pericolo di esplosione:** | Prodotto non esplosivo.    |
| **Limiti di infiammabilità:** |                             |
| Inferiore:                  | Non definito.              |
| Superiore:                  | Non definito.              |
Denominazione commerciale: acido maleico

(SEgue da pagina 4)

(SEZIONE 10: Stabilità e reattività)

· 10.1 Reattività
· 10.2 Stabilità chimica
· Decomposizione termica/ condizioni da evitare: Il prodotto non si decompone se utilizzato secondo le norme.
· 10.3 Possibilità di reazioni pericolose: Non sono note reazioni pericolose.
· 10.4 Condizioni da evitare: Non sono disponibili altre informazioni.
· 10.5 Materiali incompatibili: Non sono disponibili altre informazioni.
· 10.6 Prodotti di decomposizione pericolosi: Non sono noti prodotti di decomposizione pericolosi.

(SEZIONE 11: Informazioni tossicologiche)

· 11.1 Informazioni sugli effetti tossicologici
· Tossicità acuta:
· Valori LD/LC50 rilevanti per la classificazione:

|   | Orale  | LD50   | 708 mg/kg (rat) |
|   | Cutaneo| LD50   | 1560 mg/kg (rabbit) |

· Irritabilità primaria:
· sulla pelle: Irrita la pelle e le mucose.
· sugli occhi: Irritante.
· Sensibilizzazione: Può provocare sensibilizzazione a contatto con la pelle.

(SEZIONE 12: Informazioni ecologiche)

· 12.1 Tossicità
· Tossicità acquatica: Non sono disponibili altre informazioni.
· 12.2 Persistenza e degradabilità: Non sono disponibili altre informazioni.
· 12.3 Potenziale di bioaccumulo: Non sono disponibili altre informazioni.
· 12.4 Mobilità nel suolo: Non sono disponibili altre informazioni.
· Ulteriori indicazioni in materia ambientale:
· Ulteriori indicazioni:

Pericolosità per le acque classe 1 (D) (Classif. secondo le liste): poco pericoloso
Non immettere nelle acque freatiche, nei corsi d’acqua o nelle fognature non diluito o in grandi quantità.

(continua a pagina 6)
Denominazione commerciale: acido maleico

12.5 Risultati della valutazione PBT e vPvB
- PBT: Non applicabile.
- vPvB: Non applicabile.

12.6 Altri effetti avversi Non sono disponibili altre informazioni.

SEZIONE 13: Considerazioni sullo smaltimento

13.1 Metodi di trattamento dei rifiuti
- Consigli: Non smaltire il prodotto insieme ai rifiuti domestici Non immettere nelle fognature.
- Imballaggi non puliti:
  - Consigli: Smaltimento in conformità con le disposizioni amministrative.
  - Detergente consigliato: Acqua eventualmente con l'aggiunta di detersivi.

SEZIONE 14: Informazioni sul trasporto

14.1 Numero ONU
- ADR, IMDG, IATA UN1759

14.2 Nome di spedizione dell'ONU
- ADR 1759 SOLIDO CORROSIVO, N.A.S. (acido maleico)
- IMDG, IATA CORROSIVE SOLID, N.O.S. (MALEIC ACID)

14.3 Classi di pericolo connesso al trasporto
- ADR, IMDG, IATA
  - Classe 8 Materie corrosive
  - Etichetta 8

14.4 Gruppo di imballaggio
- ADR, IMDG, IATA III

14.5 Pericoli per l'ambiente:
- Marine pollutant: No

14.6 Precauzioni speciali per gli utilizzatori
- Numero Kemler: 80
- Numero EMS: F-A,S-B

14.7 Trasporto di rinfuse secondo l'allegato II di MARPOL 73/78 ed il codice IBC
- Non applicabile.

Trasporto/ulteriori indicazioni:
- ADR
  - Quantità limitate (LQ) 5 kg
  - Quantità esenti (EQ) Codice: EI
  - Categoria di trasporto 3
  - Codice di restrizione in galleria E
**Scheda di dati di sicurezza**
ai sensi del regolamento 1907/2006/CE, Articolo 31

Stampato il: 27.05.2015  
Revisione: 27.05.2015

### Denominazione commerciale: acido maleico

| · IMDG | 5 kg |
| · Limited quantities (LQ) | Code: E1 |
| · Excepted quantities (EQ) | Maximum net quantity per inner packaging: 30 g |
| | Maximum net quantity per outer packaging: 1000 g |
| · UN "Model Regulation": | UN1759, SOLIDO CORROSIVO, N.A.S. (acido maleico), 8, III |

### SEZIONE 15: Informazioni sulla regolamentazione

- **15.1 Norme e legislazione su salute, sicurezza e ambiente specifiche per la sostanza o la miscela**
  Non sono disponibili altre informazioni.

- **15.2 Valutazione della sicurezza chimica:** Una valutazione della sicurezza chimica non è stata effettuata.

### SEZIONE 16: Altre informazioni

I dati sono riportati sulla base delle nostre conoscenze attuali, non rappresentano tuttavia alcuna garanzia delle caratteristiche del prodotto e non motivano alcun rapporto giuridico contrattuale.

- **Abbreviazioni e acronimi:**
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
  IMDG: International Maritime Code for Dangerous Goods  
  IATA: International Air Transport Association  
  GHS: Globally Harmonised System of Classification and Labelling of Chemicals  
  EINECS: European Inventory of Existing Commercial Chemical Substances  
  CAS: Chemical Abstracts Service (division of the American Chemical Society)  
  LC50: Lethal concentration, 50 percent  
  LD50: Lethal dose, 50 percent  
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2  
  Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2  
  Skin Sens. 1: Sensitisation - Skin, Hazard Category 1  
  STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
## 1 화학제품과 회사에 관한 정보

- 제품 식별자
  - 제품명: MALEIC ACID
  - 상품번호: 18150
  - CAS-번호: 110-16-7
  - EC-번호: 203-742-5
  - 색인 번호: 607-095-00-3
- 제품의 권고 용도와 사용상의 제한: 실험실 화학품
- 안전데이터표(Safety Data Sheet) 내 공급업체 관련 상세 정보
  - 제조자/수입자/유통업자 정보:
    - Electron Microscopy Sciences
      1560 Industry Road
      USA-Hatfield, PA 19440
      Tel: 215-412-8400  Fax: 215-412-8450
      email: sgkcck@aol.com
      www.emsdiasum.com
    - Samchang Commercial Co., Ltd.
      Yeo Eui Do
      PO Box 1110
      Seoul, Korea
      Tel: 82 2 703 3040
      Fax: 82 2 717 3298
  - 추가적인 정보 획득 가능: Product safety department
  - 비상연락 전화번호:
    - ChemTrec 1-800-424-9300 Contract CCN7661
    - 1-703-527-3887

## 2 유해성, 위험성

- 순물질 또는 혼합물의 분류

  !

  급성 독성(경구) 구분 4 H302 삽입면 유해함
  피부 부식성/자극성 구분 2 H315 피부에 자극을 일으킴
  심한 눈 손상/자극성 구분 2 H319 눈에 심한 자극을 일으킴
  피부과민성 구분 1 H317 알레르기성 피부 반응을 일으킬 수 있음
  표적기강/회노출 구분 3 H335 호흡기계 자극을 일으킬 수 있음

  - 라벨표기 요소
    - GHS 라벨 요소
      본 화학물질은 화학물질의 분류 및 표기에 관한 국제조화시스템(GHS)에 따라 분류 및 표기되었습니다.

(2 점에계속)
제품명: MALEIC ACID

3 구성성분의 명칭 및 함유량

- 화학적 특성: 화학물질
- CAS-번호 표시: 110-16-7 MALEIC ACID
- 식별 번호: EC: 203-742-5
- 색인 번호: 607-095-00-3

4 응급조치 요령

- 응급조치요령 내용
- 일반적 정보: 중독 증상은 몇 시간이 지난 뒤에 발생할 수 있다. 따라서 사고가 발생한 후에 적어도 48 시간 동안은 의료진의 진료를 받어야 한다.
- 응급조치: 신선한 공기를 흐르게 하여 의사와 상담한다. 피부에 접촉을 한 경우는 즉시 물로 씻어내고 의사와 상담한다. 눈에 들어갔을 때는 즉시 물로 씻어내고 의사와 상담한다. 가장 중요한 급성 중독 및 영양 추가적인 정보가 존재하지 않습니다. 즉각적인 의료처치 및 특별치료가 필요함을 시사하는 징후 추가적인 정보가 존재하지 않습니다.
제품명: MALEIC ACID

5 폭발, 화재시 대처방법
- 소화제
- 적절한 소화제:
  이산화 탄소, 진화용 석회가루 또는 물방울을 사용하고, 더 큰 화재는 물을 분사하거나 알코올
  이 함유된 거품으로 한다.
- 본 화학물질이나 흔합물에서 발생하는 특별 유해성 추가적인 정보가 존재하지 않습니다.
- 소방관에 대한 권고사항
- 화재 진압 시 작용할 보호구 및 예방조치: 특 별한 조치가 필요없음.

6 부주의 사고 시 대처방법
- 개인적 예방조치, 보호장비 및 용기적취 절차 필요없음.
- 항목 관련 예방조치: 하수도방/해수면위의물/지하수로도달하지 않게한다.
- 밀폐 및 정화 방법과 소재:
  항목 13에 따라 오염된 물질을 쓰레기로 처분한다.
  충분한 환기가 되도록 한다.
- 타 석면 참조
  안전관 리에 대한 정보는 제7장을 참고하시오.
  개인보호장비에 대한 정보는 제8장을 참고하시오.
  쓰레기 처리 리에 대한 정보는 제13장으로 참고하시오.

7 취급 및 저장방법
- 안전 취급을 위한 예방조치 올바르게 사용할 경우에는 특별한 주의가 필요없음.
- 화재 및 폭발 사고 예방대책에 관한 정보: 특별한 조치가 필요없음.
- 화학물질성 안전 저장 조건
- 보관:
  - 안전한 저장 방법: 특 별한 요구사항이 없음.
  - 하나의 공통 보관 시설에 대한 보관 관련 정보: 필요없음
- 보관 조건에 관한 추가적인 정보: 용기를 사용하지 않거나 밀폐한 체 보관한다.
- 구체적 최종 사용자 추가적인 정보가 존재하지 않습니다.

8 노출방지 및 개인보호구
- 첨단시설 디자인에 대한 추가정보: 더 이상의 자료는 없음. 항목 7을 참고하시오.
- 통제 변수
- 화학물질의 노출기준, 생물학적 노출기준 등: 생략
- 추가 정보: 제조함당시에 유고한 특 별을 기초로 사용했다.
- 노출 통제
- 개인보호구
- 일반적보호조치 및 위생조치:
  삭로류, 물로 수와 사료로부터 멀리 멀어 놓으려 놓는다.
  더러 워지하거나 음료 수가 물든 곳은 즉시 청소한다.
  손식전이나 작업이 끝난 뒤마다 손을 씻는다.
  눈과 피부와의 접촉은 피한다.
- 호흡기 보호:
  단시간 또는 경미한 오염의 경우에는 호흡자와 기기를 사용한다. 심각한 또는 장기간 노출시에는
  호흡보호장비를 사용한다.

(4쪽에계속)
제품명: MALEIC ACID

손 보호:

보호용 장갑

장갑재질은 제품/원료/조제물투과시험을 거쳐야하며, 내구성이 있어야한다.
테스트를 하지 않기 때문에 제품/조제/화학 혼합물에 적합한 장갑재질에 대한 추천이 없다.
투과 시간, 침투율과 저항력 고려해서 장갑 재료를 선택한다.

장갑의재료
적합한장갑의선정은제품/원료/조제물투과시험을 거쳐야하며, 내구성이 있어야한다.

장갑 재료의 투과시간 정확한관통시간은 보호장갑제조자에 의하여 인지되고, 준수되어야한다.

눈 보호:

확조이는 보안경

9 물리화학적 특성

- 기본 물리 및 화학적 특성에 대한 정보
- 일반정보
- 외형
  - 물리적 상태: 고체
  - 색: 알맞지 않다.
  - 녹는점/비누점: 139-140 °C
  - 더위점/비누점 범위: 160 °C
- pH: 해당사항 없음.
- 상태변화
  - 녹는점/비누점: 139-140 °C
  - 초기 녹는점과 녹는점 범위: 160 °C
- 인화점: 해당사항 없음.
- 인화성(고체, 기체):
  - 이 제품은 가연성이 없다.
- 점화온도:
  - 분해 온도: 알맞지 않다.
- 자기점화: 알맞지 않다.
- 특발위험: 이 제품은 특발위험성이 없다.
- 인화 또는 특발 범위의 상한/하한
  - 아래로:
    - 위로: 알맞지 않다.
  - 증기압: 해당사항 없음.
- 밀도
  - 밀도: 1.59 g/cm³
  - 비중: 알맞지 않다.
  - 증기밀도: 해당사항 없음.
  - 증발 속도: 해당사항 없음.
제품명: MALEIC ACID

10 안전성 및 반응성

반응성
- 화학적 안전성
- 화학적 안전성 및 유해 반응의 가능성 / 피해야 할 조건: 규정에따라사용할경우해체는없다
- 유해반응 가능성 위험한반응으로는알려지지않았다
- 피해야 할 조건: 추가적인 정보가 존재하지 않습니다.
- 유해분해물질: 위험성있는분해물들은알려지지않았다.

11 독성에 관한 정보

- 독성학적 영향에 대한 정보
- 급성 독성:
  - LD/LC50-수치에 따른 분류:
    | 구강의 LD50 | 708 mg/kg (rat) |
    | 피부의 LD50 | 1560 mg/kg (rabbit) |
- 일차적 자극 효과:
- 피부 부식성 또는 자극성: 피부와점막을자극한다.
- 실한 눈 손상 또는 자극성: 자극
- 감각화: 피부접촉을통하여감각화가능성이있다.

12 환경에 미치는 영향

- 독성:
- 수생독성: 추가적인 정보가 존재하지 않습니다.
- 지속성 및 분해성 추가적인 정보가 존재하지 않습니다.
- 생물농축 잠재성 추가적인 정보가 존재하지 않습니다.
- 독성학적 영향에 대한 정보
- 일반 특징:
  - 수질오염등급 1(목록분류): 약하게수질오염이된
  - 흐석시커지않은치대양으로지수나, 하천으로그리고하수도망에도달하지않게한다.
  - PBT(전류성, 생물농축성, 독성 물질) 및 vPvB(고 전류성, 고 생물농축성 물질) 평가 결과
  - PBT(전류성, 생물농축성, 독성 물질): 해당사항 없음.
  - vPvB(고 전류성, 고 생물농축성 물질): 해당사항 없음.
  - 기타 부작용 추가적인 정보가 존재하지 않습니다.
제품명: MALEIC ACID

### 13 폐기시 주의사항

- 폐기를 처리 방법
  - 권고: 생활쓰레기와 함께 처리되어서는 안된다. 하수도망으로 유입되어서는 안된다.
  - 비위생적 포장:
  - 권고: 당국의 지침에 입각한 쓰레기 처리.
  - 추천 세정재: 경유에 따라 서세제가 필요한 경우.

### 14 운송에 필요한 정보

<table>
<thead>
<tr>
<th>유형 번호</th>
<th>ADR, IMDG, IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN 적정 선적명</td>
<td>UN1759</td>
</tr>
<tr>
<td>ADR 적정 선적명</td>
<td>1759 CORROSIVE SOLID, N.O.S. (MALEIC ACID)</td>
</tr>
<tr>
<td>IMDG, IATA 적정 선적명</td>
<td>CORROSIVE SOLID, N.O.S. (MALEIC ACID)</td>
</tr>
</tbody>
</table>

#### 운송 통합 위험 클래스

- ADR, IMDG, IATA

<table>
<thead>
<tr>
<th>등급</th>
<th>위험물 라벨</th>
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<td>8</td>
<td>부식작용하는물질</td>
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<tr>
<th>환경적 유해물질:</th>
<th>아니오</th>
</tr>
</thead>
<tbody>
<tr>
<td>해양오염물질:</td>
<td>아니오</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>이용자 특별 예방조치</th>
<th>경고: 부식작용하는물질</th>
</tr>
</thead>
<tbody>
<tr>
<td>위험 코드:</td>
<td>80</td>
</tr>
<tr>
<td>EMS-번호:</td>
<td>F-A,S-B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MARPOL73/78(선박으로부터의 해양오염방지협약) 부속서2 및 IBC Code(국제선적화물코드)에 따른 별첨(bulk) 운송</th>
</tr>
</thead>
<tbody>
<tr>
<td>해당사항 없음.</td>
</tr>
</tbody>
</table>

#### 운송/추가 정보:

- ADR
  - 한정 수량 (LQ): 5 kg
  - Exepted quantities (EQ)
    - Code: E1
    - Maximum net quantity per inner packaging: 30 g
    - Maximum net quantity per outer packaging: 1000 g

- IMDG
  - Limited quantities (LQ): 5 kg
제품명: MALEIC ACID

<table>
<thead>
<tr>
<th>접수일: 2015.05.27</th>
<th>개정: 2015.05.27</th>
</tr>
</thead>
</table>

### 15 법적 규제현황

- 해당 순물질 또는 응합물에 대한 안전, 보건 및 환경 규제/법률
- Korean Existing Chemical Inventory

<table>
<thead>
<tr>
<th>Code</th>
<th>Product Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>MALEIC ACID</td>
</tr>
</tbody>
</table>

- GHS 라벨 요소
  본 화학물질은 화학물질의 분류 및 표기에 관한 국제조화시스템(GHS)에 따라 분류 및 표기되었습니다.
- 위험 요소

  ![GHS07]

  - GHS07

### 주의 사항

- 위험 분류
  삽입물 유해한 피부에 자극을 일으킴 눈에 심한 자극을 일으킴 알레르기성 피부 반응을 일으킬 수 있음 호흡기계 자극을 일으킬 수 있음
- 주의 분류
  (분진·흡·가스·미스트·증기·스프레이)의 흡입을 피하시오. (보호장갑·보호의·보안의·보안보호구)를(을) 착용하시오. 눈에 물으면 몇 분간 물로 씻어내십시오. 가능하면 콘택트렌즈를 제거하시오. 계속 씻으십시오. (라벨 참조) 처치를 하십시오.
- 잠금장치가 있는 저장장소에 저장하시오.
- 현지/지역/국가/국제 규정에 따라서 내용물 용기 노출
- 화학물질 안전성 평가: 화학물질 안전성 평가가 수행되지 않습니다.

### 16 그 밖의 참고사항

이보고는 우리지식에대한오늘날의상태에대하여평가하고있다. 하지만이보고서는생산특성에관한보증은 기술하지 않았으며법적안전기반을두고있지도않다

- 최초 작성일자: 2015.05.27
- 개정 횟수 및 최종 개정일자: 1 / 2015.05.27
- 맬어와 두문자어:
  ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
  IMDG: International Maritime Code for Dangerous Goods
  IATA: International Air Transport Association
  EINECS: European Inventory of Existing Commercial Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  급성 독성(경구) 구분: Acute toxicity, Hazard Category 4

KR
제품명: MALEIC ACID

피부 부식성/자극성 구분: Skin corrosion/irritation, Hazard Category 2
심한 눈 손상/자극성 구분: Serious eye damage/eye irritation, Hazard Category 2
피부과민성 구분: Sensitisation - Skin, Hazard Category 1
표적장기-1회노출 구분: Specific target organ toxicity - Single exposure, Hazard Category 3

(7쪽부터 계속)
SECCIÓN 1: Identificación de la sustancia o la mezcla y de la sociedad o la empresa

1.1 Identificador del producto
- Nombre comercial: ácido maleico
- Número del artículo: 18150
- Número CAS: 110-16-7
- Número CE: 203-742-5
- Número de clasificación: 607-095-00-3

1.2 Usos pertinentes identificados de la sustancia o de la mezcla y usos desaconsejados
No existen más datos relevantes disponibles.

1.3 Datos del proveedor de la ficha de datos de seguridad
- Fabricante/distribuidor:
  Electron Microscopy Sciences
  1560 Industry Road
  USA-Hatfield, PA 19440
  Tel: 215-412-8400  Fax: 215-412-8450
  email: sgkck@aol.com
  www.emsdiasum.com

- Fabricante/distribuidor:
  Aname
  C/ Perez Galdos no. 2
  28693 Quijorna
  Madrid, Spain
  Tel: +34.91.816.89.50
  Fax: +34.91.816.85.94
  email: ventas@aname.es

- Área de información: Product safety department
- 1.4 Teléfono de emergencia:
  ChemTrec 1-800-424-9300 Contract  CCN7661
  1-703-527-3887

SECCIÓN 2: Identificación de los peligros

2.1 Clasificación de la sustancia o de la mezcla
- Clasificación con arreglo al Reglamento (CE) nº 1272/2008

GHS07

Acute Tox. 4  H302  Nocivo en caso de ingestión.
Skin Irrit. 2   H315  Provoca irritación cutánea.
Eye Irrit. 2   H319  Provoca irritación ocular grave.
Skin Sens. 1   H317  Puede provocar una reacción alérgica en la piel.
STOT SE 3   H335  Puede irritar las vías respiratorias.

2.2 Elementos de la etiqueta
- Etiquetado con arreglo al Reglamento (CE) nº 1272/2008
  La sustancia se ha clasificado y etiquetado de conformidad con el reglamento CLP.
SECCIÓN 3: Composición/información sobre los componentes

· 3.1 Caracterización química: Sustancias
  · Denominación Nº CAS
    110-16-7 ácido maleico
  · Número(s) de identificación
    · Número CE: 203-742-5
    · Número de clasificación: 607-095-00-3

SECCIÓN 4: Primeros auxilios

· 4.1 Descripción de los primeros auxilios
  · Instrucciones generales:
    Los síntomas de intoxicación pueden presentarse después de muchas horas, por lo que se requiere una supervisión médica durante un mínimo de 48 horas después del accidente.
  · En caso de inhalación del producto:
    Suministrar suficiente aire fresco y, para mayor seguridad, consultar al médico. Las personas desmayadas deben tenderse y transportarse de lado con la suficiente estabilidad.
  · En caso de contacto con la piel:
    Lavar inmediatamente con agua y jabón y enjuagar bien.
  · En caso de con los ojos:
    Limpiar los ojos abiertos durante varios minutos con agua corriente. En caso de trastornos persistentes consultar un médico.
  · En caso de ingestión:
    Consultar inmediatamente un médico.
  · 4.2 Principales síntomas y efectos, agudos y retardados
    No existen más datos relevantes disponibles.
Ficha de datos de seguridad
según 1907/2006/CE, Artículo 31

fecha de impresión 27.05.2015
Revisión: 27.05.2015

Nombre comercial: ácido maleico

- 4.3 Indicación de toda atención médica y de los tratamientos especiales que deban dispensarse inmediatamente
No existen más datos relevantes disponibles.

SECCIÓN 5: Medidas de lucha contra incendios

- 5.1 Medios de extinción
- Sustancias extintoras apropiadas:
  CO2, polvo extintor o chorro de agua rociada. Combatir incendios mayores con chorro de agua rociada o espuma resistente al alcohol.
- 5.2 Peligros específicos derivados de la sustancia o la mezcla No existen más datos relevantes disponibles.
- 5.3 Recomendaciones para el personal de lucha contra incendios
  - Equipo especial de protección: No se requieren medidas especiales.

SECCIÓN 6: Medidas en caso de vertido accidental

- 6.1 Precauciones personales, equipo de protección y procedimientos de emergencia No es necesario.
- 6.2 Precauciones relativas al medio ambiente:
  Evitar que penetre en la canalización /aguas de superficie /agua subterráneas.
- 6.3 Métodos y material de contención y de limpieza:
  Desechar el material contaminado como vertido según item 13.
  Asegurar suficiente ventilación.
- 6.4 Referencia a otras secciones
  Ver capítulo 7 para mayor información sobre una manipulación segura.
  Ver capítulo 8 para mayor información sobre el equipo personal de protección.
  Para mayor información sobre cómo desechar el producto, ver capítulo 13.

SECCIÓN 7: Manipulación y almacenamiento

- 7.1 Precauciones para una manipulación segura
  Si se manipulan correctamente, no se requieren medidas especiales.
- Prevención de incendios y explosiones: No se requieren medidas especiales.
- 7.2 Condiciones de almacenamiento seguro, incluidas posibles incompatibilidades
  - Almacenamiento:
    - Exigencias con respecto al almacén y los recipientes: No se requieren medidas especiales.
    - Normas en caso de un almacenamiento conjunto: No es necesario.
    - Indicaciones adicionales sobre las condiciones de almacenamiento:
      Mantener el recipiente cerrado herméticamente.
- 7.3 Usos específicos finales No existen más datos relevantes disponibles.

SECCIÓN 8: Controles de exposición/protección individual

- Instrucciones adicionales para el acondicionamiento de instalaciones técnicas:
  Sin datos adicionales, ver punto 7.
- 8.1 Parámetros de control
  - Componentes con valores límite admisibles que deben controlarse en el puesto de trabajo: Nulo.
  - Indicaciones adicionales: Como base se han utilizado las listas vigentes en el momento de la elaboración.
8.2 Controles de la exposición
· Equipo de protección individual:
· Medidas generales de protección e higiene:
  Mantener alejado de alimentos, bebidas y alimentos para animales.
  Quitarse de inmediato la ropa ensuciada o impregnada.
  Lavarse las manos antes de las pausas y al final del trabajo.
  Evitar el contacto con los ojos y la piel.
· Protección respiratoria:
  Si la exposición va a ser breve o de poca intensidad, colocarse una máscara respiratoria. Para una exposición más intensa o de mayor duración, usar un aparato de respiración autónomo.
· Protección de manos:

Guantes de protección

El material del guante deberá ser impermeable y resistente al producto / substancia / preparado.
Ante la ausencia de tests específicos, no se puede recomendar ningún material específico para guantes de protección contra el producto / preparado / mezcla de substancias químicas.
Selección del material de los guantes en función de los tiempos de rotura, grado de permeabilidad y degradación.
· Material de los guantes
La elección del guante adecuado no depende únicamente del material, sino también de otras características de calidad, que pueden variar de un fabricante a otro.
· Tiempo de penetración del material de los guantes
El tiempo de resistencia a la penetración exacto deberá ser pedido al fabricante de los guantes. Este tiempo debe ser respetado.
· Protección de ojos:

Gafas de protección herméticas

SECCIÓN 9: Propiedades físicas y químicas

· 9.1 Información sobre propiedades físicas y químicas básicas
· Datos generales
· Aspecto:
  Forma: Sólido
  Color: No determinado.
· Olor:
  Característico
· Umbral olfativo:
  No determinado.
· valor pH:
  No aplicable.
· Cambio de estado
  Punto de fusión / campo de fusión: 139-140 °C
  Punto de ebullición / campo de ebullición: 160 °C
· Punto de inflamación:
  No aplicable.
· Inflamabilidad (sólido, gaseiforme):
  La sustancia no es inflamable.
SECCIÓN 10: Estabilidad y reactividad

10.1 Reactividad
10.2 Estabilidad química
10.3 Posibilidad térmica / condiciones que deben evitarse: No se descompone al emplearse adecuadamente.
10.4 Condiciones que deben evitarse: No existen más datos relevantes disponibles.
10.5 Materiales incompatibles: No existen más datos relevantes disponibles.
10.6 Productos de descomposición peligrosos: No se conocen productos de descomposición peligrosos.

SECCIÓN 11: Información toxicológica

11.1 Información sobre los efectos toxicológicos
11.1.1 Toxicidad aguda:

Valores LD/LC50 (dosis letal /dosis letal = 50%) relevantes para la clasificación:

<table>
<thead>
<tr>
<th>Tipo</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>708 mg/kg (rat)</td>
<td>1560 mg/kg (rabbit)</td>
</tr>
</tbody>
</table>

Efecto estimulante primario:
- en la piel: Irrita la piel y las mucosas.
- en el ojo: Produce irritaciones.

Sensibilización: Posible sensibilización al entrar en contacto con la piel.
Nombre comercial: ácido maleico

SECCIÓN 12: Información ecológica

- 12.1 Toxicidad
  - Toxicidad acuática: No existen más datos relevantes disponibles.
  - Toxidad y degradabilidad: No existen más datos relevantes disponibles.
- 12.3 Potencial de bioacumulación: No existen más datos relevantes disponibles.
- 12.4 Movilidad en el suelo: No existen más datos relevantes disponibles.
- Indicaciones medioambientales adicionales:
  - Indicaciones generales:
    Nivel de riesgo para el agua 1 (clasificación de listas): escasamente peligroso para el agua
    En estado no diluido o no neutralizado, no dejar que se infiltre en aguas subterráneas, aguas superficiales o en alcantarillados.
  - 12.5 Resultados de la valoración PBT y mPmB
    - PBT: No aplicable.
    - mPmB: No aplicable.
  - 12.6 Otros efectos adversos: No existen más datos relevantes disponibles.

SECCIÓN 13: Consideraciones relativas a la eliminación

- 13.1 Métodos para el tratamiento de residuos
  - Recomendación: No debe desecharse con la basura doméstica. No debe llegar al alcantarillado.
  - Embalajes sin limpiar:
    - Recomendación: Eliminar conforme a las disposiciones oficiales.
    - Producto de limpieza recomendado: Agua, eventualmente añadiendo productos de limpieza.

SECCIÓN 14: Información relativa al transporte

- 14.1 Número UN
  - ADR, IMDG, IATA UN1759
- 14.2 Designación oficial de transporte de las Naciones Unidas
  - ADR 1759 SÓLIDO CORROSIVO, N.E.P. (ácido maleico)
  - IMDG, IATA CORROSIVE SOLID, N.O.S. (MALEIC ACID)
- 14.3 Clase(s) de peligro para el transporte
  - ADR, IMDG, IATA
- 14.4 Grupo de embalaje
  - ADR, IMDG, IATA III
- 14.5 Peligros para el medio ambiente:
  - Contaminante marino: No
- 14.6 Precauciones particulares para los usuarios
  - Atención: Materias corrosivas
  - Número Kemler: 80
**Nombre comercial: ácido maleico**

( se continúa en página 6 )

<table>
<thead>
<tr>
<th>· Número EMS:</th>
<th>F-A,S-B</th>
</tr>
</thead>
<tbody>
<tr>
<td>· 14.7 Transporte a granel con arreglo al anexo II del Convenio Marpol 73/78 y del Código IBC</td>
<td>No aplicable.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>· Transporte/datos adicionales:</th>
</tr>
</thead>
<tbody>
<tr>
<td>· ADR</td>
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<tr>
<td>· Cantidades limitadas (LQ)</td>
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<td>· Cantidades exceptuadas (EQ)</td>
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<table>
<thead>
<tr>
<th>· &quot;Reglamentación Modelo&quot; de la UNECE:</th>
</tr>
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<tbody>
<tr>
<td>UN1759, SÓLIDO CORROSIVO, N.E.P. (ácido maleico), 8, III</td>
</tr>
</tbody>
</table>

**SECCIÓN 15: Información reglamentaria**

<table>
<thead>
<tr>
<th>· 15.1 Reglamentación y legislación en materia de seguridad, salud y medio ambiente específicas para la sustancia o la mezcla</th>
</tr>
</thead>
<tbody>
<tr>
<td>No existen más datos relevantes disponibles.</td>
</tr>
</tbody>
</table>

| · 15.2 Evaluación de la seguridad química: Una evaluación de la seguridad química no se ha llevado a cabo. |

**SECCIÓN 16: Otra información**

Los datos se fundan en el estado actual de nuestros conocimientos, pero no constituyen garantía alguna de cualidades del producto y no generan ninguna relación jurídica contractual.

<table>
<thead>
<tr>
<th>· Abreviaturas y acrónimos:</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)</td>
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<td>EINECS: European Inventory of Existing Commercial Chemical Substances</td>
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<td>LD50: Lethal dose, 50 percent</td>
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<tr>
<td>Acute Tox. 4: Acute toxicity, Hazard Category 4</td>
</tr>
<tr>
<td>Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2</td>
</tr>
<tr>
<td>Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2</td>
</tr>
<tr>
<td>Skin Sens. 1: Sensitisation - Skin, Hazard Category 1</td>
</tr>
<tr>
<td>STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3</td>
</tr>
</tbody>
</table>