



SAFETY DATA SHEET MALEIC ACID

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	MALEIC ACID
Product number	718
REACH registration number	01-2119488705-25-XXXX
CAS number	110-16-7
EU index number	607-095-00-3
EC number	203-742-5

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

Identified uses	Chemical
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1.3. Details of the supplier of the safety data sheet

Supplier	Univar Aquarius House 6 Mid Point Business Park Bradford BD3 7AY +44 1274 267300 sds@univar.com +44 1274 267306
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1.4. Emergency telephone number

Emergency Contact Number (Outside Office Hours)	SGS - +32 (0)3 575 55 55 (24h)
Sds No.	718

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (EC/1272/2008)

Physical hazards	Not Classified
Health hazards	Acute Tox. 4 - H302 Acute Tox. 4 - H312 Skin Irrit. 2 - H315 Eye Dam. 1 - H318 Skin Sens. 1 - H317 STOT SE 3 - H335
Environmental hazards	Not Classified

Classification (67/548/EEC or 1999/45/EC) Xn; R21/22. Xi; R41, R37/38. R43

2.2. Label elements

EC number	203-742-5
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MALEIC ACID

Pictogram



Signal word

Danger

Hazard statements

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

Precautionary statements

P261 Avoid breathing vapour/ spray.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P362+P364 Take off contaminated clothing and wash it before reuse.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container in accordance with national regulations.

2.3. Other hazards

This substance is not classified as PBT or vPvB according to current EU criteria. Dust may form explosive mixture with air.

SECTION 3: Composition/information on ingredients

3.1. Substances

Product name	MALEIC ACID
REACH registration number	01-2119488705-25-XXXX
EU index number	607-095-00-3
CAS number	110-16-7
EC number	203-742-5

SECTION 4: First aid measures

4.1. Description of first aid measures

General information	NOTE! Effects may be delayed. Keep affected person under observation.
Inhalation	Move affected person to fresh air at once. Get medical attention if any discomfort continues.
Ingestion	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Rinse mouth thoroughly with water. Give plenty of water to drink. Get medical attention.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. Get medical attention if any discomfort continues.
Eye contact	Rinse immediately with plenty of water. Remove any contact lenses and open eyelids wide apart. Continue to rinse for at least 15 minutes. Get medical attention immediately. Continue to rinse.

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

Inhalation	May cause respiratory system irritation.
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Ingestion	Harmful if swallowed. Gastrointestinal symptoms, including upset stomach.
Skin contact	Harmful in contact with skin. Causes skin irritation. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage. Severe irritation, burning and tearing.

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

Notes for the doctor	Treat symptomatically.
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SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog.
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5.2. Special hazards arising from the substance or mixture

Specific hazards	Dust may form explosive mixture with air.
Hazardous combustion products	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.

5.3. Advice for firefighters

Special protective equipment for firefighters	Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.
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SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Wear protective clothing as described in Section 8 of this safety data sheet. Avoid inhalation of dust and contact with skin and eyes. Provide adequate ventilation. Avoid generation and spreading of dust. Keep unnecessary and unprotected personnel away from the spillage.
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6.2. Environmental precautions

Environmental precautions	Avoid the spillage or runoff entering drains, sewers or watercourses. Spillages or uncontrolled discharges into watercourses must be reported immediately to the Environmental Agency or other appropriate regulatory body.
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6.3. Methods and material for containment and cleaning up

Methods for cleaning up	Collect powder using special dust vacuum cleaner with particle filter or carefully sweep into suitable waste disposal containers and seal securely. Flush contaminated area with plenty of water.
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6.4. Reference to other sections

Reference to other sections	For personal protection, see Section 8. For waste disposal, see Section 13.
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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Usage precautions	Avoid spilling. Avoid inhalation of dust and contact with skin and eyes. Provide adequate ventilation. Dust may form explosive mixture with air. Avoid inhalation of vapours.
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7.2. Conditions for safe storage, including any incompatibilities

Storage precautions	Store in tightly-closed, original container in a dry, cool and well-ventilated place. Avoid contact with oxidising agents.
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7.3. Specific end use(s)

Specific end use(s)	The identified uses for this product are detailed in Section 1.2.
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SECTION 8: Exposure Controls/personal protection

8.1. Control parameters

Ingredient comments

No exposure limits known for ingredient(s).

DNEL

Workers - Inhalation; Long term systemic effects: 3 mg/m³
 Workers - Inhalation; Long term local effects: 3 mg/m³
 Workers - Inhalation; Short term systemic effects: 3 mg/m³
 Workers - Inhalation; Short term local effects: 3 mg/m³
 Industry - Dermal; Short term local effects: 0.55 mg/m³
 Industry - Dermal; Long term systemic effects: 3.3 mg/kg/day
 Industry - Dermal; Long term local effects: 0.04 mg/m³
 Industry - Dermal; Short term systemic effects: 58 mg/kg/day
 Consumer - Dermal; Short term systemic effects: 167 mg/kg/day

PNEC

- Fresh water; 0.1 mg/l
 - Marine water; 0.01 mg/l
 - Intermittent release; 0.4281 mg/l
 - Sediment (Freshwater); 0.334 mg/kg
 - Sediment (Marinewater); 0.0334 mg/kg
 - Soil; 0.0415 mg/kg
 - STP; 44.6 mg/l

8.2. Exposure controls

Protective equipment



Appropriate engineering controls

Provide adequate ventilation. Provide eyewash station and safety shower.

Eye/face protection

Wear chemical splash goggles. EN 166

Hand protection

Wear protective gloves. EN 374 e.g. Neoprene. Nitrile rubber. Rubber (natural, latex).

Other skin and body protection

Wear suitable protective clothing as protection against splashing or contamination.

Hygiene measures

Avoid inhalation of dust and contact with skin and eyes. Wash hands at the end of each work shift and before eating, smoking and using the toilet. When using do not eat, drink or smoke. Promptly remove any clothing that becomes contaminated. Care should be taken to avoid contact with contaminants when removing contaminated clothing. Wash contaminated clothing before reuse. Keep away from food, drink and animal feeding stuffs.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Particulate filter, type P2.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance

Crystalline powder.

Colour

White/off-white.

Odour

Odourless.

Odour threshold

No information available.

pH

Not determined.

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Melting point	132 - 135°C
Initial boiling point and range	160°C @
Flash point	127°C
Evaporation rate	No information available.
Evaporation factor	No information available.
Flammability (solid, gas)	No information available.
Upper/lower flammability or explosive limits	No information available.
Vapour pressure	No information available.
Vapour density	No information available.
Relative density	1.59 @ 20°C
Bulk density	750 - 800 kg/m ³
Solubility(ies)	478.8 g/l water @ 20°C
Partition coefficient	: (-0.79) - (-0.32) log Pow: 1.3
Auto-ignition temperature	No information available.
Decomposition Temperature	No information available.
Viscosity	No information available.
Explosive properties	Not considered to be explosive. Under certain conditions capable of dust explosion.
Oxidising properties	Does not meet the criteria for classification as oxidising.

9.2. Other information

Other information	No information available.
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SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity	No information available.
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10.2. Chemical stability

Stability	Stable at normal ambient temperatures and when used as recommended.
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10.3. Possibility of hazardous reactions

Possibility of hazardous reactions	Dust may form explosive mixture with air. Take precautionary measures against static discharges.
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10.4. Conditions to avoid

Conditions to avoid	Avoid excessive heat for prolonged periods of time.
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10.5. Incompatible materials

Materials to avoid	Strong alkalis. Strong oxidising agents.
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10.6. Hazardous decomposition products

Hazardous decomposition products	Thermal decomposition or combustion may liberate carbon oxides and other toxic gases or vapours.
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SECTION 11: Toxicological information

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11.1. Information on toxicological effects

Acute toxicity - oral

Acute toxicity oral (LD₅₀
mg/kg) 708.0

Species Rat

ATE oral (mg/kg) 708.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀
mg/kg) 1,560.0

Species Rabbit

ATE dermal (mg/kg) 1,560.0

Skin corrosion/irritation

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/irritation

Serious eye damage/irritation Causes serious eye damage.

Respiratory sensitisation

Respiratory sensitisation No specific test data are available.

Skin sensitisation

Skin sensitisation May cause an allergic skin reaction.

Germ cell mutagenicity

Genotoxicity - in vitro Does not contain any substances known to be mutagenic.

Carcinogenicity

Carcinogenicity Does not contain any substances known to be carcinogenic.

Reproductive toxicity

Reproductive toxicity - fertility Does not contain any substances known to be toxic to reproduction.

Specific target organ toxicity - single exposure

STOT - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure

STOT - repeated exposure No specific test data are available.

Aspiration hazard

Aspiration hazard Not available.

Inhalation May cause respiratory system irritation.

Ingestion Harmful if swallowed.

Skin contact Harmful in contact with skin. Irritating to skin. May cause sensitisation by skin contact.

Eye contact Causes serious eye damage.

SECTION 12: Ecological Information

Ecotoxicity The product components are not classified as environmentally hazardous. However, large or frequent spills may have hazardous effects on the environment.

MALEIC ACID

12.1. Toxicity

Toxicity Not considered toxic to fish.

Acute toxicity - fish LC₅₀, 48 hours: 106 mg/l, Fish
LC₅₀, 96 hours: 75 mg/l, Onchorhynchus mykiss (Rainbow trout)

Acute toxicity - aquatic invertebrates EC₅₀, 24 hours: 160 mg/l, Daphnia magna
EC₅₀, 48 hours: 42.81 mg/l, Daphnia magna

Acute toxicity - aquatic plants EC₅₀, 72 hours: 74.35 mg/l, Pseudokirchneriella subcapitata

Acute toxicity - microorganisms EC10, 18 hours: 44.6 mg/l,

12.2. Persistence and degradability

Persistence and degradability The product is biodegradable.

12.3. Bioaccumulative potential

Bioaccumulative potential The product does not contain any substances expected to be bioaccumulating.

Partition coefficient : (-0.79) - (-0.32) log Pow: 1.3

12.4. Mobility in soil

Mobility The product is soluble in water.

12.5. Results of PBT and vPvB assessment

Results of PBT and vPvB assessment This substance is not classified as PBT or vPvB according to current EU criteria.

12.6. Other adverse effects

Other adverse effects No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

General information Waste is classified as hazardous waste. Disposal to licensed waste disposal site in accordance with the local Waste Disposal Authority. Do not puncture or incinerate, even when empty.

Disposal methods Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.

SECTION 14: Transport information

14.1. UN number

UN No. (ADR/RID) 3261

UN No. (IMDG) 3261

UN No. (ICAO) 3261

UN No. (ADN) 3261

14.2. UN proper shipping name

Proper shipping name (ADR/RID) CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.

Proper shipping name (IMDG) CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.

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Proper shipping name (ICAO) CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.

Proper shipping name (ADN) CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.

14.3. Transport hazard class(es)

ADR/RID class	8
ADR/RID classification code	C4
ADR/RID label	8
IMDG class	8
ICAO class/division	8
ADN class	8

Transport labels



14.4. Packing group

ADR/RID packing group	III
IMDG packing group	III
ADN packing group	III
ICAO packing group	III

14.5. Environmental hazards

Environmentally hazardous substance/marine pollutant

No.

14.6. Special precautions for user

EmS	F-A, S-B
ADR transport category	3
Emergency Action Code	2X
Hazard Identification Number (ADR/RID)	80
Tunnel restriction code	(E)

14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code

SECTION 15: Regulatory information

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

EU legislation	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) (as amended). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended).
Inventory Information	AICS DSL IECS EINECS ENCS KECL NZIOC PICCS TSCA

15.2. Chemical safety assessment

MALEIC ACID

A chemical safety assessment has been carried out.

SECTION 16: Other information

Revision comments NOTE: Lines within the margin indicate significant changes from the previous revision.

Revision date 11/12/2015

Revision 02

Supersedes date 23/07/2010

SDS number 718

Version number 1.000

SDS status Approved.

Signature Jitendra Panchal

Risk phrases in full R22 Harmful if swallowed.
R36/37/38 Irritating to eyes, respiratory system and skin.
R43 May cause sensitisation by skin contact.

Hazard statements in full H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.