



Maleic anhydride

Safety Data Sheet

according to Regulation (EU) 2015/830

Issue date: 5/31/2007 Revision date: 3/27/2020

Version: 5.0

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

1.1. Product identifier

Chemical type : Substance
Trade name : Maleic anhydride
EC Index-No. : 607-096-00-9
EC-No. : 203-571-6
CAS-No. : 108-31-6
REACH registration No : 01-2119472428-31
Product code : MOL_1121_001_MOL_1122_001_MOL_1122_001_P

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

1.2.1. Relevant identified uses

Main use category : Industrial use, Professional use
Industrial/Professional use spec : Manufacture of substance
Use as an intermediate
Polymer production

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer: MOL Hungarian Oil and Gas Public Limited Company, Refining

Address: 2443 Százhalombatta, POB.1.

Telephone: +36-23-552-511,

Fax: +36-23-553-122

Distributor: MOL Hungarian Oil and Gas Public Limited Company

Address: 1117 Budapest, Október huszonharmadika utca 18.

Telephone, fax.: +36-1-209-0000

The competent person responsible for Safety Data Sheet: sds@mol.hu

1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number	Comment
United Kingdom	National Poisons Information Service (Belfast Centre) Royal Victoria Hospital	Grosvenor Road BT12 6BA Belfast	0344 892 0111	
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0344 892 0111	
United Kingdom	National Poisons Information Service (Cardiff Centre) Gwenwyn Ward, Llandough Hospital	Penarth CF64 2XX Cardiff	0344 892 0111	
United Kingdom	National Poisons Information Service Edinburgh Royal Infirmary of Edinburgh	Little France Crescent EH16 4SA Edinburgh	0344 892 0111	
United Kingdom	Guy's & St Thomas' Poisons Unit Medical Toxicology Unit, Guy's & St Thomas' Hospital Trust	Avonley Road SE14 5ER London	+44 20 7188 7188	
United Kingdom	National Poisons Information Service (Newcastle Centre) Regional Drugs and Therapeutics Centre, Wolfson Unit	Claremont Place Newcastle-upon-Tyne NE1 4LP Newcastle	0344 892 0111	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute toxicity (oral), Category 4 H302
Skin corrosion/irritation, Category 1B H314
Respiratory sensitisation, Category 1 H334
Skin sensitisation, category 1A H317
Specific target organ toxicity — Repeated exposure, Category 1 H372

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Full text of H statements : see section 16

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) :

Danger

Hazard statements (CLP) :

H302 - Harmful if swallowed.
H314 - Causes severe skin burns and eye damage.
H317 - May cause an allergic skin reaction.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H372 - Causes damage to organs (respiratory system) through prolonged or repeated exposure (inhalation).

Precautionary statements (CLP) :

P260 - Do not breathe dust.
P280 - Wear eye protection, face protection, protective clothing, face shield.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .
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.
P310 - Immediately call a doctor.
P342+P311 - If experiencing respiratory symptoms: Call a doctor.
P501 - Dispose of contents/container to an approved waste disposal plant.

EUH-statements :

EUH071 - Corrosive to the respiratory tract.

2.3. Other hazards

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent
Name : Maleic anhydride
CAS-No. : 108-31-6
EC-No. : 203-571-6
EC Index-No. : 607-096-00-9

Name	Product identifier	%
maleic anhydride (Main constituent)	(CAS-No.) 108-31-6 (EC-No.) 203-571-6 (EC Index-No.) 607-096-00-9 (REACH-no) 01-2119472428-31-0007	≥ 99.5
maleic acid	(CAS-No.) 110-16-7 (EC-No.) 203-742-5 (EC Index-No.) 607-095-00-3	≤ 0.3

Full text of H-statements: see section 16

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Finely dispersed particles form explosive mixtures in air. Do not give anything by mouth to an unconscious person. Before attempting to rescue casualties, isolate area from all potential sources of ignition including disconnecting electrical supply.

First-aid measures after inhalation : Breathing Remove person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice. Immediately begin artificial respiration if breathing has ceased. Seek immediate medical attention.

First-aid measures after skin contact : Remove contaminated clothing, contaminated footwear and dispose of safely. Wash affected area with soap and water. Seek medical attention if skin irritation, swelling or redness develops and persists.

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First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If dust particles remain in the eye, do not rub the eye as mechanical abrasion due to the dust may damage the cornea. Immediately obtain specialist medical assessment and treatment for the casualty.

First-aid measures after ingestion : Do not induce vomiting. Rinse mouth out with water. Immediately call a POISON CENTER/doctor.

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

Symptoms/effects after inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled. Cough.

Symptoms/effects after skin contact : Highly corrosive to skin. Symptoms: reddening, irritation.

Symptoms/effects after eye contact : Permanent eye damage. Mechanical irritation.

Symptoms/effects after ingestion : Gastrointestinal complaints.

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Foam (trained personnel only). Water fog (trained personnel only). Carbon dioxide. Other inert gases (subject to regulations). Sand or earth. Dry powder.

Unsuitable extinguishing media : Do not use direct water jets on the burning product. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Combustible.

Explosion hazard : Dust could form explosive mixtures with air.

Hazardous decomposition products in case of fire : Carbon dioxide. Carbon monoxide. Toxic fumes may be released.

Hungarian fire hazard

5.3. Advice for firefighters

Firefighting instructions : Evacuate area. Contain the extinguishing fluids by bunding.

Protection during firefighting : In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Other information : Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide. High temperature decomposition products are harmful by inhalation.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Evacuate area.

6.1.1. For non-emergency personnel

Protective equipment : Antistatic non-skid safety shoes or boots. Work gloves (preferably gauntlets) providing adequate chemical resistance.

Emergency procedures : Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). Stop or contain leak at the source, if safe to do so. Avoid contact with skin, eyes and clothing. Do not breathe dust. If required, notify relevant authorities according to all applicable regulations.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

prevent product from entering sewers, rivers or other bodies of water. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Stop leak without risks if possible.

Methods for cleaning up : Ventilate affected area. Use approved industrial vacuum cleaner for removal. Avoid contact with water.

6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling	: Ensure that all relevant regulations regarding handling and storage facilities of flammable products are followed. Keep away from heat/sparks/open flames/hot surfaces. Dust could form explosive mixtures with air. Take precautionary measures against static electricity. Avoid dust formation. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe dust. Do not eat, drink or smoke when using this product. Keep away from food and beverages. Wash the hands thoroughly after handling.
Handling temperature	: < 50
Hygiene measures	: Remove contaminated clothes. Contaminated work clothing should not be allowed out of the workplace. Separate working clothes from town clothes. Launder separately.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Empty containers may contain flammable product residues. Do not weld, solder, drill, cut or incinerate empty containers, unless they have been properly cleaned.
Storage conditions	: Keep only in original container. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Incompatible products	: Oxidizing agent. Halogens. Strong bases. Metals. Combustible products. Water.
Incompatible materials	: Heat sources. Sources of ignition. Direct sunlight.
Storage temperature	: < 50 °C

7.3. Specific end use(s)

Site documentation to support safe handling arrangements including the selection of engineering, administrative and personal protective equipment controls in accordance with risk-based management systems is available at each manufacturing site.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Maleic anhydride (108-31-6)		
United Kingdom	WEL TWA (mg/m ³)	1 mg/m ³
United Kingdom	WEL STEL (mg/m ³)	3 mg/m ³

Maleic anhydride (108-31-6)	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	58 mg/kg bodyweight/day
Acute - local effects, dermal	0.55 mg/cm ²
Long-term - systemic effects, dermal	3.3 mg/kg bodyweight/day
Long-term - local effects, dermal	0.04 mg/cm ²
PNEC (Water)	
PNEC aqua (freshwater)	0.074 mg/l
PNEC aqua (intermittent, freshwater)	0.744 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0.0624 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	3.33 mg/l

8.2. Exposure controls

Appropriate engineering controls	: Provide local exhaust or general room ventilation.
Personal protective equipment	: Use of personal protective equipment must be consistent with good occupational hygiene practices. Gloves. EN 374. In case of splash hazard: safety glasses. EN 166. Protective clothing. Protective goggles. Dust production: dust mask with filter type P2.

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Materials for protective clothing	: Protective clothing. Clothing to protect against heat and flame (EN 11612)
Hand protection	: Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Gloves must be periodically inspected and changed in case of wear, perforations or contaminations.
Eye protection	: If contact is likely, a protection (protective shield and/or safety goggles) should be used.
Skin and body protection	: Wear suitable coveralls to prevent exposure to the skin. Chemical resistant safety shoes. Coveralls should be changed at the end of the work shift and cleaned as necessary to avoid transfer of product to clothes or underwear.
Respiratory protection	: No respiratory protection needed under normal use conditions. to avoid respiratory tract irritation inhalation exposure should be kept to a minimum. If exposure levels cannot be determined or estimated with adequate confidence, or an oxygen deficiency is possible, only SCBA's should be used



Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance	: Crystals.
Physical state	: Solid
Colour	: white.
Melting point	: 52.3 °C
Freezing point	: ≥ 0 °C
Boiling point	: 200 °C 1013,25 hPa
Flash point	: > 103 °C
Explosive limits (vol %)	: 1.4 – 7.1 vol %
Vapour pressure	: 0.33 hPa 25°C
Density	: 1.48 g/cm ³ 20°C
Solubility in water	: 400 g/l 20°C

9.2. Other information

Additional information : The above data are informative, accurate physical-chemical data of the product are specified on the product certificate.

SECTION 10: Stability and reactivity

10.1. Reactivity

This substance is stable under all ordinary circumstances at ambient temperatures, and if released into the environment.

10.2. Chemical stability

Stable under normal conditions. Hygroscopic.

10.3. Possibility of hazardous reactions

Contact with strong oxidizers (peroxides, chromates, etc.) may cause a fire hazard.

10.4. Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. They may be ignited by heat, sparks, static electricity or flames.

10.5. Incompatible materials

Oxidizing agent. Strong bases. metals. Amines. Water.

10.6. Hazardous decomposition products

No decomposition if stored normally.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed.

maleic anhydride (108-31-6)	
LD50 oral rat	1090 mg/kg bodyweight literature data
LD50 dermal rabbit	2620 mg/kg literature data

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maleic anhydride (108-31-6)

LC50 inhalation rat (mg/l)	> 4.35 mg/l 1 h
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Skin corrosion/irritation	: Causes severe skin burns.
Serious eye damage/irritation	: Assumed to cause serious eye damage
Respiratory or skin sensitisation	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
STOT-single exposure	: Not classified
STOT-repeated exposure	: Causes damage to organs (respiratory system) through prolonged or repeated exposure (inhalation).
Aspiration hazard	: Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

maleic anhydride (108-31-6)

LC50 fish 1	75 mg/l <i>Lepomis macrochirus</i> , literature data
EC50 Daphnia 1	42.81 mg/l <i>Daphnia magna</i> , literature data
EC50 72h algae (1)	74.32 mg/l
NOEC chronic crustacea	10 mg/l <i>Daphnia magna</i> (21 days), literature data
NOEC chronic algae	11.8 mg/l

12.2. Persistence and degradability

maleic anhydride (108-31-6)

Chemical oxygen demand (COD)	3100 g O ₂ /g substance
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12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

Maleic anhydride (108-31-6)

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: 2012. évi CLXXXV. törvény a hulladékról. DIRECTIVE 2008/98/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 19 November 2008 on waste and repealing certain Directives.
Waste treatment methods	: Contain and dispose of waste according to local regulations. External recovery and recycling of waste should comply with applicable local and/or national regulations. Where possible (e.g. in the absence of relevant contamination), recycling of used substance is feasible and recommended. If recycling is not possible, eliminate in accordance with local valid waste disposal regulations.
Sewage disposal recommendations	: Do not empty into drains. Dispose of at a licensed waste collection centre.
Waste disposal recommendations	: Clear up spills immediately and dispose of waste safely. Dispose of waste or used sacks/containers according to local regulations.
Additional information	: Handle empty containers with care because residual vapours are flammable.
Ecology - waste materials	: Hazardous waste. Avoid any discharge of the product into waste water. Recycle by distillation. Recycle/reuse. Disposal in high-temperature incinerator (> 1200 °C).
EWC (EURAL) code	: 16 03 05* - organic wastes containing dangerous substances




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SECTION 14: Transport information

In accordance with ADN / ADR / IATA / IMDG / RID

ADR	RID	ADN	IMDG	IATA
14.1. UN number				
2215	2215	2215	2215	2215
14.2. UN proper shipping name				
MALEIC ANHYDRIDE	MALEIC ANHYDRIDE	MALEIC ANHYDRIDE	MALEIC ANHYDRIDE	Maleic anhydride
14.3. Transport hazard class(es)				
8 	8 	8	8	8 
14.4. Packing group				
III	III	III	III	III
14.5. Environmental hazards				
Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No	Dangerous for the environment : No Marine pollutant : No	Dangerous for the environment : No
14.6. Special precautions for user				
80	80		EmS-No. (Fire) F-A EmS-No. (Spillage) S-B	
C4	C4	C4		
No supplementary information available				

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

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006. 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, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006.

No REACH Annex XVII restrictions

Maleic anhydride is not on the REACH Candidate List

Maleic anhydride is not on the REACH Annex XIV List

15.1.2. National regulations

15.2. Chemical safety assessment

A chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

	Supersedes	Added	
	Revision date	Modified	
2.1	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Modified	
2.2	Precautionary statements (CLP)	Modified	
2.2	EUH-statements	Added	
2.2	Hazard statements (CLP)	Modified	

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Abbreviations and acronyms:

ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Median effective concentration
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
TLM	Median Tolerance Limit
vPvB	Very Persistent and Very Bioaccumulative

Data sources : 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, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. <http://echa.europa.eu/>. CONCAWE registration dossier. Data arise from reference works and literature. Data relies on practical experience.

Training advice : Normal use of this product shall imply use in accordance with the instructions on the packaging.

Classification for mixtures and used evaluation method according to regulation (EC) 1272/2008 (CLP)

Acute toxicity (oral), Category 4	H302
Skin corrosion/irritation, Category 1B	H314
Respiratory sensitisation, Category 1	H334
Skin sensitisation, category 1A	H317
Specific target organ toxicity — Repeated exposure, Category 1	H372

Full text of H- and EUH-statements:

Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Resp. Sens. 1	Respiratory sensitisation, Category 1
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
Skin Sens. 1A	Skin sensitisation, category 1A
STOT RE 1	Specific target organ toxicity — Repeated exposure, Category 1
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H372	Causes damage to organs through prolonged or repeated exposure.
EUH071	Corrosive to the respiratory tract.

SDS EU (REACH Annex II) MOL

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.