

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

1.1 Product identifier

Trade name **Maleic anhydride**

Stock number: A12178
CAS Number: 108-31-6
EC number: 203-571-6
Index number: 607-096-00-9

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

No further relevant information available.
SU24 Scientific research and development


1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Alfa Aesar GmbH & Co.KG
A Johnson Matthey Company
Zeppelinstr. 7b
76185 Karlsruhe / Germany
Tel: +49 (0) 721 84007 280
Fax: +49 (0) 721 84007 300
Email: tech@alfa.com
www.alfa.com
Informing department: Product safety Tel + +049 (0) 7275 988687-0
Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)
Poison Information Center Mainz
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240


SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

 GHS08 health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

 GHS05 corrosion


Skin Corr. 1B H314 Causes severe skin burns and eye damage.

 GHS07


Acute Tox. 4 H302 Harmful if swallowed.

Skin Sens. 1 H317 May cause an allergic skin reaction.


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

 C; Corrosive

R34: Causes burns.

 Xn; Harmful

R22: Harmful if swallowed.

 Xn; Sensitising

R42/43: May cause sensitisation by inhalation and skin contact.

Information concerning particular hazards for human and environment:

Other hazards that do not result in classification

Not applicable

No information known.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms

The substance is classified and labelled according to the CLP regulation.



GHS05 GHS07 GHS08

Signal word

Danger

Hazard statements

H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P285 In case of inadequate ventilation wear respiratory protection.
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
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 Substances

CAS# Designation: 108-31-6 Maleic anhydride

Identification number(s):

EC number: 203-571-6

Index number: 607-096-00-9

SECTION 4: First aid measures

4.1 Description of first aid measures

General information

Instantly remove any clothing soiled by the product.

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After inhalation	Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
After skin contact	Seek immediate medical advice. Instantly wash with water and soap and rinse thoroughly.
After eye contact	Seek immediate medical advice.
After swallowing	Rinse opened eye for several minutes under running water. Then consult doctor.
4.2 Most important symptoms and effects, both acute and delayed	Seek medical treatment.
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	CO ₂ , extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.
Suitable extinguishing agents	
5.2 Special hazards arising from the substance or mixture	If this product is involved in a fire, the following can be released: Carbon monoxide and carbon dioxide
5.3 Advice for firefighters	
Protective equipment:	Wear self-contained breathing apparatus. Wear full protective suit.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures	Wear protective equipment. Keep unprotected persons away. Ensure adequate ventilation
6.2 Environmental precautions:	Do not allow material to be released to the environment without proper governmental permits. Do not allow product to reach sewage system or water bodies. Do not allow to enter the ground/soil.
6.3 Methods and material for containment and cleaning up:	Use neutralizing agent. Dispose of contaminated material as waste according to item 13. Ensure adequate ventilation.
Prevention of secondary hazards:	No special measures required.
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 information on disposal.

SECTION 7: Handling and storage

7.1 Precautions for safe handling	Handle under dry protective gas. Keep containers tightly sealed. Store in cool, dry place in tightly closed containers. Ensure good ventilation/exhaustion at the workplace. Prevent formation of dust.
Information about protection against explosions and fires:	No information known.
7.2 Conditions for safe storage, including any incompatibilities	
Storage	
Requirements to be met by storerooms and containers:	No special requirements.
Information about storage in one common storage facility:	Store away from water. Do not store together with acids. Store away from strong bases. Store away from oxidising agents. Store away from reducing agents. Store away from amines. Store away from alkali metals.
Further information about storage conditions:	Store under dry inert gas. This product is moisture sensitive. Keep container tightly sealed. Store in cool, dry conditions in well sealed containers. Protect from humidity and keep away from water. Store in a locked cabinet or with access restricted to technical experts or their assistants.
7.3 Specific end use(s)	No further relevant information available.

SECTION 8: Exposure controls/personal protection

Additional information about design of technical systems:	Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
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8.1 Control parameters

Components with critical values that require monitoring at the workplace:

108-31-6 Maleic anhydride (100,0%)

AGW (Germany)	Long-term value: 0,41 mg/m ³ , 0,1 ppm 1;=2=(I);DFG, Y, Sa, 11
PEL (USA)	Long-term value: 1 mg/m ³ , 0,25 ppm
REL (USA)	Long-term value: 1 mg/m ³ , 0,25 ppm
TLV (USA)	Long-term value: 0,01 mg/m ³ , 0,0025 ppm (SEN) NIC-DSEN, RSEN,*inhalable fraction + vapor

Additional information:	No data
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8.2 Exposure controls

Personal protective equipment

General protective and hygienic measures

Breathing equipment:

Recommended filter device for short term use:

The usual precautionary measures should be adhered to in handling the chemicals.
Keep away from foodstuffs, beverages and food.
Instantly remove any soiled and impregnated garments.
Wash hands during breaks and at the end of the work.
Avoid contact with the eyes and skin.
Maintain an ergonomically appropriate working environment.
Use breathing protection with high concentrations.

Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

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Protection of hands:	Check protective gloves prior to each use for their proper condition. 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.
Material of gloves	Nitrile rubber, NBR
Penetration time of glove material	Not determined
Eye protection:	Tightly sealed safety glasses. Full face protection
Body protection:	Protective work clothing.

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SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information

Appearance:

Form:	Flakes or pellets
Colour:	White
Smell:	Not determined
Odour threshold:	Not determined.

pH-value: Not applicable.

Change in condition

Melting point/Melting range:	52-56 °C
Boiling point/Boiling range:	202 °C
Sublimation temperature / start:	Not determined

Flash point:	103 °C
Inflammability (solid, gaseous)	Not determined.
Ignition temperature:	380 °C
Decomposition temperature:	Not determined
Self-inflammability:	Not determined.

Danger of explosion: Product is not explosive.

Critical values for explosion:

Lower:	1,4 Vol %
Upper:	7,1 Vol %
Steam pressure at 20 °C:	0,2 hPa
Density at 20 °C	1,48 g/cm ³
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.

Solubility in / Miscibility with

Water:	Hydrolyzes
Partition coefficient (n-octanol/water):	Not determined.

Viscosity:	
dynamic:	Not applicable.
kinematic:	Not applicable.

9.2 Other information No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity

10.2 Chemical stability

Thermal decomposition / conditions to be avoided:

10.3 Possibility of hazardous reactions

10.5 Incompatible materials:

No information known.
Stable under recommended storage conditions.
No decomposition if used and stored according to specifications.
Reacts with strong oxidizing agents
Acids
Oxidising agents
Bases
Water/moisture
Reducing agents
Amines
Alkali metals
Carbon monoxide and carbon dioxide

10.6 Hazardous decomposition products:

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity:

Harmful if swallowed.
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

LD/LC50 values that are relevant for classification:

Oral	LD50	400 mg/kg (rat)
Dermal	LD50	2620 mg/kg (rabbit)

Skin irritation or corrosion:

Eye irritation or corrosion:

Sensitization:

Germ cell mutagenicity:	Causes severe skin burns.
Carcinogenicity:	Causes serious eye damage.
	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
	May cause an allergic skin reaction.
	The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.
	ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.
	The Registry of Toxic Effects of Chemical Substances (RTECS) contains tumorigenic and/or carcinogenic and/or neoplastic data for this substance.
	The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.

Reproductive toxicity:

Specific target organ system toxicity - repeated exposure:

Specific target organ system toxicity - single exposure:

No effects known.

No effects known.

No effects known.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.

Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity:

12.2 Persistence and degradability

12.3 Bioaccumulative potential

12.4 Mobility in soil

No further relevant information available.

No further relevant information available.

No further relevant information available.

No further relevant information available.

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Trade name **Maleic anhydride**

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Additional ecological information:
General notes:

Do not allow material to be released to the environment without proper governmental permits.
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 bodies or sewage system.
Avoid transfer into the environment.

12.5 Results of PBT and vPvB assessment

Not applicable.

PBT:

Not applicable.

vPvB:

12.6 Other adverse effects

No further relevant information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Recommendation

Hand over to disposers of hazardous waste.
Must be specially treated under adherence to official regulations.
Consult state, local or national regulations for proper disposal.

Uncleaned packagings:
Recommendation:

Disposal must be made according to official regulations.

SECTION 14: Transport information

UN-Number
ADR, IMDG, IATA

UN2215

14.2 UN proper shipping name
ADR
IMDG, IATA

2215 MALEIC ANHYDRIDE
MALEIC ANHYDRIDE

14.3 Transport hazard class(es)

ADR



Class
Label
IMDG, IATA

8 (C4) Corrosive substances.
8



Class
Label

8 Corrosive substances.
8

Packing group
ADR, IMDG, IATA

III

14.5 Environmental hazards:

Not applicable.

14.6 Special precautions for user

Kemler Number:

Warning: Corrosive substances.

EMS Number:

80

Segregation groups

F-A,S-B

Acids

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC
Code

Not applicable.

Transport/Additional information:

ADR

Excepted quantities (EQ):

E0

Limited quantities (LQ)

LQ24

Transport category

3

Tunnel restriction code

E

UN "Model Regulation":

UN2215, MALEIC ANHYDRIDE, 8, III

SECTION 15: Regulatory information

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

Australian Inventory of Chemical

Substance is listed.

Substances

Substance is not listed.

Standard for the Uniform Scheduling of

Medicines and Poisons

National regulations

Information about limitation of use:

Employment restrictions concerning young persons must be observed.
For use only by technically qualified individuals.

Classification according to VbF:

Not applicable

Technical instructions (air):

Class	Share in %
I	100.0

Water hazard class:

Water hazard class 1 (Assessment by list): slightly hazardous for water.

Other regulations, limitations and prohibitive

regulations

ELINCS (European List of Notified Chemical

Substance is not listed.

Substances)

Substance of Very High Concern (SVHC)

according to the REACH Regulations (EC)

No. 1907/2006.

REACH - Pre-registered substances

Substance is not listed.

Substance is listed.

15.2 Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS:

Health, Safety and Environmental Department.

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO: International Civil Aviation Organization
ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)
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

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Trade name **Maleic anhydride**

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GHS: Globally Harmonized 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)
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1

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