Safety Data Sheet

29 CFR 1910.1200 App D

Maleic Anhydride

Version number: 1.0

SECTION 1: Identification

1.1 Product identifier

Identification of the substance 2,5-Furandione

Trade name Maleic Anhydride

CAS number 108-31-6

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

Relevant identified uses Chemicals for various applications

Uses advised against Do not use for squirting or spraying
Do not use for products which come into direct contact with the skin

1.3 Details of the supplier of the safety data sheet

Valudor Products, LLC
179 Calle Magdalena Suite 100
Encinitas, California CA 92024
United States

Telephone: +1 (760) 635 8500
e-mail: info@valudor.com
Website: www.valudor.com

1.4 Emergency telephone number

Emergency information service 800-535-5053 (Infotrac)

As above or next toxicological information centre.

SECTION 2: Hazard(s) identification

2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Classification				
Section	**Hazard class**	**Category**	**Hazard class and category**	**Hazard state-ment**
A.1O	acute toxicity (oral)	4	Acute Tox. 4	H302
A.2	skin corrosion/irritation	1B	Skin Corr. 1B	H314
A.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
A.4R	respiratory sensitization	1	Resp. Sens. 1	H334
A.4S	skin sensitization	1A	Skin Sens. 1A	H317

Classification				
Section	**Hazard class**	**Category**	**Hazard class and category**	**Hazard statement**
A.9	specific target organ toxicity - repeated exposure	1	STOT RE 1	H372
B.cD	combustible dust	Comb. Dust	cD	OSHA003

For full text of abbreviations: see SECTION 16

The most important adverse physicochemical, human health and environmental effects

Skin corrosion produces an irreversible damage to the skin; namely, visible necrosis through the epidermis and into the dermis.
Delayed or immediate effects can be expected after short or long-term exposure.

2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Signal word danger

Pictograms

GHS05, GHS07, GHS08

Hazard statements

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 (if inhaled).
OSHA003 May form combustible dust concentrations in air.

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapors/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P285 In case of inadequate ventilation wear respiratory protection.
P301+P312 If swallowed: Call a poison center/doctor/.../ if you feel unwell.
P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
P302+P352 IF ON SKIN: Wash with plenty of soap and water.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
P304+P341 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.

Precautionary statements

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 poison center/doctor.
P342+P311	If experiencing respiratory symptoms: Call a poison center or doctor.
P363	Wash contaminated clothing before reuse.
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards

Dust explosion hazards.

Hazards not otherwise classified

Corrosive to the respiratory tract.

Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Maleic Anhydride
Identifiers	
CAS No	108-31-6
Molecular formula	$C_4H_2O_3$
Molar mass	98.06 $^{g}/_{mol}$
Purity	≥ 99.5 %

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Do not leave affected person unattended.
Remove victim out of the danger area.
Take off immediately all contaminated clothing.
Symptoms may develop several hours following exposure; medical observation therefore necessary for at least 48 hours.
In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Remove person to fresh air and keep comfortable for breathing.
Mouth to mouth resuscitation should be avoided. Use alternative methods, preferably with oxygen or compressed air driven apparatus.
If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

Following skin contact

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water.
After contact with skin, wash immediately with plenty of water and soap.
Call a physician immediately. Causes poorly healing wounds.

Following eye contact

Rinse immediately carefully and thoroughly with eye shower or water.
Get immediate medical advice/attention.
Remove contact lenses, if present and easy to do. Continue rinsing.

Following ingestion

Rinse mouth immediately and drink plenty of water.
Do NOT induce vomiting.
Get immediate medical advice/attention.

Notes for the doctor

None.

4.2 Most important symptoms and effects, both acute and delayed

These information are not available.

4.3 Indication of any immediate medical attention and special treatment needed

None.

SECTION 5: Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

water mist, alcohol resistant foam, carbon dioxide (CO2)

Unsuitable extinguishing media

water jet, fire extinguishing powder

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.
Danger of dust explosion.
Deposited combustible dust has considerable explosion potential.

Hazardous combustion products

carbon monoxide (CO), carbon dioxide (CO2)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes.
Coordinate firefighting measures to the fire surroundings.
Do not allow firefighting water to enter drains or water courses.
Collect contaminated firefighting water separately.
Fight fire with normal precautions from a reasonable distance.

Special protective equipment for firefighters

chemical protection suit, self-contained breathing apparatus (SCBA)

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.
Ventilate affected area.
Control of dust.
Avoidance of ignition sources.
Do not breathe dust.
Do not get in eyes, on skin, or on clothing.
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water.
Retain contaminated washing water and dispose of it.
If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Take up mechanically.

Advice on how to clean up a spill

Take up mechanically.
Collect spillage.

Appropriate containment techniques

Neutralization techniques.

Other information relating to spills and releases

Place in appropriate containers for disposal.
Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5.
Personal protective equipment: see section 8.
Incompatible materials: see section 10.
Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.
Use only in well-ventilated areas.
Keep away from sources of ignition - No smoking.
Take precautionary measures against static discharge.
Only vacuum cleaners containing no ignition sources may be used for combustible dusts.
Use explosion-proof electrical/ventilating/lighting/equipment.
Use only non-sparking tools.

Specific notes/details

Layers, deposits and heaps of combustible dust must be considered, like any other source which can form a hazardous explosive atmosphere.
Dust deposits may accumulate on all deposition surfaces in a technical room.
Danger of dust explosion.

Handling of incompatible substances or mixtures

Do not mix with alkali.

Measures to protect the environment

Avoid release to the environment.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.
Remove contaminated clothing and protective equipment before entering eating areas.
Do not breathe dust.
Do not get in eyes, on skin, or on clothing.
Wash thoroughly after handling.
Preventive skin protection (barrier creams/ointments) is recommended.

7.2 Conditions for safe storage, including any incompatibilities

Explosive atmospheres

Removal of dust deposits.
Only vacuum cleaners containing no ignition sources may be used for combustible dusts.

Flammability hazards

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharge.
Ground/bond container and receiving equipment.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, humidity, direct light irradiation, sunlight

Consideration of other advice

Keep away from food, drink and animal feedingstuffs.
Keep container tightly closed and dry.
Keep in a cool place.

Ventilation requirements

Provision of sufficient ventilation.

Packaging compatibilities

Only packagings which are approved (e.g. acc. to DOT) may be used.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

Country	Name of agent	CAS No	Identifier	TWA [ppm]	TWA [mg/m³]	STEL [ppm]	STEL [mg/m³]	Notation	Source
US	maleic anhydride	108-31-6	REL	0.25 (10 h)	1 (10 h)	-	-	-	NIOSH REL
US	maleic anhydride	108-31-6	PEL	0.25	1	-	-	-	29 CFR 1910.1000
US	maleic anhydride (cis-butenedioic anhydride)	108-31-6	PEL (CA)	0.1	0.4	-	-	-	Cal/OSHA PEL

Notation

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified

Human health values

Relevant DNELs and other threshold levels

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	0.081 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
DNEL	0.081 mg/m³	human, inhalatory	worker (industry)	chronic - local effects

Environment values

Relevant PNECs and other threshold levels		
Endpoint	**Threshold level**	**Environmental compartment**
PNEC	0.038 $^{mg}/_{l}$	freshwater
PNEC	0.004 $^{mg}/_{l}$	marine water
PNEC	44.6 $^{mg}/_{l}$	sewage treatment plant (STP)
PNEC	0.296 $^{mg}/_{kg}$	freshwater sediment
PNEC	0.03 $^{mg}/_{kg}$	marine sediment
PNEC	0.037 $^{mg}/_{kg}$	soil

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Hand protection

Protective gloves		
Material	**Material thickness**	**Breakthrough times of the glove material**
NBR: acrylonitrile-butadiene rubber	≥ 0,4 mm	>480 minutes (permeation: level 6)
IIR: isobutene-isoprene (butyl) rubber	≥ 0,5 mm	>480 minutes (permeation: level 6)
FKM: fluoro-elastomer	these information are not available	>480 minutes (permeation: level 6)
CR: chloroprene (chlorobutadiene) rubber	these information are not available	>480 minutes (permeation: level 6)

Wear suitable gloves.
Chemical protection gloves are suitable, which are tested according to EN 374.
Check leak-tightness/impermeability prior to use.
In the case of wanting to use the gloves again, clean them before taking off and air them well.
For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Other protection measures

Protective clothing for use against solid particulates.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.
Particulate filter device (EN 143).
Type: A-P2 (combined filters against particles and organic gases and vapors, color code: Brown/White).

Environmental exposure controls

Use appropriate container to avoid environmental contamination.
Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	solid (Solid in various forms)
Color	white
Odor	weak/faint

Other safety parameters

pH (value)	1 (in aqueous solution: 50 $^{g}/_{l}$, 25 °C)
Melting point/freezing point	51.5 – 53.8 °C
Boiling point or initial boiling point and boiling range	200.1 °C at 1,014 hPa
Flash point	not applicable
Evaporation rate	not determined
Flammability (solid, gas)	this material is combustible, but will not ignite readily
Explosive limits	not determined
Vapor pressure	15.1 Pa at 22 °C
Density	not determined
Vapor density	this information is not available
Relative density	information on this property is not available
Solubility(ies)	
Water solubility	~400 $^{g}/_{l,}$ hydrolyzed (half-life < 12 hours)

Partition coefficient	
n-octanol/water (log KOW)	-2.61 (19.8 °C) (pH 4 - 9) (OECD Guideline 107)
Auto-ignition temperature	not determined
Decomposition temperature	290 °C
Viscosity	not relevant (solid)
Dynamic viscosity	not determined
Explosive properties	dust explosion hazards
Oxidizing properties	none
Information for relevant hazard classes according to GHS	there is no additional information

9.2 Other information

there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

This material is not reactive under normal ambient conditions.

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

Reacts with water, releasing excess pressure or heat.
Danger of dust explosion.
Liberation of excessive heat with:
Alkalis.
Amine.
Release of flammable materials with:
Metals.

10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Take precautionary measures against static discharge.
Protect from moisture.

10.5 Incompatible materials

water, bases, oxidizers, amine, metal

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known.
Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

If not otherwise specified the classification is based on:

Animal studies; Evidence from any other toxicity tests; Expert judgment (weight of evidence determination).

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Acute toxicity

Shall not be classified as acutely toxic (dermal).
Harmful if swallowed.

Exposure route	Endpoint	Value	Species	Method
inhalation: vapor	LC50	>4.35 $^{mg}/_{l}$/1h	rat	-
oral	LD50	1,090 $^{mg}/_{kg}$	rat	OECD Guideline 401
dermal	LD50	2,620 $^{mg}/_{kg}$	rabbit, female	-

Skin corrosion/irritation

Causes severe skin burns and eye damage.
(OECD Guideline 404)

Serious eye damage/eye irritation

Causes serious eye damage.
(OECD Guideline 405)

Respiratory or skin sensitization

Skin sensitization
May cause an allergic skin reaction.
(OECD Guideline 429)

Respiratory sensitization
May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.
(OECD Guideline 471, OECD Guideline 475, OECD Guideline 476)

Carcinogenicity

Shall not be classified as carcinogenic.
(OECD Guideline 451)

IARC Monographs

not listed

National Toxicology Program (United States)

not listed

OSHA Carcinogens

Not listed.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.
(OECD Guideline 414 , OECD Guideline 416)

Specific target organ toxicity - single exposure

Classification could not be established because:
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Specific target organ toxicity - repeated exposure

Exposure route	Endpoint	Value	Exposure time	Species	Method	Notes
oral	NOAEL	60 mg/kg bw/day	90 d	dog	OECD Guideline 409	
oral	LOEL	32 mg/kg bw/day		rat	OECD Guideline 452	
oral	LOAEL	250 mg/kg bw/day		rat, female		
oral	LOAEL	100 mg/kg bw/day	90 d	rat, male		
inhalation: vapor	NOAEC	3.3 $^{mg}/_{m^3}$	180 d	rat		
inhalation: vapor	LOAEC	1.1 $^{mg}/_{m^3}$	180 d	rat		

Hazard category	Target organ	Exposure route
1	respiratory system	if inhaled

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

Other information

Corrosive to the respiratory tract.

11.2 Other information

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Based on available data, the classification criteria are not met.

Endpoint	Exposure time	Value	Species	Method
LC50	96 h	75 $^{mg}/_{l}$	bluegill (Lepomis macrochirus)	US EPA 660/3-75-009
EC50	48 h	42.81 $^{mg}/_{l}$	daphnia magna	OECD Guideline 202
ErC50	72 h	74.35 $^{mg}/_{l}$	algae (pseudokirchneriella subcapitata)	OECD Guideline 201

Aquatic toxicity (chronic)

Based on available data, the classification criteria are not met.

Endpoint	Exposure time	Value	Species	Method
EC50	21 d	77 $^{mg}/_{l}$	daphnia magna	-
NOEC	21 d	10 $^{mg}/_{l}$	daphnia magna	-

12.2 Persistence and degradability

Process of degradability			
Process	**Degradation rate**	**Time**	**Method**
carbon dioxide generation	>90 %	25 d	OECD Guideline 301 B

Biodegradation

The substance is readily biodegradable.

Persistence

No data available.

12.3 Bioaccumulative potential

n-octanol/water (log KOW) -2.61 (19.8 °C)
(pH 4 - 9)
(OECD Guideline 107)

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

12.6 Other adverse effects

This information is not available.

Remarks

Wassergefährdungsklasse, WGK (water hazard class): 1

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packages

Completely emptied packages can be recycled.
Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1 UN number

DOT	UN2215
IMDG-Code	UN2215
ICAO-TI	UN2215

14.2 UN proper shipping name

DOT	Maleic anhydride
IMDG-Code	MALEIC ANHYDRIDE
ICAO-TI	Maleic anhydride

14.3 Transport hazard class(es)

DOT	8
IMDG-Code	8
ICAO-TI	8

14.4 Packing group

DOT	III
IMDG-Code	III
ICAO-TI	III

14.5 Environmental hazards	-
14.6 Special precautions for user	-

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

14.8 Information for each of the UN Model Regulations

Transport of dangerous goods by road or rail (49 CFR US DOT) Additional information

Particulars in the shipper's declaration	UN2215, Maleic anhydride, 8, III
Reportable quantity (RQ)	5,000 lbs (2,270 kg) (maleic anhydride)
Danger label(s)	8

Special provisions (SP)	IB8, IP3, T4, TP1
ERG No	156

International Maritime Dangerous Goods Code (IMDG) Additional information

Marine pollutant	-
Danger label(s)	8

Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-B
Stowage category	A
Segregation group	1 - Acids.

International Civil Aviation Organization (ICAO-IATA/DGR) Additional information

Danger label(s)	8

Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

National regulations (United States)

Toxic Substance Control Act (TSCA) substance is listed

Superfund Amendment and Reauthorization Act (SARA TITLE III)

The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)

not listed

Specific Toxic Chemical Listings (EPCRA Section 313)

Toxics Release Inventory: Specific Toxic Chemical Listings			
Name of substance	**CAS No**	**Remarks**	**Effective date**
maleic anhydride	108-31-6	-	1987-01-01

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)

Name of substance	CAS No	Remarks	Statutory code	Final RQ pounds (Kg)
maleic anhydride	108-31-6	-	1 3 4	5000 (2270)

Legend

1 "1" indicates that the statutory source is section 311(b)(2) of the Clean Water Act

3 "3" indicates that the source is section 112 of the Clean Air Act

4 "4" indicates that the source is section 3001 of the Resource Conservation and Recovery Act (RCRA)

Clean Air Act

not listed

Right to Know Hazardous Substance List

Hazardous Substance List (NJ-RTK)

Name of substance	CAS No	Remarks	Classifications
maleic anhydride	108-31-6	-	CO R1.

Legend

CO Corrosive

R1 Reactive - First Degree

California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

not listed

Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System.
American Coatings Association.

Category	Rating	Description
Chronic	*	chronic (long-term) health effects may result from repeated overexposure
Health	3	major injury likely unless prompt action is taken and medical treatment is given
Flammability	2	material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur
Physical hazard	0	material that is normally stable, even under fire conditions, and will not react with water, polymerize, decompose, condense, or self-react. Non-explosive
Personal protection	-	-

NFPA® 704

National Fire Protection Association: Standard System for the Identification of the Hazards of Materials for Emergency Response (United States).

Category	Degree of hazard	Description
Flammability	2	material that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur
Health	3	material that, under emergency conditions, can cause serious or permanent injury
Instability	0	material that is normally stable, even under fire conditions
Special hazard	-	-

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance by the supplier.

SECTION 16: Other information, including date of preparation or last revision

Date of preparation: 2021-07-20

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
29 CFR 1910.1000	29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits)
49 CFR US DOT	49 CFR U.S. Department of Transportation
Cal/OSHA PEL	California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
DOT	Department of Transportation (USA)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
ERG No	Emergency Response Guidebook - Number
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IARC Monographs	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LOAEC	Lowest Observed Adverse Effect Concentration
LOAEL	Lowest Observed Adverse Effect Level
LOEL	Lowest Observed Effect Level
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NIOSH REL	National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs)

Abbr.	Descriptions of used abbreviations
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
NPCA-HMIS® III	National Paint and Coatings Association: Hazardous Materials Identification System - HMIS® III, Third Edition
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PEL	Permissible exposure limit
PNEC	Predicted No-Effect Concentration
ppm	Parts per million
STEL	Short-term exposure limit
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT).
International Maritime Dangerous Goods Code (IMDG).
Dangerous Goods Regulations (DGR) for the air transport (IATA).

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H372	Causes damage to organs (respiratory system) through prolonged or repeated exposure (if inhaled).
OSHA003	May form combustible dust concentrations in air.

Responsible for the safety data sheet

Chemical Regulatory Compliance Company
Chicago, IL
USA

Telephone: +1 (630) 410-1660
e-Mail: GHS@crc-us.com
Website: www.crc-us.com

Disclaimer

This information is based upon the present state of our knowledge.
This SDS has been compiled and is solely intended for this product.