

PBTC (2-Phosphonobutane-1,2,4-Tricarboxylic Acid)

Version number: 1.0

SECTION 1: Identification

1.1 Product identifier

Trade name PBTC (2-Phosphonobutane-1,2,4-Tricarboxylic Acid)

CAS number not relevant (mixture)

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

Relevant identified uses Water treatment

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 statement
B.16	substance or mixture corrosive to metals	1	Met. Corr. 1	H290

For full text of abbreviations: see SECTION 16

2.2 Label elements

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

Signal word warning

PBTC (2-Phosphonobutane-1,2,4-Tricarboxylic Acid)

Pictograms

GHS05



Hazard statements

H290 May be corrosive to metals.

Precautionary statements

P234 Keep only in original container.

P390 Absorb spillage to prevent material damage.

P406 Store in corrosive resistant container with a resistant inner liner.

2.3 Other hazards

Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be a PBT or a vPvB.

SECTION 3: Composition/information on ingredients

3.1 Substances

Not relevant (mixture).

3.2 Mixtures

Description of the mixture

Hazardous ingredients				
Name of substance	Identifier	Wt%	Classification acc. to GHS	Pictograms
2-phosphonobutane-1,2,4-tricarboxylic acid	CAS No 37971-36-1	50	Eye Irrit. 2 / H319 Met. Corr. 1 / H290	

The specific exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Take off immediately all contaminated clothing.

In all cases of doubt, or when symptoms persist, seek medical advice.

Following inhalation

Provide fresh air.

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

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Following skin contact

After contact with skin, wash immediately with plenty of water.
If skin irritation occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.

Following eye contact

Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.

Following ingestion

Rinse mouth with water (only if the person is conscious).
Do NOT induce vomiting.
Get 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

fire extinguishing powder, coordinate firefighting measures to the fire surroundings

Unsuitable extinguishing media

none

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.
Substance or mixture corrosive to metals.

Hazardous combustion products

carbon monoxide (CO), carbon dioxide (CO₂), phosphorus oxides (P_xO_y)

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.

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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.

Avoid inhaling sprayed product.

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

In case of formation of gases/vapors/mists suppress with water spray

Keep away from drains, surface and ground water.

Retain contaminated washing water and dispose of it.

6.3 Methods and material for containment and cleaning up

Advice on how to clean up a spill

Collect spillage.

Absorbent material (e.g. sand, diatomaceous earth, acid binder, universal binder, sawdust, etc.).

Appropriate containment techniques

Neutralization techniques.

Use of adsorbent materials.

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.

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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.

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 mist/vapors/spray.

Do not get in eyes, on skin, or on clothing.

Wash hands after use.

Preventive skin protection (barrier creams/ointments) is recommended.

7.2 Conditions for safe storage, including any incompatibilities

Corrosive conditions

Store in corrosive resistant container with a resistant inner liner.

Flammability hazards

None.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, frost, UV-radiation/sunlight

Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

Ventilation requirements

Provision of sufficient ventilation.

Specific designs for storage rooms or vessels

Keep container tightly closed and in a well-ventilated place.

Keep in a cool place.

Packaging compatibilities

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

7.3 Specific end use(s)

No information available.

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Relevant DNELs of components of the mixture						
Name of substance	CAS No	End-point	Threshold level	Protection goal, route of exposure	Used in	Exposure time
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	DNEL	15 mg/m ³	human, inhalatory	worker (industry)	chronic - systemic effects
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	DNEL	4.2 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects

Relevant PNECs of components of the mixture					
Name of substance	CAS No	Endpoint	Threshold level	Environmental compartment	Exposure time
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	PNEC	3.33 mg/l	freshwater	short-term (single instance)
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	PNEC	0.33 mg/l	marine water	short-term (single instance)
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	PNEC	50.4 mg/l	sewage treatment plant (STP)	short-term (single instance)
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	PNEC	1.47 mg/kg	freshwater sediment	short-term (single instance)
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	PNEC	0.491 mg/kg	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

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Hand protection

Protective gloves		
Material	Material thickness	Breakthrough times of the glove material
PVC: polyvinyl chloride	≥ 0,5 mm	>30 minutes (permeation: level 2)

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

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.

Body protection

Protective clothing against liquid chemicals.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Type: ABEK (combined filters against gases and vapors, color code: Brown/Grey/Yellow/Green).

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	liquid
Color	colourless to yellowish
Odor	Nearly odorless

Other safety parameters

pH (value)	<2
Melting point/freezing point	-15 °C
Boiling point or initial boiling point and boiling range	>100 °C
Flash point	>100 °C
Evaporation rate	not determined
Flammability (solid, gas)	not relevant (fluid)

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Explosive limits	not determined
Vapor pressure	not determined
Density	1.27 g/cm ³ at 20 °C
Vapor density	this information is not available
Relative density	information on this property is not available
Solubility(ies)	
Water solubility	miscible in any proportion
Partition coefficient	
n-octanol/water (log KOW)	not determined
Auto-ignition temperature	>500 °C
Decomposition temperature	>100 °C
Viscosity	
Kinematic viscosity	not determined
Dynamic viscosity	<50 mPa s at 25 °C
Explosive properties	none
Oxidizing properties	none
Information for relevant hazard classes according to GHS	
Corrosive to metals	category 1: corrosive to metals

9.2 Other information

Temperature class (USA, acc. to NEC 500)	T1 (maximum permissible surface temperature on the equipment: 450°C)
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SECTION 10: Stability and reactivity

10.1 Reactivity

Substance or mixture corrosive to metals.

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

Strong exothermic reaction with strong alkalis.

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10.4 Conditions to avoid

Keep away from heat.
UV-radiation/sunlight.

10.5 Incompatible materials

bases, oxidizers, metal

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.
Carbon monoxide (CO).
Carbon dioxide (CO₂).
Phosphorus oxides (P_xO_y).

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Classification procedure

If not otherwise specified the classification is based on:
Ingredients of the mixture (additivity formula).

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

Acute toxicity

Test data are not available for the complete mixture.

Name of substance	CAS No	Exposure route	Endpoint	Value	Species	Method
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	oral	LD50	>6,500 mg/kg	rat	EU method B.1
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	dermal	LD50	>4,000 mg/kg	rat	EU method B.3
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	inhalation: dust/mist	LC50	>1,979 mg/m ³ /4h	rat	OECD Guideline 403

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.
(OECD Guideline 404)

Serious eye damage/eye irritation

Shall not be classified as seriously damaging to the eye or eye irritant.
(OECD Guideline 405)

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Respiratory or skin sensitization

Skin sensitization

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

Respiratory sensitization

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

(OECD Guideline 471)

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

Carcinogenicity

IARC Monographs

None of the ingredients are listed.

National Toxicology Program (United States)

None of the ingredients are listed.

OSHA Carcinogens

None of the ingredients are listed.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

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

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

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

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Other information

There is no additional information.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity (acute)

Test data are not available for the complete mixture.

PBTC (2-Phosphonobutane-1,2,4-Tricarboxylic Acid)

Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Exposure time
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	LC50	>1,042 mg/l	zebra fish (Danio rerio)	OECD Guideline 203	96 h
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	EC50	>1,071 mg/l	daphnia magna	OECD Guideline 202	48 h
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	ErC50	>1,081 mg/l	algae (Desmodesmus subspicatus)	OECD Guideline 201	72 h

Aquatic toxicity (chronic)

Test data are not available for the complete mixture.

Aquatic toxicity (chronic) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Method	Exposure time
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	EC50	>1,071 mg/l	daphnia magna	-	21 d
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	NOEC	1,042 mg/l	zebra fish (Danio rerio)	OECD Guideline 204	14 d
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	LOEC	329 mg/l	daphnia magna	-	21 d

12.2 Persistence and degradability

Degradability of components of the mixture

Name of substance	CAS No	Process	Degradation rate	Time	Method
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	DOC removal	30 - 40 %	128 d	OECD Guideline 302A

Persistence

No data available.

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12.3 Bioaccumulative potential

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	Log KOW
2-phosphonobutane-1,2,4-tricarboxylic acid	37971-36-1	-1.36 (25 °C)

12.4 Mobility in soil

No data available.

12.5 Results of PBT and vPvB assessment

This mixture does not contain any substances that are assessed to be 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

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

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 UN3265

IMDG-Code UN3265



ICAO-TI UN3265

14.2 UN proper shipping name

DOT Corrosive liquid, acidic, organic, n.o.s.

IMDG-Code CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.

PBTC (2-Phosphonobutane-1,2,4-Tricarboxylic Acid)

ICAO-TI	Corrosive liquid, acidic, organic, n.o.s.
Technical name (hazardous ingredients)	phosphonobutane tricarboxylic acid
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 <u>Information for each of the UN Model Regulations</u>	
Transport of dangerous goods by road or rail (49 CFR US DOT) Additional information	
Particulars in the shipper's declaration	UN3265, Corrosive liquid, acidic, organic, n.o.s., (contains: phosphonobutane tricarboxylic acid), 8, III
Danger label(s)	8
	
Special provisions (SP)	386, IB3, T7, TP1, TP28
ERG No	153
International Maritime Dangerous Goods Code (IMDG) Additional information	
Marine pollutant	-
Danger label(s)	8
	
Special provisions (SP)	223, 274
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L

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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
	
Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	1 L

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) all ingredients are listed

Superfund Amendment and Reauthorization Act (SARA TITLE III)

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

none of the ingredients are listed

Specific Toxic Chemical Listings (EPCRA Section 313)

none of the ingredients are listed

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

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

none of the ingredients are listed

Clean Air Act

none of the ingredients are listed

Right to Know Hazardous Substance List

Hazardous Substance List (NJ-RTK)

none of the ingredients are listed

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

none of the ingredients are listed

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Industry or sector specific available guidance(s)

NPCA-HMIS® III

Hazardous Materials Identification System.
American Coatings Association.

Category	Rating	Description
Chronic	/	none
Health	0	no significant risk to health
Flammability	0	material that will not burn under typical fire conditions
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	0	material that will not burn under typical fire conditions
Health	0	material that, under emergency conditions, would offer no hazard beyond that of ordinary combustible material
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 mixture by the supplier.

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

Date of preparation: 2021-06-14

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
49 CFR US DOT	49 CFR U.S. Department of Transportation
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

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Abbr.	Descriptions of used abbreviations
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
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
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
LOEC	Lowest Observed Effect Concentration
log KOW	n-Octanol/water
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
Met. Corr.	Substance or mixture corrosive to metals
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
PNEC	Predicted No-Effect Concentration
RTECS	Registry of Toxic Effects of Chemical Substances (database of NIOSH with toxicological information)

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Abbr.	Descriptions of used abbreviations
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).

Classification procedure

Physical and chemical properties.

Health hazards.

Environmental hazards.

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

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

Code	Text
H290	May be corrosive to metals.
H319	Causes serious eye irritation.

Responsible for the safety data sheet

Chemical Regulatory Compliance Company Telephone: +1 (630) 410-1660
Chicago, IL e-Mail: GHS@crc-us.com
USA 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.