PCB-MD7C

High-Purity Standards

Chemwatch Hazard Alert Code: **3**

Catalogue number: **PCB-MD7C**
Version No: **2.2**
Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Issue Date: **07/07/2017**
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S.GHS.USA.EN

SECTION 1 IDENTIFICATION

Product Identifier

Product name	PCB-MD7C
Chemical Name	2,2,4-trimethylpentane
Synonyms	Not Available
Proper shipping name	Octanes
Other means of identification	PCB-MD7C

Recommended use of the chemical and restrictions on use

Relevant identified uses	The use of a quantity of material in an unventilated or confined space may result in increased exposure and an irritating atmosphere developing.

Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	High-Purity Standards
Address	PO Box 41727 SC 29423 United States
Telephone	843-767-7900
Fax	843-767-7906
Website	highpuritystandards.com
Email	Not Available

Emergency phone number

Association / Organisation	INFOTRAC
Emergency telephone numbers	1-800-535-5053
Other emergency telephone numbers	1-352-323-3500

SECTION 2 HAZARD(S) IDENTIFICATION

Classification of the substance or mixture

Classification	Aspiration Hazard Category 1, Skin Corrosion/Irritation Category 2, Specific target organ toxicity - single exposure Category 3 (narcotic effects), Acute Aquatic Hazard Category 1, Chronic Aquatic Hazard Category 1, Flammable Liquid Category 2

Label elements

Hazard pictogram(s)	
SIGNAL WORD	**DANGER**

Hazard statement(s)

H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H336	May cause drowsiness or dizziness.
H410	Very toxic to aquatic life with long lasting effects.

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H225	Highly flammable liquid and vapour.

Hazard(s) not otherwise specified

Not Applicable

Precautionary statement(s) Prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Precautionary statement(s) Response

P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

Precautionary statement(s) Storage

P403+P235	Store in a well-ventilated place. Keep cool.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
540-84-1	99.93	2,2,4-trimethylpentane
35065-29-3	0.01	2,2',3,4,4',5,5'-heptachlorobiphenyl
35065-28-2	0.01	2,2',3,4,4',5'-hexachlorobiphenyl
35065-27-1	0.01	2,2',4,4',5,5'-hexachlorobiphenyl
37680-73-2	0.01	2,2',4,5,5'-pentachlorobiphenyl
35693-99-3	0.01	2,2',5,5'-tetrachlorobiphenyl
7012-37-5	0.01	2,4,4'-trichlorobiphenyl
31508-00-6*	0.01	2,3',4,4',5-pentachlorobiphenyl

SECTION 4 FIRST-AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▸ Immediately remove all contaminated clothing, including footwear. ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▸ Other measures are usually unnecessary.
Ingestion	▸ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus. ▸ If swallowed do **NOT** induce vomiting. ▸ If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. ▸ Observe the patient carefully. ▸ Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious. ▸ Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. ▸ Seek medical advice. ▸ Avoid giving milk or oils. ▸ Avoid giving alcohol.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.
compare PCB treatment regime:
Presentation:

- Acute symptoms related to overexposure to the PCBs and dioxins (PCDDs and PCDFs) include irritation of the skin, eyes and mucous membranes and nausea, vomiting and myalgias.
- After a latency period which may be prolonged (up to several weeks or more), chloracne, porphyria cutanea tarda, hirsutism, or hyper-pigmentation may occur. Elevated levels of hepatic transaminases and blood lipids may be found. Polyneuropathies with sensory impairment and lower-extremity motor weakness may also occur.
- Useful laboratory studies might include glucose, electrolytes, BUN, creatinine, liver transaminase, and liver function tests, and uroporphyrins (where porphyria is suspected)

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Treatment:
- Emergency and Supportive Measures: Treat skin, eye and respiratory irritation symptomatically
- There is no specific antidote
- Decontamination: 1. Inhalation; remove victims from exposure and give supplemental oxygen if available. 2. Eyes and Skin: remove contaminated clothing and wash affected skin with copious soap and water; irrigate exposed eyes with copious tepid water or saline. 3. Ingestion; (a) Prehospital: Administer activated charcoal if available. Ipecac-induced vomiting may be useful for initial treatment at the scene if it can be given within a few minutes exposure (b) Hospital: Administer activated charcoal. Gastric emptying is not necessary if activated charcoal can be given promptly.
- Enhanced elimination: There is no known role for these procedures.

POISONING and DRUG OVERDOSE, Californian Poison Control System Ed. Kent R Olson; 3rd Edition

For acute or short term repeated exposures to petroleum distillates or related hydrocarbons:
- Primary threat to life, from pure petroleum distillate ingestion and/or inhalation, is respiratory failure.
- Patients should be quickly evaluated for signs of respiratory distress (e.g. cyanosis, tachypnoea, intercostal retraction, obtundation) and given oxygen. Patients with inadequate tidal volumes or poor arterial blood gases (pO2 50 mm Hg) should be intubated.
- Arrhythmias complicate some hydrocarbon ingestion and/or inhalation and electrocardiographic evidence of myocardial injury has been reported; intravenous lines and cardiac monitors should be established in obviously symptomatic patients. The lungs excrete inhaled solvents, so that hyperventilation improves clearance.
- A chest x-ray should be taken immediately after stabilisation of breathing and circulation to document aspiration and detect the presence of pneumothorax.
- Epinephrine (adrenalin) is not recommended for treatment of bronchospasm because of potential myocardial sensitisation to catecholamines. Inhaled cardioselective bronchodilators (e.g. Alupent, Salbutamol) are the preferred agents, with aminophylline a second choice.
- Lavage is indicated in patients who require decontamination; ensure use of cuffed endotracheal tube in adult patients. [Ellenhorn and Barceloux: Medical Toxicology]

SECTION 5 FIRE-FIGHTING MEASURES

Extinguishing media

- Foam.

Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Special protective equipment and precautions for fire-fighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard.
Fire/Explosion Hazard	▸ Liquid and vapour are flammable. Combustion products include: carbon monoxide (CO) carbon dioxide (CO2) other pyrolysis products typical of burning organic material. **Contains low boiling substance:** Closed containers may rupture due to pressure buildup under fire conditions.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	▸ Remove all ignition sources.
Major Spills	▸ Clear area of personnel and move upwind.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	The conductivity of this material may make it a static accumulator., A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10 000 pS/m., Whether a liquid is nonconductive or semi-conductive, the precautions are the same., A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid. Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. ▸ Containers, even those that have been emptied, may contain explosive vapours. **Contains low boiling substance:** Storage in sealed containers may result in pressure buildup causing violent rupture of containers not rated appropriately. ▸ Electrostatic discharge may be generated during pumping - this may result in fire. ▸ Avoid all personal contact, including inhalation. ▸ **DO NOT** allow clothing wet with material to stay in contact with skin
Other information	▸ Store in original containers in approved flammable liquid storage area.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Glass container is suitable for laboratory quantities ▸ Packing as supplied by manufacturer. ▸ For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type.
Storage incompatibility	▸ Avoid reaction with oxidising agents n-Octane/ iso-octane: ▸ reacts violently with strong oxidisers, dinitrogen tetraoxide ▸ is incompatible with sulfuric acid, nitric acid, caustics, aliphatic amines, isocyanates ▸ attacks some plastics, rubber and coatings

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	▸ may generate electrostatic charges on agitation or flow, due to low conductivity.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
2,2,4-trimethylpentane	Isooctane; (2,2,4-Trimethylpentane)	230 ppm	830 ppm	5000 ppm

Ingredient	Original IDLH	Revised IDLH
2,2,4-trimethylpentane	5,000 ppm	1,000 [LEL] ppm
2,2',3,4,4',5,5'-heptachlorobiphenyl	Not Available	Not Available
2,2',3,4,4',5'-hexachlorobiphenyl	Not Available	Not Available
2,2',4,4',5,5'-hexachlorobiphenyl	Not Available	Not Available
2,2',4,5,5'-pentachlorobiphenyl	Not Available	Not Available
2,2',5,5'-tetrachlorobiphenyl	Not Available	Not Available
2,4,4'-trichlorobiphenyl	Not Available	Not Available
2,3',4,4',5-pentachlorobiphenyl	Not Available	Not Available

Exposure controls

Appropriate engineering controls	**CARE:** Use of a quantity of this material in confined space or poorly ventilated area, where rapid build up of concentrated atmosphere may occur, could require increased ventilation and/or protective gear Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard.
Personal protection	
Eye and face protection	▸ Safety glasses with side shields.
Skin protection	See Hand protection below
Hands/feet protection	▸ Wear chemical protective gloves, e.g. PVC. The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. ▸ Neoprene rubber gloves
Body protection	See Other protection below
Other protection	▸ Overalls. · Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
Thermal hazards	Not Available

Respiratory protection

Cartridge respirators should never be used for emergency ingress or in areas of unknown vapour concentrations or oxygen content. The wearer must be warned to leave the contaminated area immediately on detecting any odours through the respirator. The odour may indicate that the mask is not functioning properly, that the vapour concentration is too high, or that the mask is not properly fitted. Because of these limitations, only restricted use of cartridge respirators is considered appropriate.
Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator
up to 10	1000	A-AUS / Class 1	-
up to 50	1000	-	A-AUS / Class 1
up to 50	5000	Airline *	-
up to 100	5000	-	A-2
up to 100	10000	-	A-3
100+		-	Airline**

* - Continuous Flow
** - Continuous-flow or positive pressure demand.
A(All classes) = Organic vapours, B AUS or B1 = Acid gases, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 deg C)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Colourless

Continued...

Physical state	Liquid	**Relative density (Water = 1)**	Not Available
Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	Not Available
pH (as supplied)	Not Available	**Decomposition temperature**	Not Available
Melting point / freezing point (°C)	Not Available	**Viscosity (cSt)**	Not Available
Initial boiling point and boiling range (°C)	Not Available	**Molecular weight (g/mol)**	Not Available
Flash point (°C)	Not Available	**Taste**	Not Available
Evaporation rate	Not Available	**Explosive properties**	Not Available
Flammability	Not Available	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	Not Available	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	Not Available	**Volatile Component (%vol)**	Not Available
Vapour pressure (kPa)	Not Available	**Gas group**	Not Available
Solubility in water (g/L)	Immiscible	**pH as a solution (1%)**	Not Available
Vapour density (Air = 1)	Not Available	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Inhalation of vapours may cause drowsiness and dizziness. Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination. Central nervous system (CNS) depression may include general discomfort, symptoms of giddiness, headache, dizziness, nausea, anaesthetic effects, slowed reaction time, slurred speech and may progress to unconsciousness. The inhalation of dioxins may produce respiratory tract irritation, headache, dizziness, nausea and vomiting, fatigue, sleep difficulties, sexual dysfunction, and intolerance to cold.
Ingestion	Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". Dioxin TCDD has been associated with a range of toxic effects.
Skin Contact	This material can cause inflammation of the skin on contact in some persons. The material may accentuate any pre-existing dermatitis condition Skin absorption of TCDD may result in redness and swelling, followed by acne. Exposure to the material may result in a skin inflammation called chloracne. The liquid may be able to be mixed with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Eye	Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn). Application of dioxins to the eye may produce irritation, inflammation of eyelids and conjunctiva, and irritation of other mucous membranes.
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course. Exposure to PHAHs, including TCDD, can result in acne, fatigue, decreased libido, sleep trouble, loss of appetite and weight and sensory dysfunction. Exposure to polychlorinated biphenyls (PCBs) over a long time can cause eczema and internal effects; various systems may be affected.

PCB-MD7C	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,2,4-trimethylpentane	**TOXICITY**	**IRRITATION**
	Dermal (rabbit) LD50: >2000 mg/kg[1]	Not Available
	Oral (rat) LD50: >5000 mg/kg[1]	

Continued...

2,2',3,4,4',5,5'-heptachlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,2',3,4,4',5'-hexachlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,2',4,4',5,5'-hexachlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,2',4,5,5'-pentachlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,2',5,5'-tetrachlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,4,4'-trichlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
2,3',4,4',5-pentachlorobiphenyl	**TOXICITY**	**IRRITATION**
	Not Available	Not Available

Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

2,2,4-TRIMETHYLPENTANE	Asthma-like symptoms may continue for months or even years after exposure to the material ends.
2,2',3,4,4',5'-HEXACHLOROBIPHENYL	WARNING: Polychlorinated biphenyls [1336-36-3] in general and [11097-69-1] in particular are classified by IARC as Group 2A - Probably carcinogenic to humans. Use strict occupational hygiene practices to minimize all personal contact.
2,2',5,5'-TETRACHLOROBIPHENYL	**NOTE:** Substance has been shown to be mutagenic in at least one assay, or belongs to a family of chemicals producing damage or change to cellular DNA.
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL & 2,2',3,4,4',5'-HEXACHLOROBIPHENYL & 2,2',4,4',5,5'-HEXACHLOROBIPHENYL & 2,2',4,5,5'-PENTACHLOROBIPHENYL & 2,2',5,5'-TETRACHLOROBIPHENYL & 2,4,4'-TRICHLOROBIPHENYL	Side-reactions during manufacture of the parent compound may result in the production of trace amounts of polyhalogenated aromatic hydrocarbon(s).
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL & 2,2',3,4,4',5'-HEXACHLOROBIPHENYL & 2,2',4,4',5,5'-HEXACHLOROBIPHENYL & 2,2',4,5,5'-PENTACHLOROBIPHENYL & 2,2',5,5'-TETRACHLOROBIPHENYL & 2,4,4'-TRICHLOROBIPHENYL	Polyhalogenated aromatic hydrocarbons (PHAHs) can cause effects on hormones and mimic thyroid hormone.
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL & 2,2',3,4,4',5'-HEXACHLOROBIPHENYL & 2,2',4,4',5,5'-HEXACHLOROBIPHENYL & 2,2',4,5,5'-PENTACHLOROBIPHENYL & 2,2',5,5'-TETRACHLOROBIPHENYL & 2,4,4'-TRICHLOROBIPHENYL	No significant acute toxicological data identified in literature search.
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL & 2,2',3,4,4',5'-HEXACHLOROBIPHENYL	**WARNING:** This substance has been classified by the IARC as Group 2A: Probably Carcinogenic to Humans.

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& 2,2',4,4',5,5'-HEXACHLOROBIPHENYL & 2,2',4,5,5'-PENTACHLOROBIPHENYL & 2,2',5,5'-TETRACHLOROBIPHENYL & 2,4,4'-TRICHLOROBIPHENYL	
2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL & 2,2',4,4',5,5'-HEXACHLOROBIPHENYL & 2,2',4,5,5'-PENTACHLOROBIPHENYL & 2,2',5,5'-TETRACHLOROBIPHENYL & 2,4,4'-TRICHLOROBIPHENYL	**WARNING:** Polychlorinated biphenyls [CAS RN: 1336-36-3] in general and [CAS RN: 11097-69-1] in particular, are classified by IARC as Group 2A - Probably Carcinogenic to humans Use strict occupational hygiene practices to minimise all personal contact.

Acute Toxicity	⊘	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	✔	**Reproductivity**	⊘
Serious Eye Damage/Irritation	⊘	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	✔

Legend: ✘ *– Data available but does not fill the criteria for classification*
✔ *– Data available to make classification*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

PCB-MD7C

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

2,2,4-trimethylpentane

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	0.11mg/L	2
EC50	48	Crustacea	0.4mg/L	2
EC50	96	Algae or other aquatic plants	0.802mg/L	3
NOEC	504	Crustacea	0.17mg/L	2

2,2',3,4,4',5,5'-heptachlorobiphenyl

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	0.000371mg/L	3
EC50	96	Algae or other aquatic plants	0.00055mg/L	3
NOEC	1176	Fish	0.025mg/L	4

2,2',3,4,4',5'-hexachlorobiphenyl

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	0.00138mg/L	3
EC50	96	Algae or other aquatic plants	0.00188mg/L	3
NOEC	2256	Fish	0.025mg/L	4

2,2',4,4',5,5'-hexachlorobiphenyl

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	>0.0013mg/L	4
EC50	96	Algae or other aquatic plants	0.00188mg/L	3
BCF	384	Fish	0.005mg/L	4
NOEC	1176	Fish	0.025mg/L	4

2,2',4,5,5'-pentachlorobiphenyl

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
LC50	96	Fish	0.005mg/L	3
EC50	96	Algae or other aquatic plants	0.006mg/L	3
BCF	792	Algae or other aquatic plants	0.0434mg/L	4
NOEC	1176	Fish	0.025mg/L	4

Continued...

2,2',5,5'-tetrachlorobiphenyl	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.018mg/L	3
	EC50	96	Algae or other aquatic plants	0.020mg/L	3
	BCF	384	Fish	0.031mg/L	4
	NOEC	2256	Fish	0.025mg/L	4
2,4,4'-trichlorobiphenyl	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.063mg/L	3
	EC50	96	Algae or other aquatic plants	0.067mg/L	3
2,3',4,4',5-pentachlorobiphenyl	ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
	LC50	96	Fish	0.005mg/L	3
	EC50	96	Algae or other aquatic plants	0.006mg/L	3
	NOEC	336	Fish	0.04538mg/L	4

Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark.
When spilled this product may act as a typical oil, causing a film, sheen, emulsion or sludge at or beneath the surface of the body of water.
Environmental Fate: n-Octane may be released into the environment through various waste streams as a result of its production and use in petroleum and gasoline products.
90dioxin
For Polychlorinated Biphenyls (PCBs):
Environmental Limits: Limit for Marine Water: 0.004 ugm/L (equals 0.000004 mg/L).
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
2,2,4-trimethylpentane	HIGH	HIGH
2,2',3,4,4',5,5'-heptachlorobiphenyl	HIGH	HIGH
2,2',3,4,4',5'-hexachlorobiphenyl	HIGH	HIGH
2,2',4,4',5,5'-hexachlorobiphenyl	HIGH	HIGH
2,2',4,5,5'-pentachlorobiphenyl	HIGH	HIGH
2,2',5,5'-tetrachlorobiphenyl	HIGH	HIGH
2,4,4'-trichlorobiphenyl	HIGH	HIGH
2,3',4,4',5-pentachlorobiphenyl	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation
2,2,4-trimethylpentane	MEDIUM (BCF = 650)
2,2',3,4,4',5,5'-heptachlorobiphenyl	LOW (LogKOW = 8.2685)
2,2',3,4,4',5'-hexachlorobiphenyl	LOW (LogKOW = 7.624)
2,2',4,4',5,5'-hexachlorobiphenyl	LOW (LogKOW = 7.624)
2,2',4,5,5'-pentachlorobiphenyl	HIGH (LogKOW = 6.9795)
2,2',5,5'-tetrachlorobiphenyl	HIGH (LogKOW = 6.335)
2,4,4'-trichlorobiphenyl	HIGH (LogKOW = 5.6905)
2,3',4,4',5-pentachlorobiphenyl	HIGH (LogKOW = 6.9795)

Mobility in soil

Ingredient	Mobility
2,2,4-trimethylpentane	LOW (KOC = 275.5)
2,2',3,4,4',5,5'-heptachlorobiphenyl	LOW (KOC = 206800)
2,2',3,4,4',5'-hexachlorobiphenyl	LOW (KOC = 125100)

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2,2',4,4',5,5'-hexachlorobiphenyl	LOW (KOC = 122500)
2,2',4,5,5'-pentachlorobiphenyl	LOW (KOC = 74100)
2,2',5,5'-tetrachlorobiphenyl	LOW (KOC = 44820)
2,4,4'-trichlorobiphenyl	LOW (KOC = 27110)
2,3',4,4',5-pentachlorobiphenyl	LOW (KOC = 74100)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. ▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ▸ Due to their environmental persistence and potential health hazards, PCBs, PBBs, dioxins and their derivatives or congeners (including chlorinated diphenyl ethers), cannot be disposed of in landfills or dumped at sea. ▸ Recycle wherever possible.

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	

Land transport (DOT)

UN number	1262
UN proper shipping name	Octanes
Transport hazard class(es)	Class: 3 Subrisk: Not Applicable
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	Hazard Label: 3 Special provisions: IB2, T4, TP1

Air transport (ICAO-IATA / DGR)

UN number	1262
UN proper shipping name	Octanes
Transport hazard class(es)	ICAO/IATA Class: 3 ICAO / IATA Subrisk: Not Applicable ERG Code: 3H
Packing group	II
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: Not Applicable Cargo Only Packing Instructions: 364 Cargo Only Maximum Qty / Pack: 60 L Passenger and Cargo Packing Instructions: 353 Passenger and Cargo Maximum Qty / Pack: 5 L Passenger and Cargo Limited Quantity Packing Instructions: Y341 Passenger and Cargo Limited Maximum Qty / Pack: 1 L

Sea transport (IMDG-Code / GGVSee)

Continued...

UN number	1262
UN proper shipping name	OCTANES
Transport hazard class(es)	IMDG Class: 3 IMDG Subrisk: Not Applicable
Packing group	II
Environmental hazard	Marine Pollutant
Special precautions for user	EMS Number: F-E , S-E Special provisions: Not Applicable Limited Quantities: 1 L

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

SECTION 15 REGULATORY INFORMATION

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

2,2,4-TRIMETHYLPENTANE(540-84-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

US - Alaska Limits for Air Contaminants
US - Idaho - Limits for Air Contaminants
US - Massachusetts - Right To Know Listed Chemicals
US - Minnesota Permissible Exposure Limits (PELs)
US - Pennsylvania - Hazardous Substance List
US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants
US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US ACGIH Threshold Limit Values (TLV)
US Clean Air Act - Hazardous Air Pollutants
US EPA Carcinogens Listing
US Spacecraft Maximum Allowable Concentrations (SMACs) for Airborne Contaminants
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

2,2',3,4,4',5,5'-HEPTACHLOROBIPHENYL(35065-29-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

2,2',3,4,4',5'-HEXACHLOROBIPHENYL(35065-28-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

2,2',4,4',5,5'-HEXACHLOROBIPHENYL(35065-27-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

2,2',4,5,5'-PENTACHLOROBIPHENYL(37680-73-2) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Continued...

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

2,2',5,5'-TETRACHLOROBIPHENYL(35693-99-3) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

2,4,4'-TRICHLOROBIPHENYL(7012-37-5) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

2,3',4,4',5-PENTACHLOROBIPHENYL(31508-00-6*) IS FOUND ON THE FOLLOWING REGULATORY LISTS

International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs
US - Alaska Limits for Air Contaminants
US - California - Proposition 65 - Priority List for the Development of MADLs for Chemicals Causing Reproductive Toxicity
US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)
US - California Permissible Exposure Limits for Chemical Contaminants
US - California Proposition 65 - Carcinogens
US - California Proposition 65 - No Significant Risk Levels (NSRLs) for Carcinogens
US - California Proposition 65 - Reproductive Toxicity
US - Idaho - Limits for Air Contaminants
US - New Jersey Right to Know - Special Health Hazard Substance List (SHHSL): Carcinogens
US - Pennsylvania - Hazardous Substance List
US - Rhode Island Hazardous Substance List
US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants
US - Washington Permissible exposure limits of air contaminants
US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values
US Clean Air Act - Hazardous Air Pollutants
US CWA (Clean Water Act) - Toxic Pollutants
US EPA Carcinogens Listing
US Office of Environmental Health Hazard Assessment Proposition 65 No Significant Risk Levels (NSRLs) for Carcinogens and Maximum Allowable Dose Levels (MADLs) for Chemicals Causing Reproductive Toxicity

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SECTION 311/312 HAZARD CATEGORIES

Immediate (acute) health hazard	Yes
Delayed (chronic) health hazard	No
Fire hazard	Yes
Pressure hazard	No
Reactivity hazard	No

US. EPA CERCLA HAZARDOUS SUBSTANCES AND REPORTABLE QUANTITIES (40 CFR 302.4)

Name	Reportable Quantity in Pounds (lb)	Reportable Quantity in kg
2,2,4-Trimethylpentane	1000	454
Aroclors	1	0.454
PCBs	1	0.454
POLYCHLORINATED BIPHENYLS	1	0.454
Aroclors	1	0.454
PCBs	1	0.454

Continued...

POLYCHLORINATED BIPHENYLS	1	0.454
Aroclors	1	0.454
PCBs	1	0.454
POLYCHLORINATED BIPHENYLS	1	0.454
Aroclors	1	0.454
PCBs	1	0.454
POLYCHLORINATED BIPHENYLS	1	0.454
Aroclors	1	0.454
PCBs	1	0.454
POLYCHLORINATED BIPHENYLS	1	0.454
Aroclors	1	0.454
PCBs	1	0.454
POLYCHLORINATED BIPHENYLS	1	0.454
Aroclors	1	0.454
PCBs	1	0.454
POLYCHLORINATED BIPHENYLS	1	0.454

State Regulations

US. CALIFORNIA PROPOSITION 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm

US - CALIFORNIA PREPOSITION 65 - CARCINOGENS & REPRODUCTIVE TOXICITY (CRT): LISTED SUBSTANCE

Polychlorinated biphenyls, Polychlorinated biphenyls (containing 60 or more percent chlorine by molecular weight) Listed

National Inventory	Status
Australia - AICS	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Canada - DSL	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Canada - NDSL	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2,4-trimethylpentane; 2,2',5,5'-tetrachlorobiphenyl)
China - IECSC	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Europe - EINEC / ELINCS / NLP	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Japan - ENCS	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Korea - KECI	Y
New Zealand - NZIoC	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Philippines - PICCS	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
USA - TSCA	N (2,2',4,5,5'-pentachlorobiphenyl; 2,3',4,4',5-pentachlorobiphenyl; 2,2',4,4',5,5'-hexachlorobiphenyl; 2,2',3,4,4',5'-hexachlorobiphenyl; 2,4,4'-trichlorobiphenyl; 2,2',3,4,4',5,5'-heptachlorobiphenyl; 2,2',5,5'-tetrachlorobiphenyl)
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment.

Definitions and abbreviations

PC－TWA: Permissible Concentration-Time Weighted Average
PC－STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor
NOAEL :No Observed Adverse Effect Level

Continued...

LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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