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SAFFTY DATA SHEET

According to GHS Globally Harmonised System

TPO-L

1. Identification of the chemical and supplier

Product identifier

Product Name	2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester
Synonyms	84434-11-7
CAS No.	282-810-6
EC No.	VL-1050S
Molecular Formula	$C_{18}H_{21}O_3P$

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

Relevant identified uses	Used for Photoinitiator etc.
Uses advised against	No information available

Details of the supplier of the Safety Data Sheet

Name of the company	Nanjing Vali Chemical Technology Co., Ltd.
Address of thecompany	Nanjing Qixia DistrictMaigaoqiao Yanyaolu-88
Post code	210038
Telephone number	025-85328161
Fax number	025-83373260

2.Hazards identification

Hazard classification according to GHS

Sensitization-skin	Category 1
Hazardous to the aquatic environment,long-termhazad	Category 2

Label elements

Hazard pictograms

Signal word **Warning**

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Hazard statements

H317	May cause an allergic skin reaction
H411	Toxic to aquatic life with long lasting effects

Precautionary statements

Prevention

P261	IF ON SKIN: Wash with plenty of water.
P272	If skin irritation or rash occurs: Get medical advice/attention.
P273	Take off contaminated clothing and wash it before reuse.
P280	Collect spillage.

Response

P302+P352	IF ON SKIN: Wash with plenty of water.
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.

Storage

Storage	Not applicable.

Disposal

P501	Disposeofcontents/containerinaccordancewithlocal/regional/national/international regulations.

Hazard description

Physicaland chemicalhazards	Liquid. Combustible. Toxic smoke/fumes in a fire.

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Health hazards	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis. Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn). There is limited evidence that, skin contact with this product is more likely to cause a sensitization reaction in some persons compared to the general population.

Environmental hazards Harmful to the environment.

3.Composition/information on ingredients

Component	CAS No.	EC No.	Concentration (weight percent, %)
2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester	84434-11-7	282-810-6	≥95

4.First aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if fell uncomfortable.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if fell uncomfortable.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms and effects, both acute and delayed

1	See section 11.

Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

5.Firefighting measures

Extinguishing media

Suitable extinguishing media Dry chemical, carbon dioxide, alcohol-resistant foam etc.

Unsuitable extinguishing media There is no restriction on the type of extinguisher which may be used.

Specific hazards arising from the substance or mixture

1	Combustible.
2	Slight fire hazard when exposed to heat or flame.
3	Heating may cause expansion or decomposition leading to violent rupture of containers.
4	On combustion, may emit toxic fumes of carbon monoxide (CO).

Advice for firefighters

1	As in any fire, wear self-contained breathing apparatus and full protective gear.
2	Fire-extinguishing work is done from the windward and the suitable fire-extinguishing method according to the surrounding situation is used.
3	Uninvolved persons should evacuate to a safe place.
4	In case of fire in the surroundings, keep containers cool by spraying with water. Eliminate all ignition sources if safe to do so.

6.Accidental release measures

Personal precautions, protective equipment and emergency procedures

1	Remove all sources of ignition. Ensure adequate ventilation. Take precautionary measures against staticdischarges.
2	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Use personalprotective equipment. Avoid breathing vapors and contacting with skin and eyes.
3	Remove all sources of ignition. Ensure adequate ventilation. Take precautionary measures against staticdischarges.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so.
2	Do not let product enter drains.

Methods and materials for containment and cleaning up

1	Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.
2	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
3	Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

7.Handling and storage

Precautions for handling

1	Handling is performed in a well ventilated place.
2	Wear suitable protective equipment.
3	Avoid contact with skin and eyes. Avoid inhalation of vapours.
4	Keep away from heat/sparks/open flames/ hot surfaces.
5	No smoking, naked lights or ignition sources.

Precautions for storage

1	Store in original containers.
2	Keep away from heat/sparks/open flames/ hot surfaces.
3	Store away from incompatible materials such as oxidizing agents and other incompatible materials.
4	Keep containers securely sealed.
5	Store in a cool, dry, well-ventilated area.

8. Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m³	ppm	mg/m³
2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester 84434-11-7	Australia	-	-	-	-
	Denmark	-	-	-	-
	Germany (AGS)	-	-	-	-
	Ireland	-	-	-	-
	South Korea	-	-	-	-
	USA(OSHA)	-	-	-	-

Biological limit values

Biological limit values No information available

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Monitoring methods

1	EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents

Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.
3	Use explosion-proof electrical/ventilating/lighting/equipment.

Personal protection equipment

General requirement

Eye protection	Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US).
Hand protection	Protective gloves（such as butyl rubber）, approved by EN 374(EU).
Respiratory protection	Use appropriative respirator if exposure limits are exceeded or if irritation or other symptoms are experienced. Recommended Filter type: low boiling organic solvent, Type AX, Brown, conforming to EN371.
Skin and body protection	Wear fire/flame resistant/retardant clothing and antistatic boots.

9. Physical and chemical properties

Physical and chemical properties

Appearance	Yellow liquid
Odor	Special odor
Odor threshold	No information available
pH	5-7
Melting point/freezing point	16℃
Initial boiling point and boiling range	300℃（760 mmHg）
Flash point	144℃（Closed cup）
Evaporation rate	Not applicable
Flammability(solid, gas)	Not applicable
Upper/lower explosive limits	Not applicable

Vapor pressure	No information available
Vapor density	No information available
Relative density	1.13（20℃，water=1.0）
Solubility	No information available
n-octanol/water partition coefficient	2.91
Auto-ignition temperature	No information available
Decomposition temperature	No information available

10. Stability and reactivity

Stability and reactivit

Reactivity	No information available.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	No information available.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Oxidizing agents.
Hazardous decomposition products	Carbon monoxide and phosphorus oxide.

11. Toxicological information

Acute toxicity

Component	Cas No.	LD_{50}(oral)	LD_{50}(dermal)	LC_{50}(inhalation)
2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester	84434-11-7	> 2000mg/kg (rat)	> 2000mg/kg (rabbit)	No information available

Others

Skin corrosion/irritation	Based on available data, the classification criteria are not met.
Serious eye damage/irritation	Based on available data, the classification criteria are not met.
Respiratory or skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester is not identified as probable, possible or confirmed human carcinogen by IARC.
Reproductive toxicity	Based on available data, the classification criteria are not met.

STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

12.Ecological information

Toxicity

Component	Cas No.	Fish	Crustaceans	Algae
2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester	84434-11-7	No information available	No information available	No information available

Others

Persistence and degradability	No information available
Bioaccumulative potential	No information available
Mobility in soil	No information available
Results of PBT and vPvB assessment	2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

13.Disposal considerations

Disposal considerations

Waste chemicals	Beforedisposalshouldrefertotherelevantnationalandlocallawsand
	regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible
Disposal recommendations	Refer to section 13.1and 13.2.

14.Transport information

Label

Label

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Transport information (IMDG-CODE, ICAO/IATA-DG, UN-ADR)

UN number	3082
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE,LIQUID, N.O.S.
Transport hazard class	9
Transport subsidiary hazard class	-
Packing group	Ⅲ

15 . Regulatory information

International chemical inventory

Component	EINECS	TSCA	DSL	IECSC	NZLOC	PICCS	KECI
2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester	Listed	Not Listed	Not Listed	Listed	Listed	Not Listed	Listed

Chinese chemical inventory (2,4,6-trimethylbenzoylphenylphosphinic acid ethyl ester)

《Highly toxic chemicals directory》	Not Listed
《Dangerous chemicals directory used to manufacure exploder》	Not Listed
《National dangerous wastes directory》 annex A	Not Listed
《Strict limits on the import and export of toxic chemicals directory in China》	Not Listed
《List of Import and Export of Controlled ODS in China》	Not Listed
《List of additives used in food containers and packaging materials in China》	Not Listed

16.Other information

Information on revision

Creation Date	2015/05/29
Revision Date	2015/05/29
Reason for revision	Modified according to the requirements of UN GHS(fifth revision) and GB/T 17519.

Reference

[1]IPCS: The International Chemical Safety Cards (ICSC) ,website: http://www.ilo.org/dyn/icsc/showcard.home

2]IARC，website: http://www.iarc.fr/

[3]OECD: The Global Portal to Information on Chemical Substances, website:
http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
[4]CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
[5]NLM: ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
[6]EPA: Integrated Risk Information System, website: http://cfpub.epa.gov/iris/
[7]U.S. Department of Transportation: ERG, website: http://www.phmsa.dot.gov/hazmat/library/erg
[8]Germany GESTIS-database on hazard substance, website: http://gestis-en.itrust.de/.

Abbreviations and acronyms

CAS –Chemical Abstracts Service

EINECS - European Inventory of Existing Commercial Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

IECSC- China Inventory of Existing Chemical Substances

PC-STEL- Short term exposure limit

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC_{50} - Lethal Concentration 50%

NOEC -No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

BCF - Bioconcentration factor (BCF)

CMR - Carcinogens, mutagens or substances toxic to reproduction

TSCA- United States Toxic Substances Control Act Inventory

DSL - Canadian Domestic Substances List

NZIOC -New Zealand Inventory of Chemicals

KECI- Existing and Evaluated Chemical Substances

PC-TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC –Predicted No Effect Concentration

LD_{50} - Lethal Dose 50%

EC_{50} - Effective Concentration 50%

POW - Partition coefficient Octanol:Water

vPvB - very Persistent, very Bioaccumulative

CAS –Chemical Abstracts Service

EINECS - European Inventory of Existing Commercial Chemical Substances

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Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 5th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

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