

SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of:
US OSHA

Revision date 26-Nov-2023 Supersedes Date: 08-May-2019 Revision Number 5.1

1. Identification

Product identifier

Product Name LINDOL

Other means of identification

Product Code(s) 7034

UN/ID no UN3082

Chemical name Tricresyl phosphate and Trixylenyl phosphate mixture

Recommended use of the chemical and restrictions on use

Recommended use Flame-retardant plasticizer

Restrictions on use No information available

Details of the supplier of the safety data sheet

Supplier Address

ICL

622 Emerson Road - Suite 500 St. Louis, Missouri 63141, USA

Tel:(314)983-7884

e-mail:msdsinfo@icl-group.com

Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300

2. Hazard(s) identification

Classification

Reproductive toxicity	Category 1B
Specific target organ toxicity (repeated exposure)	Category 2
Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1

Hazards not otherwise classified (HNOC)

Not applicable

Label elements

Danger

Hazard statements

May damage fertility or the unborn child

May cause damage to organs through prolonged or repeated exposure

Very toxic to aquatic life with long lasting effects



Appearance Clear, colourless to slightly Physical state Liquid Odor Slight brownish liquid

Precautionary Statements - Prevention

Do not handle until all safety precautions have been read and understood Wear protective gloves/clothing and eye/face protection Do not breathe dust/fume/gas/mist/vapors/spray

Precautionary Statements - Response

IF exposed or concerned: Get medical advice/attention

Precautionary Statements - Storage

Store locked up

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other information

May be harmful if swallowed May be harmful in contact with skin

3. Composition/information on ingredients

Substance

Not applicable.

<u>Mixture</u>

Chemical name	CAS No.	Weight-%	Trade secret
Tricresyl phosphate (mixed isomers)	1330-78-5	80-100	Sk*
Trixylyl phosphate	25155-23-1	0-20	Sk*
Tri-ortho-cresyl phosphate	78-30-8	<0.1	Sk*
TRICRESYL PHOSPHATE	78-32-0	2-12	Sk*
(M-M-M,M-M-P,M-P-P,P-P-P)			

^{*}The exact percentage (concentration) of composition has been withheld as a trade secret.

4. First-aid measures

Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance.

Inhalation Remove to fresh air.

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids.

Consult a physician.

Skin contact Wash skin with soap and water. In the case of skin irritation or allergic reactions see a

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physician.

Ingestion Rinse mouth

Get medical attention if symptoms occur

NOTE: Never give an unconscious person anything to drink

Most important symptoms and effects, both acute and delayed

Symptoms No information available.

Indication of any immediate medical attention and special treatment needed

Treat symptomatically and supportively. Note to physicians

5. Fire-fighting measures

Suitable Extinguishing Media Use extinguishing measures that are appropriate to local circumstances and the

surrounding environment.

Specific hazards arising from the

chemical

May emit toxic and irritating fumes under fire conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge None.

Special protective equipment and

precautions for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Cool containers with water spray. Contain runoff to prevent entry into water or drainage

systems.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Ensure adequate ventilation. Use personal protective equipment as required. Evacuate

personnel to safe areas.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Pick up and transfer to properly labeled containers. Methods for cleaning up

Reference to other sections See section 8 for more information. See section 13 for more information.

7. Handling and storage

Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with

skin, eyes or clothing. Ensure adequate ventilation.

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Conditions for safe storage, including any incompatibilities

Storage Conditions Store locked up. Store in a dry, well-ventilated area. Maximum recommended storage

temperature of 65°C (149°F). Store above 4.4°C (40° F) for improved pumping rates.

Temperatures between 27 - 37.8°C (80 - 100°F) provide good flow rates.

8. Exposure controls/personal protection

Control parameters

Exposure Limits The following ingredients are the only ingredients of the product above the cut-off level (or

level that contributes to the hazard classification of the mixture) which have an exposure limit applicable in the region for which this safety data sheet is intended or other recommended limit. At this time, the other relevant constituents have no known exposure

limits from the sources listed here.

Chemical name	ACGIH TLV	OSHA PEL	NIOSH
Tricresyl phosphate (mixed isomers) 1330-78-5	-	-	-
Trixylyl phosphate 25155-23-1	-	-	-
Tri-ortho-cresyl phosphate 78-30-8	TWA: 0.02 mg/m³ inhalable fraction and vapor S*	TWA: 0.1 mg/m³ (vacated) TWA: 0.1 mg/m³ (vacated) S*	IDLH: 40 mg/m³ TWA: 0.1 mg/m³
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) 78-32-0	-	-	-

Chemical name	ACGIH
Tri-ortho-cresyl phosphate	70 % of baseline - red blood cells (Acetylcholinesterase
78-30-8	activity) - end of shift

Appropriate engineering controls

Engineering controls Showers

Eyewash stations Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/face protection Chemical safety goggles.

Hand protection Wear suitable gloves

Skin and body protection Wear suitable protective clothing.

exceeded or irritation is experienced, ventilation and evacuation may be required

General hygiene considerations Do not eat, drink or smoke when using this product. Wash hands before breaks and

immediately after handling the product.

9. Physical and chemical properties

Information on basic physical and chemical properties

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Physical state Liquid

Appearance Clear, colourless to slightly brownish liquid

Color No information available

Odor Slight

Property Values Remarks • Method

pH No data available None known

Melting point / freezing pointNo data availableInitial boiling point and boiling range260°C / 500°FFlash point240°C / 464°F

Evaporation rateNo data availableNone knownFlammabilityNo data availableNone knownFlammability Limit in AirNone known

Upper flammability or explosive No data available

limits

Lower flammability or explosive No data available

limits

Vapor pressure 0.1 mmHg (155°C)

Relative vapor density No data available None known

Relative density

1.162 g/mL (25°C)

Water solubility

0.2 g/100ml at 25°C

Soluble in common solvents

Partition coefficientNo data availableNone knownAutoignition temperatureNo data availableNot self-ignitableDecomposition temperatureNone knownKinematic viscosityNo data availableNone known

Kinematic viscosity

No data available

Dynamic viscosity

34 cps (37.8°C)

Other information

Explosive properties

Oxidizing properties

No information available
VOC content
No information available
Liquid Density
No information available
Bulk density
No information available

10. Stability and reactivity

Reactivity It hydrolyzes slowly at normal temperatures in acidic or alkaline aqueous solutions.

Chemical stability Stable under normal conditions.

Possibility of hazardous reactions None under normal processing.

Conditions to avoid Prolonged storage at elevated temperatures.

Incompatible materials Strong oxidising agent. Strong acids. Strong bases.

Hazardous decomposition products Carbon dioxide and carbon monoxide. Phosphorus oxides.

11. Toxicological information

Information on likely routes of exposure

Product Information

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Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Acute toxicity

Numerical measures of toxicity

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral) 4,241.60 mg/kg **ATEmix (dermal)** 4,674.10 mg/kg

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Tricresyl phosphate (mixed	15,750 mg/kg (Rat)	3700 mg/kg (Rabbit)	>11.1 mg/L air (Rat)
isomers)			
1330-78-5			
Trixylyl phosphate	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	-
25155-23-1			
Tri-ortho-cresyl phosphate	= 1160 mg/kg (Rat)	-	-
78-30-8			
TRICRESYL PHOSPHATE	> 12.8 mg/kg (Rat)	-	-
(M-M-M,M-M-P,M-P-P,P-P-P)			
78-32-0			

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Not irritant.

Serious eye damage/eye irritation Not irritant.

Respiratory or skin sensitization Not a skin sensitizer

Germ cell mutagenicity Not clastogenic in chromosome aberration test with Chinese hamster cells.

Negative in sister chromatid exchange assay in mammalian cells (read across to structural

analogue Tricresyl phosphate, CAS 1330-78-5)

Not mutagenic in AMES Test

 Carcinogenicity
 The table below indicates whether each agency has listed any ingredient as a carcinogen

Chemical name	ACGIH	IARC	NTP	OSHA
Tricresyl phosphate	-	-	-	-
(mixed isomers)				
1330-78-5				
Trixylyl phosphate	-	-	-	-
25155-23-1				
Tri-ortho-cresyl phosphate	-	-	-	-
78-30-8				
TRICRESYL	-	-	-	-
PHOSPHATE				
(M-M-M,M-M-P,M-P-P,P-				
P-P)				
78-32-0				

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Reproductive toxicity Classification based on data available for ingredients. May damage fertility. (Specific effect:

Testicular effects - Sperm concentration, motility).

STOT - single exposureNo information available.

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure

(adrenals, testes, epididymides, ovaries, liver (rat females only))

Aspiration hazard Not expected.

Other adverse effects No information available.

12. Ecological information

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Tricresyl phosphate (mixed isomers) 1330-78-5	>2500 μg/L ,96h	0.6 mg/L 96h NOEC: 0.01 mg/L (fish, 28 days)	-	146 μg/L 48h
Trixylyl phosphate 25155-23-1	EC50: > 1011 ug/l (96 hr)	LC50: >1119 µg/l (96h, Fathead minnow) > 100 mg/L (96h, Rainbow trout)	-	EC50: 60 μg/L (48h,Daphnia magna) NOEC: 0.033 mg/L
Tri-ortho-cresyl phosphate 78-30-8	-	-	-	-
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P- P-P) 78-32-0	-	-	-	-

Persistence and degradability

Tricresyl phosphate displays a low ready biodegradability. Tricresyl phosphate is expected to hydrolyse slowly under normal environmental conditions. Therefore, abiotic processes would contribute significantly to the depletion of the substance within the environment. As such, the substance does not fulfill the requirements of Annex XIII, Para 1.1 and cannot be considered a "P" and "vP" .

Bioaccumulation

Not bioaccumulative. BCF=669. The calculated bioconcentration factor (BCF) is lower than 2000. As such, the substance does not fulfil the requirement of Annex XIII, Para 1.2 and cannot be considered to be "B" or "vB".

Component Information

Chemical name	Partition coefficient
Tricresyl phosphate (mixed isomers)	5.93
1330-78-5	
Trixylyl phosphate	6.3
25155-23-1	
Tri-ortho-cresyl phosphate	-
78-30-8	

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TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P)

78-32-0

Mobility in soil The adsorption/desorption of the substance has been demonstrated to be high (log Koc >5).

Other adverse effects No information available

13. Disposal considerations

Waste treatment methods

Waste from residues/unused

products

Dispose of in accordance with local regulations. Dispose of waste in accordance with

environmental legislation.

Contaminated packaging Dispose of in a safe manner in accordance with local/national regulations.

14. Transport information

DOT

UN/ID no UN3082

Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less than 1% Proper shipping name

ortho isomer), trixylenyl phosphate)

Transport hazard class(es)

Packing group

Special Provisions 8, 146, 173, 335, IB3, T4, TP1, TP29

DOT Marine Pollutant Νp

Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less

than 1% ortho isomer), trixylenyl phosphate), 9, III, Marine pollutant

Emergency Response Guide

Number

TDG

UN/ID no UN3082

Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less than 1% Proper shipping name

ortho isomer), trixylenyl phosphate)

Transport hazard class(es) Packing group Ш 16, 99 **Special Provisions**

(Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate). Marine pollutant name

Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less

than 1% ortho isomer), trixylenyl phosphate) 9, III

MEX

UN3082 UN/ID no

Proper shipping name Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less than 1%

ortho isomer), trixylenyl phosphate)

Transport hazard class(es)

9 Packing group

MEX Technical Name (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)

Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less

than 1% ortho isomer), trixylenyl phosphate), 9, III

274, 331, 335 **Special Provisions**

IATA

UN3082 **UN number or ID number**

UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less than 1%

ortho isomer), trixylenyl phosphate)

Transport hazard class(es) 9
Packing group III

IATA Technical Name (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)

Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less

than 1% ortho isomer), trixylenyl phosphate), 9, III

Special Provisions A97, A158, A197

IMDG

UN number or ID number UN3082

UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less than 1%

ortho isomer), trixylenyl phosphate)

Transport hazard class(es)

Packing group

EmS-No

Special Provisions

9

III

F-A, S-F

274, 335, 969

Marine Pollutant (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)

Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (Tricresyl phosphate (less

than 1% ortho isomer), trixylenyl phosphate), 9, III, Marine pollutant

15. Regulatory information

International Inventories

GHS hazardous component CAS registry numbers appearing in section 3 may differ from substances appearing in section 15 due to country or regional chemical inventory coverage requirements, however, remain in compliance with the inventory Products that are used as food additives are exempt from listing in international chemical inventories

For further details on the regulatory status for this product in a specific country, please send your inquiry to the following email address: msdsinfo@icl-group.com

Chemical name	TSCA Inventory List Active/Inactive
Tricresyl phosphate (mixed isomers)	Present (ACTIVE)
1330-78-5 (80-100)	
Trixylyl phosphate	Present (ACTIVE)
25155-23-1 (0-20)	
Tri-ortho-cresyl phosphate	Present (ACTIVE)
78-30-8 (<0.1)	
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P)	Present (ACTIVE)
78-32-0 (2-12)	

TSCA Listed or exempted Listed or exempted **DSL ENCS** Listed or exempted Listed or exempted **IECSC** Listed or exempted **KECI PICCS** Not Listed Listed or exempted **AIIC NZIoC** Not Listed **TCSI** Listed or exempted Listed or exempted NCI Not Listed **TECI NSQ** Not Listed

Leaend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AIIC - Australian Inventory of Industrial Chemicals

NZIoC - New Zealand Inventory of Chemicals

TCSI - Taiwan Chemical Substance Inventory

NCI - Vietnam National Chemicals Inventory

TECI - Thailand Inventory FDA Existing Chemicals

NSQ - Mexico National Inventory of Chemical Substances

US Federal Regulations

Chemical name	U.S TSCA (Toxic Substances Control Act) - Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs)
Tricresyl phosphate (mixed isomers) - 1330-78-5	-
Trixylyl phosphate - 25155-23-1	-
Tri-ortho-cresyl phosphate - 78-30-8	-
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) -	-
78-32-0	

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

Chemical name	SARA 313 - Threshold Values %
Tricresyl phosphate (mixed isomers) - 1330-78-5	-
Trixylyl phosphate - 25155-23-1	1.0
Tri-ortho-cresyl phosphate - 78-30-8	-
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) -	-
78-32-0	

SARA 311/312 Hazard Categories

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Chemical name	CWA - Reportable	CWA - Toxic Pollutants	CWA - Priority Pollutants	
	Quantities			Substances
Tricresyl phosphate	-	-	-	-
(mixed isomers)				
1330-78-5				
Trixylyl phosphate	-	-	-	-
25155-23-1				
Tri-ortho-cresyl phosphate	-	-	-	-
78-30-8				
TRICRESYL	-	-	-	-
PHOSPHATE				
(M-M-M,M-M-P,M-P-P,P-				
P-P)				
78-32-0				

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

Chemical name	Hazardous Substances RQs	Extremely Hazardous	Reportable Quantity (RQ)
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		Substances RQs	
Tricresyl phosphate (mixed isomers) 1330-78-5	-	-	
Trixylyl phosphate 25155-23-1	-	-	
Tri-ortho-cresyl phosphate 78-30-8	-	-	
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) 78-32-0	-	-	

US State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated under applicable state right-to-know regulations

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. Other information

NFPA Health hazards 1 Flammability 1 Instability 0 Special hazards - HMIS Health hazards 1* Flammability 1 Physical hazards 0 Personal protection X Chronic Hazard Star Legend *= Chronic Health Hazard

Key or legend to abbreviations and acronyms used in the safety data sheet

Legend Section 8: Exposure controls/personal protection

TWA TWA (time-weighted average) STEL STEL (Short Term Exposure Limit)

Ceiling Maximum limit value * Skin designation

Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR) U.S. Environmental Protection Agency ChemView Database

European Food Safety Authority (EFSA)

Environmental Protection Agency

Acute Exposure Guideline Level(s) (AEGL(s))

U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act

U.S. Environmental Protection Agency High Production Volume Chemicals

Food Research Journal

Hazardous Substance Database

International Uniform Chemical Information Database (IUCLID)

National Institute of Technology and Evaluation (NITE)

Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)

NIOSH (National Institute for Occupational Safety and Health)

National Library of Medicine's ChemID Plus (NLM CIP)

National Library of Medicine's PubMed database (NLM PUBMED)

U.S. National Toxicology Program (NTP)

New Zealand's Chemical Classification and Information Database (CCID)

Organization for Economic Co-operation and Development Environment, Health, and Safety Publications

Organization for Economic Co-operation and Development High Production Volume Chemicals Program

Organization for Economic Co-operation and Development Screening Information Data Set

World Health Organization

Prepared By HERA

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Revision NoteThe symbol (***) in the margin of this SDS indicates that this line has been revised.

Disclaimer

Although the information and recommendations set forth herein (hereinafter 'information') are presented in good faith and believed to be correct as of the date hereof, we make no representations as to the completeness or accuracy thereof. Information is supplied to you upon the condition that the persons receiving the information will make their own determination as to its safety and suitability for their purposes prior to use. In no event will we be responsible for damages of any nature whatsoever resulting from the use of or reliance upon the information. In addition, we shall not be liable for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices or from any hazards inherent in the nature of the product.

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End of Safety Data Sheet

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