



# SAFETY DATA SHEET

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

Revision date 08-May-2019

Supersedes Date: 22-Jan-2017

Revision Number 5

## 1. Identification

### Product identifier

Product Name LINDOL

### Other means of identification

Product Code(s) 7034

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-IP America Inc.  
622 Emerson Road - Suite 500  
St. Louis, Missouri 63141, USA  
Tel:(314)983-7884 Fax:(314)983-7607  
e-mail:msdsinfo@icl-group.com

### Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300  
ALERT-SGS  
24 hr Toll Free Number : +800 ALERTSGS (+800-2537-8747)  
24 hr Singapore Exchange Number: +65 6542-9595

## 2. Hazard(s) identification

### Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

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

**Signal word**

Danger

**Hazard statements**

May damage fertility or the unborn child

(Specific effect: Testicular effects - Sperm concentration, motility)

May cause damage to organs through prolonged or repeated exposure (adrenals, testes, epididymides, ovaries, liver (rat females only))

Very toxic to aquatic life with long lasting effects

**Precautionary Statements - Prevention**

Do not handle until all safety precautions have been read and understood

Wear protective gloves/protective clothing/eye protection/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.

**Mixture**

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

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

**4. First-aid measures**

**Description of first aid measures**

<b>General advice</b>	Show this safety data sheet to the doctor in attendance.
<b>Inhalation</b>	Remove to fresh air.
<b>Eye contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
<b>Skin contact</b>	Wash skin with soap and water. In the case of skin irritation or allergic reactions see a physician.
<b>Ingestion</b>	If swallowed, wash mouth thoroughly with plenty of water. Get medical attention immediately. NOTE: Never give an unconscious person anything to drink

**Most important symptoms and effects, both acute and delayed**

<b>Symptoms</b>	No information available.
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**Indication of any immediate medical attention and special treatment needed**

<b>Note to physicians</b>	Treat symptomatically.
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**5. Fire-fighting measures**

<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Specific hazards arising from the chemical</b>	May emit toxic fumes under fire conditions.
<b>Special protective equipment for fire-fighters</b>	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

**6. Accidental release measures****Personal precautions, protective equipment and emergency procedures**

<b>Personal precautions</b>	Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas.
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**Methods and material for containment and cleaning up**

<b>Methods for containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for cleaning up</b>	Pick up and transfer to properly labeled containers.
<b>Environmental precautions</b>	Should not be released into the environment. See Section 12 for additional Ecological Information.
<b>Reference to other sections</b>	See section 8 for more information. See section 13 for more information.

**7. Handling and storage****Precautions for safe handling**

<b>Advice on safe handling</b>	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 IDLH
Tricresyl phosphate (mixed isomers) 1330-78-5	-	-	-
Trixylyl phosphate 25155-23-1	-	-	-
Tri-ortho-cresyl phosphate 78-30-8	TWA: 0.02 mg/m <sup>3</sup> inhalable fraction and vapor S*	TWA: 0.1 mg/m <sup>3</sup> (vacated) TWA: 0.1 mg/m <sup>3</sup> (vacated) S*	IDLH: 40 mg/m <sup>3</sup> TWA: 0.1 mg/m <sup>3</sup>
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) 78-32-0	-	-	-

### 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  
Neoprene gloves

**Respiratory protection** No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

**Skin and body protection** Wear suitable protective clothing.

**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

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

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>pH</b>	No data available	None known
<b>Melting point / freezing point</b>	Not determined	
<b>Boiling point / boiling range</b>	260 °C / 500 °F	
<b>Flash point</b>	240 °C / 464 °F	
<b>Evaporation rate</b>	No data available	None known

<b>Flammability (solid, gas)</b>	No data available	None known
<b>Flammability Limit in Air</b>		None known
<b>Upper flammability or explosive limits</b>	No data available	
<b>Lower flammability or explosive limits</b>	No data available	
<b>Vapor pressure</b>	0.1 mmHg (155°C)	
<b>Vapor density</b>	No data available	None known
<b>Relative density</b>	1.162 g/mL (25°C)	
<b>Water solubility</b>	0.2 g/100ml at 25°C	
<b>Solubility in other solvents</b>	Soluble in common solvents	
<b>Partition coefficient</b>	No data available	None known
<b>Autoignition temperature</b>	Not self-ignitable	
<b>Decomposition temperature</b>	No data available	None known
<b>Dynamic viscosity</b>	34 cps (37.8°C)	
<b>Other information</b>		
<b>Pour Point</b>	-25°C (-13 °F)	
<b>Oxidizing properties</b>	No data available	
<b>Explosive properties</b>	No data available	

## 10. Stability and reactivity

<b>Reactivity</b>	It hydrolyzes slowly at normal temperatures in acidic or alkaline aqueous solutions.
<b>Chemical stability</b>	Stable under normal conditions.
<b>Possibility of hazardous reactions</b>	None under normal processing.
<b>Conditions to avoid</b>	Prolonged storage at elevated temperatures.
<b>Incompatible materials</b>	Strong oxidizing agents, strong acids, and strong bases.
<b>Hazardous decomposition products</b>	Carbon dioxide and carbon monoxide. Phosphorus oxides.

## 11. Toxicological information

### Information on likely routes of exposure

#### Product Information

### Symptoms related to the physical, chemical and toxicological characteristics

**Symptoms** No information available.

#### Acute toxicity

#### Numerical measures of toxicity

#### Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Tricresyl phosphate (mixed isomers) 1330-78-5	> 20,000 mg/kg (Rat)	> 10,000 mg/kg (Rabbit)	>5.2 mg/L (Rat)
Trixylyl phosphate 25155-23-1	> 5000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	-
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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**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Skin corrosion/irritation</b>	Not irritant.
<b>Serious eye damage/irritation</b>	Not irritant.
<b>Respiratory or skin sensitization</b>	Not a skin sensitizer.
<b>Germ cell mutagenicity</b>	Not mutagenic by the Ames Test. 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).

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

Chemical name	ACGIH	IARC	NTP	US 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	-	-	-	-

<b>Reproductive toxicity</b>	Classification based on data available for ingredients. May damage fertility. (Specific effect: Testicular effects - Sperm concentration, motility).
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	May cause damage to organs. (adrenals, testes, epididymides, ovaries,liver (rat females only)).
<b>Chronic toxicity</b>	No data available
<b>Aspiration hazard</b>	Not expected to occur.

**12. Ecological information**

**Ecotoxicity** Very toxic to aquatic life with long lasting effects.

**Component Information**

Chemical name	Algae/aquatic plants	Fish	Crustacea	Toxicity to microorganisms
Tricresyl phosphate (mixed isomers) 1330-78-5	>2500 µg/L ,96h	0.6 mg/L 96h	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)	-
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) 1330-78-5	5.93
Trixylyl phosphate 25155-23-1	6.3
Tri-ortho-cresyl phosphate 78-30-8	-
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) 78-32-0	-

**Other adverse effects** Germany, water endangering classes (WGK) 2.

### 13. Disposal considerations

#### Waste treatment methods

**Waste from residues/unused products** Dispose of in accordance with local regulations.

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

### 14. Transport information

**UN number** 3082

**IMDG** Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)  
Class: 9 - Miscellaneous Dangerous Substances and Articles  
Packing Group: III  
Labels: 9  
Mark: MARINE POLLUTANT

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not relevant

**ICAO/IATA** Proper shipping name: Environmentally hazardous substance, liquid, n.o.s (Tricresyl phosphate (less than 1% ortho isomer), trixylenyl phosphate)

Class: 9  
 Packing Group: III  
 Hazard label(s): Miscellaneous  
 Marking: Environmentally hazardous substance

**DOT** Proper shipping name: Environmentally hazardous substances, liquid , n.o.s  
 (Tricresyl phosphate { < 1% ortho isomer), Trixylenyl phosphate)  
 Class: 9 - Miscellaneous Hazardous Materials  
 Labels: 9  
 Packing Group: III

Not regulated for surface and air transport in non-bulk (<119 gallons) packagings.  
 (contains tricresyl phosphate (less than 1% ortho isomer) and trixylenyl phosphate which  
 are Marine Pollutants per 49CFR 172.101 Appendix B)

## 15. Regulatory information

### International Inventories

<b>TSCA</b>	Listed
<b>DSL/NDSL</b>	Listed
<b>ENCS</b>	Listed
<b>IECSC</b>	Listed
<b>KECL</b>	Listed
<b>PICCS</b>	Not Listed
<b>AICS</b>	Listed
<b>TCSI</b>	Listed
<b>NCI</b>	Listed
<b>TECI</b>	Not Listed
<b>NSQ</b>	Not Listed

### **Legend:**

**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  
**AICS** - Australian Inventory of Chemical Substances  
**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.

### **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. Under the amended regulations at 40 CFR 370, EPCRA 311/312 Tier II reporting for the 2017 calendar year will



need to be consistent with updated hazard 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 Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous 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 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**

#### **US State Regulations**

Chemical name	New Jersey	Massachusetts	Pennsylvania
Tricresyl phosphate (mixed isomers) 1330-78-5	X	-	-
Trixylyl phosphate 25155-23-1	-	-	-
Tri-ortho-cresyl phosphate 78-30-8	X	X	X
TRICRESYL PHOSPHATE (M-M-M,M-M-P,M-P-P,P-P-P) 78-32-0	-	-	-

### **U.S. EPA Label Information**

EPA Pesticide Registration Number Not applicable

**16. Other information**

<b>NFPA</b>	Health hazards 1	Flammability 1	Instability 0	Physical and chemical properties -
<b>HMIS</b>	Health hazards 1*	Flammability 1	Physical hazards 0	Personal protection X
	<i>Chronic Hazard Star Legend</i>	<i>* = Chronic Health Hazard</i>		

**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)  
 European Chemicals Agency  
 EPA (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)  
 Japan GHS Classification  
 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)  
 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  
 RTECS (Registry of Toxic Effects of Chemical Substances)  
 World Health Organization

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**Revision date** 08-May-2019

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

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End of Safety Data Sheet