



SAFETY DATA SHEET

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

Revision date 22-Jul-2020

Supersedes Date: 25-Oct-2019

Revision Number 5

1. Identification

Product identifier

Product Name PHOSFLEX 71B

Other means of identification

Product Code(s) 7019

UN/ID no. UN3082

Chemical name Reaction mass of 4-tert-butylphenyl diphenyl phosphate and bis(4-tert-butylphenyl) phenyl phosphate and triphenyl phosphate

Synonyms Phenol, isobutylenated, phosphate (3:1)

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 Fax:(314)983-7607
e-mail:msdsinfo@icl-group.com

Emergency telephone number

Emergency Telephone Chemtrec 1-800-424-9300

2. Hazard(s) identification

Classification

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

Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 2

Hazards not otherwise classified (HNOC)

Not Applicable

Label elements

**Signal word**

Warning

Hazard statements

Very toxic to aquatic life with long lasting effects

Precautionary Statements - Prevention

Avoid release to the environment

Collect spillage

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other information

Not Applicable

3. Composition/information on ingredients

Substance**Component information**

The product contains no substances which at their given concentration, are considered to be hazardous to health.

This product can also be described as: CAS No. 68937-40-6 , Phenol, isobutyleneated, phosphate (3:1).

Chemical name	CAS No.	Weight-%
t-Butylphenyl diphenyl phosphate	56803-37-3	40-46
Bis(t-butylphenyl)phenyl phosphate	65652-41-7	12-18
Tri(t-butylphenyl) phosphate	78-33-1	1-3
Triphenyl phosphate	115-86-6	30-45

4. First-aid measures

Description of first aid measures**Inhalation**

Supply fresh air; consult doctor in case of symptoms.

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 physician.

Ingestion

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**Symptoms**

No information available. .

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically and supportively.

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 fumes under fire conditions. .

Special protective equipment for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

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

Personal precautions Ensure adequate ventilation.

Methods and material for containment and cleaning up

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

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

Environmental precautions Should not be released into the environment. See Section 12 for additional Ecological Information.

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. .

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep container tightly closed in a dry and well-ventilated place. away from incompatible materials (see Section 10). Maximum recommended storage temperature of 65°C (149°F). Crystallizes at temperatures below 4.4°C (40°F).

8. Exposure controls/personal protection**Control parameters****Exposure Limits**

Chemical name	ACGIH TLV	OSHA PEL	NIOSH IDLH
t-Butylphenyl diphenyl phosphate 56803-37-3	-	-	-
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	-	-	-
Tri(t-butylphenyl) phosphate 78-33-1	-	-	-
Triphenyl phosphate	TWA: 3 mg/m ³	TWA: 3 mg/m ³	IDLH: 1000 mg/m ³

115-86-6	(vacated) TWA: 3 mg/m ³	TWA: 3 mg/m ³
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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 Protective 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. In case of insufficient ventilation, wear suitable respiratory equipment.

Skin and body protection Wear suitable protective clothing.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties**Information on basic physical and chemical properties**

Physical state Liquid
Appearance Clear, transparent liquid
Color No information available
Odor None

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	no data available	None known
Melting point / freezing point	-21°C / -5.8 °F	
Boiling point / boiling range	400 °C / 752 °F	(760 mmHg)
Flash point	80 °C / 201.2 °F	CC (closed cup)
Evaporation rate	no data available	None known
Flammability (solid, gas)	no data available	None known
Flammability Limit in Air		None known
Upper flammability or explosive limits	no data available	
Lower flammability or explosive limits	no data available	
Vapor pressure	1.08x10 ⁻³ Pa (20°C)	
Vapor density	no data available	None known
Relative density	1.176 g/mL (25°C)	
Water solubility	3.2 mg/l at 20°C	
Solubility in other solvents	no data available	
Partition coefficient	Log Pow : 4.85	
Autoignition temperature	no data available	
Decomposition temperature	>234°C	
Kinematic viscosity	no data available	None known
Dynamic viscosity	63.6 cP (25°C)	
Other information		
Pour Point	-26.11°C (-15 °F)	
Oxidizing properties	no data available	
Explosive properties	no data 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	Exposure to moisture. .
Incompatible materials	Strong acids. Strong bases. Strong oxidizing agents.
Hazardous decomposition products	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

Oral LD50 >5000 mg/kg (rat)
Dermal LD50 >2000 mg/kg (rabbit)
Inhalation LC50 >0.4 mg/L (rat)

Component information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
t-Butylphenyl diphenyl phosphate 56803-37-3	-	-	-
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	= 2140 mg/kg (Rat)	> 5 g/kg (Rabbit)	-
Tri(t-butylphenyl) phosphate 78-33-1	-	-	-
Triphenyl phosphate 115-86-6	> 20000 mg/kg (Rat)	> 10000 mg/kg (Rabbit)	> 200000 mg/m ³ (Rat) 1 h

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

Skin corrosion/irritation Not irritant.

Serious eye damage/irritation Not irritant.

Respiratory or skin sensitization Sensitiser (Local lymph node assay in the mouse).
 Based on the favourable outcome of the Human Patch test and the epidemiological information that no incidences of sensitization are known at the production facility for many years related to the use and production of the substance, it was decided not to classify for sensitization.

Germ cell mutagenicity No evidence of genotoxic or mutagenic activity was noted in Ames tests, the mouse lymphoma and chromosome aberration tests.

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

Chemical name	ACGIH	IARC	NTP	US OSHA
t-Butylphenyl diphenyl	-	-	-	-

phosphate 56803-37-3				
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	-	-	-	-
Tri(t-butylphenyl) phosphate 78-33-1	-	-	-	-
Triphenyl phosphate 115-86-6	-	-	-	-

Reproductive toxicity

Butylated triphenyl phosphate did not demonstrate reproductive toxicity. In a rat reproduction study, male and female animals received either 50, 250 or 1000 mg/kg/day for several weeks after which they mated. There was no reproductive toxicity observed at any dose level. Diagnostic pathology confirmed no alterations to the reproductive organs. There was no effect on mating index, litter size, survival of the offspring or on any other measured parameter.
NOAEL 1000 mg/kg bw/day (rat, oral).

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.
NOAEL 107.5 mg/kg bw /day (90 days oral, male rat)
NOAEL 124.8 mg/kg bw/day (90 days oral, female rat).

Neurological effects

No signs of acute delayed neurotoxicity when administered orally to hens at 11.83 g/kg.

Aspiration hazard

Not expected.

12. Ecological information

Yes.

Ecotoxicity

Very toxic to aquatic life with long lasting effects.

**Algae/aquatic plants
72-hour EC50**

EC50: 1.4 mg/L (Pseudokirchneriella subcapitata)
NOEC: 0.05 mg/L (72h)

**Fish
96-hour LC50**

0.8 mg/l (Fish, Ictalurus punctatus)
NOEC: 0.093 mg/L (90 days)

**Crustacea
48-hour EC50**

202 µg/L (Daphnia magna)
NOEC: 0.0399 mg/L(21 days)

Component information

Chemical name	Algae/aquatic plants	Fish	Crustacea	Toxicity to microorganisms
t-Butylphenyl diphenyl phosphate 56803-37-3	-	-	-	-
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	-	-	-	-
Tri(t-butylphenyl) phosphate 78-33-1	-	-	-	-
Triphenyl phosphate	EC50: 0.6 - 4mg/L (96h,	LC50: 0.4 mg/L (96h)	EC50: 0.18-0.32 mg/L	-

115-86-6	Pseudokirchneriella subcapitata)	(Daphnia magna, 48h)	
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Persistence and degradability Readily biodegradable.

Bioaccumulation The wholefish BCF was found to be 1850.

Component information

Chemical name	Partition coefficient
t-Butylphenyl diphenyl phosphate 56803-37-3	-
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	-
Tri(t-butylphenyl) phosphate 78-33-1	-
Triphenyl phosphate 115-86-6	4.59

Mobility Not Applicable. Readily biodegradable.

Other adverse effects No information available.

13. Disposal considerations

Waste treatment methods

Waste from residues/unused products Observe all federal, state and local environmental regulations when disposing of this material.

Contaminated packaging Empty containers should be disposed of in accordance with all applicable laws and regulations.

14. Transport information

Note: Materials carried under UN3082 or UN3077 in either single or inner packaging of ≤5L (liquids) or ≤5kg (solids) may be transported as non-dangerous goods, provided they are packed in good quality packaging and adhere to the corresponding general packaging provisions of the above transport legislation.

DOT

UN/ID no. UN3082
Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard class 9
Packing group III
Marine pollutant Yes.
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) , 9, III
Emergency Response Guide Number 171

TDG

UN/ID no. UN3082
Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard class 9
Packing group III
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) ,

9, III

MEX

UN/ID no. UN3082
Proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Hazard class 9
Packing group III
Environmental hazards Yes
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) , 9, III

IATA

UN number UN3082
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport hazard class(es) 9
Packing group III
Environmental hazards Yes
ERG Code 9L
Special precautions None
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) , 9, III

IMDG

UN number UN3082
UN proper shipping name ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
Transport hazard class(es) 9
Packing group III
EmS-No. F-A, S-F
Special precautions None
Marine pollutant Yes
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphate mixtures containing 10% to 48% triphenyl phosphates) , 9, III

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.

Chemical name	TSCA Inventory List Active/Inactive
t-Butylphenyl diphenyl phosphate 56803-37-3 (40-46)	Present (ACTIVE)
Bis(t-butylphenyl)phenyl phosphate 65652-41-7 (12-18)	Present (ACTIVE)
Tri(t-butylphenyl) phosphate 78-33-1 (1-3)	Present (ACTIVE)
Triphenyl phosphate 115-86-6 (30-45)	Present (ACTIVE)

TSCA Listed or exempted
DSL Listed or exempted
ENCS Listed or exempted
IECSC Listed or exempted
KECL Listed or exempted
PICCS Listed or exempted
AICS Listed or exempted
NZIoC Listed or exempted
TCSI Listed or exempted

NCI	Listed or exempted
TECI	Not Listed
NSQ	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
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)
t-Butylphenyl diphenyl phosphate - 56803-37-3	-
Bis(t-butylphenyl)phenyl phosphate - 65652-41-7	-
Tri(t-butylphenyl) phosphate - 78-33-1	-
Triphenyl phosphate - 115-86-6	-

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
t-Butylphenyl diphenyl phosphate 56803-37-3	-	-	-	-
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	-	-	-	-
Tri(t-butylphenyl) phosphate 78-33-1	-	-	-	-
Triphenyl phosphate 115-86-6	-	-	-	-

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
t-Butylphenyl diphenyl phosphate 56803-37-3	-	-
Bis(t-butylphenyl)phenyl phosphate 65652-41-7	-	-
Tri(t-butylphenyl) phosphate 78-33-1	-	-
Triphenyl phosphate 115-86-6	-	-

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**

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

Chemical name	New Jersey	Massachusetts	Pennsylvania
Reaction mass of 4-tert-butylphenyl diphenyl phosphate and bis(4-tert-butylphenyl) phenyl phosphate and triphenyl phosphate - ---	Listed (Triphenyl phosphate)	Listed (Triphenyl phosphate)	Listed (Triphenyl phosphate)

U.S. EPA Label Information

EPA Pesticide Registration Number Not Applicable

16. Other information

NFPA	Health hazards 1	Flammability 1	Instability 0	Physical and chemical properties -
HMIS	Health hazards 1	Flammability 1	Physical hazards 0	Personal protection X

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
World Health Organization

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Revision date 22-Jul-2020

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