



SAFETY DATA SHEET

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

Revision date 06-Jun-2021

Supersedes Date: 19-Jul-2017

Revision Number 5.1

1. Identification

Product identifier

Product Name Fyrquel 220

Other means of identification

Product Code(s) 7030

UN/ID no UN3082

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

Chemical Family Aryl phosphate

Synonyms Phenol, isobutylenated, phosphate (3:1)

Recommended use of the chemical and restrictions on use

Recommended use Fire-resistant hydraulic fluid

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 (International): +1 (703) 527-3887

2. Hazard(s) identification

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Hazards not otherwise classified (HNOC)

Not Applicable

Label elements

Hazard statements

Not classified

Other information

Not Applicable

3. Composition/information on ingredients**Substance**

Not applicable.

Mixture

Butylated triphenyl phosphate is multi constituent substance can also be described as: (CAS No. 68937-40-6) Phenol, isobutylenated, phosphate (3:1)

Chemical name	CAS No	Weight-%
t-Butylphenyl diphenyl phosphate	56803-37-3	30-35
Bis(t-butylphenyl)phenyl phosphate	65652-41-7	30-35
Tri(t-butylphenyl) phosphate	78-33-1	10-15
Triphenyl phosphate	115-86-6	<25

4. First-aid measures**Description of first aid measures**

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 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	Material is not combustible. Use extinguishing media appropriate to surrounding fire conditions.
Specific hazards arising from the chemical	May emit toxic fumes under fire conditions.
Hazardous combustion products	Carbon monoxide, carbon dioxide (CO ₂), and phosphorus oxides.
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.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Wear appropriate safety clothing and eye/face protection (see Section 8).

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 Soak up with sand or other suitable absorbant and dispose of as solid waste. Collect in suitable and properly labeled containers. Ventilate area and wash spill site after material pickup is complete.

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

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). Store above 4.4°C (40° F) for improved pumping rates. Temperatures between 27 - 37.8°C (80 - 100°F) provide good flow rates. Product viscosity will increase significantly at low temperatures.

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
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	TWA: 3 mg/m ³	TWA: 3 mg/m ³ (vacated) TWA: 3 mg/m ³	IDLH: 1000 mg/m ³ TWA: 3 mg/m ³

Appropriate engineering controls

Engineering controls	Eyewash stations Showers Ventilation systems
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Individual protection measures, such as personal protective equipment

Eye/face protection	Chemical safety goggles.
Hand protection Gloves	Protective gloves. Neoprene gloves Butyl rubber
Skin and body protection	Wear suitable protective clothing.
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.
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	yellowish
Odor	Slight

Property	Values	Remarks • Method
Melting point / freezing point	No data available	
Boiling point / boiling range	260 °C	
Flammability (solid, gas)	Not flammable .	
Flammability Limit in Air		None known
Upper flammability or explosive limits	No data available	
Lower flammability or explosive limits	No data available	
Flash point	246 °C	CC (closed cup)
Autoignition temperature	544 °C	
Decomposition temperature	>234 °C	None known
pH	No data available	None known
pH (as aqueous solution)	No data available	No information available
Kinematic viscosity	47 cST @ 37.8°C	
Dynamic viscosity	220 SUS @ 38°C (100°F)	
Water solubility	< 0.1 g/100 ml	
Solubility(ies)	No data available	None known
Partition coefficient	Log Pow: 4.85	
Vapor pressure	1.08x10 ⁽⁻³⁾ Pa (20°C)	
Relative density	1.13 - 1.17 g/cm ³ (20°C)	
Bulk density	No data available	
Liquid Density	No data available	
Vapor density	No data available	Not determined
Particle characteristics		
Particle Size	No information available	
Particle Size Distribution	No information available	
Other information		
Pour Point	-17.77°C (0 °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.
Stability	Stable under normal conditions.
Explosion data	
Sensitivity to mechanical impact	None.
Sensitivity to static discharge	None.
Possibility of hazardous reactions	None under normal processing.
Conditions to avoid	Exposure to moisture. Heating above decomposition temperature.
Incompatible materials	Strong oxidizers, strong acids and strong alkalis.
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	-	-	-
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/eye irritation	Not irritant.
Respiratory or skin sensitization	Sensitiser (Local lymph node assay in the mouse). Patch test on human volunteers did not demonstrate irritating properties. No classification is

proposed, based on conclusive negative data.

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.

Teratogenicity

Not teratogenic when administered orally up to 1000 mg/kg.

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).

Target organ effects

Blood, Peripheral Nervous System (PNS).

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

Ecotoxicity

Toxic to aquatic life with long lasting effects.

Fish**96-hour LC50**

0.8 mg/l (*Ictalurus punctatus*)

48-hour EC50

202 µg/l (*Daphnia magna*)

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 115-86-6	EC50: 0.6 - 4mg/L (96h, <i>Pseudokirchneriella</i>)	LC50: 0.4 mg/L (96h)	EC50: 0.18-0.32 mg/L (<i>Daphnia magna</i> , 48h)	-

	subcapitata)			
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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 Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging Dispose of contents/containers in accordance with local regulations.

14. Transport information

DOT

UN/ID no UN3082
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphates mixtures containing 10% to 48% of triphenyl phosphate)
Hazard class 9
Packing group III
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphates mixtures containing 10% to 48% of triphenyl phosphate) , 9, III, Marine pollutant
Emergency Response Guide Number 171
Note: Not regulated for surface and air transport in non-bulk (<119 gallons) packagings. (contains triphenyl phosphate which is a Marine Pollutant per 49CFR 172.101 Appendix B)

TDG

UN/ID no UN3082
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphates mixtures containing 10% to 48% of triphenyl phosphate)
Hazard class 9
Packing group III
Description: UN3082, Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphates mixtures containing 10% to 48% of triphenyl phosphate) , 9, III

MEX

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

IATA

UN number or ID number UN3082
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphates mixtures containing 10% to 48% of triphenyl phosphate)
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 phosphates mixtures containing 10% to 48% of triphenyl phosphate) , 9, III

IMDG

UN number or ID number UN3082
UN proper shipping name Environmentally hazardous substance, liquid, n.o.s. (triphenyl phosphate, tert-butylated triphenyl phosphates mixtures containing 10% to 48% of triphenyl phosphate)
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 phosphates mixtures containing 10% to 48% of triphenyl 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
t-Butylphenyl diphenyl phosphate 56803-37-3 (30-35)	Present (ACTIVE)
Bis(t-butylphenyl)phenyl phosphate 65652-41-7 (30-35)	Present (ACTIVE)
Tri(t-butylphenyl) phosphate 78-33-1 (10-15)	Present (ACTIVE)
Triphenyl phosphate 115-86-6 (<25)	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
AIIC	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
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)
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
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	X	X	X

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

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 06-Jun-2021

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

End of Safety Data Sheet