

SECTION 1: Identification

1.1 Product identifier

Trade name: **PyroVex[®] P-111**

Chemical Name and Synonyms:

Tris (1-chloro-2-propyl) phosphate; tris(2-chloro-1-methylethyl) phosphate; 2-Propanol, 1-chloro, phosphate (3:1); Tris(monochloroisopropyl) phosphate (TMCP); Tris(2-chloroisopropyl) phosphate (TCIP); Phosphoric acid, tris(2-chloro-1-methylethyl) ester; Tris(beta-chloroisopropyl) phosphate; 2-Propanol, 1-chloro-, 2,2',2"-phosphate; TCPP

CAS-No. : 13674-84-5

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

1.2.1 Relevant identified uses: Flame-retardant in plastics and as a secondary plasticizer. Leading additive for rigid or flexible urethane foams.

1.2.2 Recommended restrictions on use: Professional users only.

1.3 Details of the supplier of the safety data sheet

Velsicol Chemical LLC

10400 W. Higgins Road
Rosemont, Illinois 60018 USA
Phone: (847) 813-7888
Fax: (847) 768-3227
Email: customerservice@velsicol.com

1.4 Emergency telephone number

Outside the continental U.S.A. call CHEMTREC 1-800-424-9300 (24 hours)
In the continental U.S.A. call CHEMTREC 703-527-3887 (24 hours)

SECTION 2: Hazards Identification

2.1 Hazard classification and Hazard statement(s)

Hazard classification	Hazard statement(s)
Acute Toxicity 4	Harmful if swallowed.

2.2 Precautionary statements

Wash hands thoroughly after handling.
Do not eat, drink or smoke when using this product.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth.
Dispose of contents/container in accordance with local /regional /national /international regulation

2.3 Signal Word: Warning

2.4 Pictograms:



2.5 Other hazards: When heated to decomposition this chemical emits very toxic fumes.

2.6 Additional Information: No available



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SECTION 3: Composition/information on ingredients:

3.1 Substance:

Chemical Name	Common name and synonyms	CAS number	% by Weight
2-Propanol, 1-chloro-, 2,2',2"-phosphate	Tris (1-chloro-2-propyl) phosphate; TCPP	13674-84-5	>95

3.2 Impurities and stabilizing additives

No information available

SECTION 4: First-Aid Measures

4.1 Description of first aid measures

4.1.1 General information:

Inhalation and skin contact are expected to be the primary routes of occupational exposure.

4.1.2 Following inhalation:

If inhaled, leave the contaminated area; take deep breaths of fresh air. Get medical attention immediately and be prepared to transport the victim to a hospital even if no symptoms (such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest) develop. Whenever possible, Self-Contained Breathing Apparatus (SCBA) should be used.

4.1.3 Following skin contact:

Immediately wash affected skin with water while removing and isolating all contaminated clothing. Gently wash all affected skin areas thoroughly with soap and water. Wash any contaminated clothing before reusing. If symptoms such as redness or irritation develop, IMMEDIATELY call a physician and be prepared to transport the victim to a hospital for treatment.

4.1.4 Following eye contact:

Immediately remove contact lenses if present and flush with plenty of water for at least 15 minutes. Get medical attention immediately. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician. IMMEDIATELY transport the victim after flushing eyes to a hospital even if no symptoms (such as redness or irritation) develop.

4.1.5 Following ingestion:

Get medical attention immediately. DO NOT INDUCE VOMITING. If the victim is conscious and not convulsing, give 1 or 2 glasses of water to dilute the chemical. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

4.1.6 Self-protection of the first aider:

Wear protective gloves/protective clothing/eye protection/face protection. Do not get in eyes, on skin, or on clothing. Contaminated work clothing should not be allowed out of the workplace.

4.1.7 Notes for the doctor:

Information concerning symptoms of exposure to this chemical is not available.

4.2 Most important symptoms and effects, both acute and delayed

See the labelling (see section 2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatments needed:

Not available.

SECTION 5: Fire-Fighting Measures

5.1 Extinguishing media

Flammability Properties: Non-flammable.



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Suitable extinguishing media: Dry chemical, carbon dioxide. A water spray may also be used.
Unsuitable extinguishing media: DO NOT use water jet.

5.2 Special hazards arising from the substance or mixture

Combustion products include toxic carbon oxides (CO, CO₂), phosphates, halogenated compounds. WARNING: Highly toxic HCl gas is produced during combustion.

5.3 Advice for fire fighters

Firefighters and others who may be exposed to products of combustion should wear full firefighting turnout gear and self-contained breathing apparatus (MSHA-NIOSH approved).

SECTION 6: Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent possible contamination of skin, eyes and personal clothing.

6.2 Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let this chemical enter the environment.

6.3 Methods and materials for containment and cleaning up

Stop the leak if possible. Absorb with an inert material and put the spilled material in an appropriate waste disposal. Consult federal, state, and/or local authorities for assistance on disposal.

6.4 References to other sections

See sections 7, 8 and 13 for further advice.

SECTION 7: Handling and Storage

7.1 Precautions for safe handling

Handle with caution and minimize exposure. Keep away from heat and sources of ignition. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation. Do not breathe gas, fumes, vapor or spray. Wear suitable protective clothing. Use with adequate ventilation.

7.2 Conditions for safe storage, including any incompatibilities

Store in a tightly closed container. Store in a cool, dry and well-ventilated area away from incompatible compounds such as oxidizing agents. Keep away from sources of ignition.

Specific incompatibilities

No known.

7.3 Specific end uses(s)

Raw industrial material.

SECTION 8. Exposure Controls/Personal Protection

8.1 Control parameters

Occupational exposure may occur through inhalation and dermal contact.
No exposure limits have been established for this product.

8.2 Exposure controls

8.2.1 Appropriate engineering controls:

Provide ventilation if necessary to minimize exposure. Provide ventilation if necessary to minimize exposure. Ensure that eyewash station and safety shower is proximal to the work-station location. Keep away from sources of ignition.

8.2.2 Personal protective measures:

Handle in accordance with good industrial hygiene and safety practice. Remove all contaminated clothing. Wash hands before breaks and at the end of work.

Respiratory protection

A organic vapor acid gas respirator are recommended

Body Protection

Protective clothing, including gloves to provide an impervious barrier to prevent dermal exposure.

Eye and face protection

Safety glasses with side-shields for eye protection

Skin protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.2.3 Environmental exposure controls:

Discharge into the environment must be avoided.

Do not contaminate water. Do not flush into surface water or sanitary sewer system.

SECTION 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance: Liquid

Color: Pale yellow, clear

Odor: Mild

Odor threshold: No information available.

pH: no data available

Boiling point (average): 288°C, Decomposes at 244°C

Melting point/freezing point (average): <-20°C,

Flashpoint: 245°C (COC)

Evaporation rate: No information available.

Flammability (solid): Not flammable

Vapor pressure: 1.4×10^{-3} Pa at 25°C

Vapor density: no data available

Specific Gravity: 1.288 at 20°C

Solubility in water: 1080 mg/l at 20°C in water

Solubility in other solvents: slightly soluble in alcohol, ether

Surface tension: no data available

Partition coefficient: Log Kow= 2.68±0.36

Auto ignition temperature: >400°C

Decomposition temperature: 244°C

Viscosity: 68.5 cP at 20°C

Explosive properties: no data available

Oxidizing properties: no data available

Dissociation Constant: no data available

Molecular Weight: 327.57

9.2 Other information:

No information available.



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SECTION 10: Stability and Reactivity

10.1 Reactivity

No hazardous reaction when handled and stored according to provisions.

10.2 Chemical stability

This substance is stable under recommended storage conditions.

10.3 Others

Possibility of hazardous reactions:

No hazardous reactions expected under normal conditions of use. This chemical may hydrolyze under acidic or alkaline conditions.

Conditions to avoid:

Avoid excessive heat and light.

Incompatible materials:

Reactive with oxidizing agents.

Hazardous decomposition products:

Carbon oxides (CO, CO₂), phosphates, halogenated compounds. WARNING: Highly toxic HCl gas is produced during combustion.

SECTION 11: Toxicological Information

11.1 Information on toxicological effects

Velsicol Chemical LLC has not conducted toxicity tests on this substance. However, toxicity data are available for this or similar substances.

a) Acute toxicity

Acute Toxicity 4, Harmful if swallowed.

LD50 Oral in the rat: This substance shows very low acute oral toxicity

Male - 4200 mg/kg bw;

Female - 2800 mg/kg bw;

LD50 inhalation in the rat: The substance shows very low inhalation toxicity.

> 7 mg/L air, 4h

LD50 dermal in rabbit: The substance shows very low dermal toxicity.

2000 mg/kg (24 hr. exp.)

b) Skin corrosion/irritation

Rabbit: Slight skin irritant following 24 hr. exp. Not classified.

c) Serious eye damage/irritation

Rabbit: slight eye irritant. Not classified.

d) Respiratory/skin sensitization

Not sensitizing to skin.

e) Germ cell mutagenicity

Not classified as a carcinogen or mutagen or toxic for reproduction.

f) Carcinogenicity

Not classified as a carcinogen or mutagen or toxic for reproduction.



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- g) Reproductive toxicity**
Not classified as a carcinogen or mutagen or toxic for reproduction.
- h) STOT-single exposure**
Not classified
- i) STOT-repeated exposure**
Not classified
- j) Aspiration hazard**
No data available
- k) Additional Information**
No data available

SECTION 12: Ecological Information

12.1. Toxicity

Velsicol Chemical LLC has not conducted toxicity tests on this substance. However, some data are available on the components of this material.

The QSAR data shows the TCPP may shows long-term toxicity to aquatic organisms.

The 96-h LC50 of approximately 51 mg/l was determined in the test with *P. promelas*.

12.2 Persistence and degradability

A mixed inoculum from soil, activated sludge and raw influent sewage was used in a study of biodegradation. The extent of degradation was close to zero at the end of 28 days.

12.3 Bioaccumulative potential

Not B and not vB based on: Log Kow = 2.59 (QSAR). Not B and not vB based on: BCFs of 0.8 – 2.8.

12.4 Mobility in soil

Henry's Law constant (Calc.): 0.000396 Pa m³/mol at 25°C

12.5 Results of PBT and vPvB assessment

This substance is considered to be persistent, non-bio-accumulating and non-toxic (PBT) substance.

12.6 Other adverse effects

Not available

SECTION 13: Disposal Considerations

Recycle to process, if possible. Containers should be drained of residual material before disposal. Emptied containers should be disposed of in accordance with all applicable laws and regulations.

This product, if unused, does not meet the EPA's criteria as either a listed or characteristic hazardous waste under the Resource Conservations and Recovery Act (RCRA) as published in 40 CFR 261 .

SECTION 14: Transport Information

DOT (US): Not dangerous goods

ADR, IATA, RID and IMDG: Not regulated



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SECTION 15: Regulatory Information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

This product is listed in the following Inventories:

United States - Section 8(b) Inventory (TSCA)

Canada - Domestic Substances List (DSL)

European Inventory of Existing Commercial Chemical (EINECS # 237-158-7)

Australia - Inventory of Chemical Substances (AICS)

China - Inventory of Existing Chemical Substances (IECSC)

Japan - Existing and New Chemical Substances (ENCS) ((2)-1941)

Korea - Existing and Evaluated Chemical Substances (KECL) (KE-05878)

New Zealand - Inventory of Chemicals (NZIoC HSNO#: 004044)

Philippines - Inventory of Chemicals and Chemical Substances (PICCS)

15.2 Chemical Safety Assessment

No information available.

SECTION 16: Other Information

16.1 Indication of changes

This is the first SDS under OSHA Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)) 06, May 2015

V2: Change to Velsicol new format and change ResNovae to PyroVex, 26 Sep. 2016

16.2 Key literature references and sources for data

Hazardous Substances Databank (6099)

Hazard Communication Standard (HCS) (29 CFR 1910.1200(g)) and Appendix C, D

ECHA website: <http://echa.europa.eu/web/guest>

Ariel WebInsight, 3E Company.com

UNEP OECD SIDS for CAS # 13674-84-5

European Union Risk Assessment Report (May 2008)

TOXNET by National Library of Medicine, <http://toxnet.nlm.nih.gov/>

Manufacture SDS.

16.3 Training advice: accordance with Hazard Communication Standard (HCS) (29 CFR 1910.1200(g))

16.4 Further information: Notice to Reader

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.