



PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 23/01/2015

Revision date:

Version: 1.0

ES-5529

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixtures
Product name. : PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE
Product code : ES-5529

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

1.2.1. Relevant identified uses

Industrial/Professional use spec : For professional use only.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Cambridge Isotope Laboratories, Inc.
50 Frontage Road
Andover, MA 01810
USA

USA: 1-800-322-1174 Int: 1-978-749-8000

cilsales@isotope.com www.isotope.com

Emergency telephone number

Emergency numbers:

Chemtrec: 1-800-424-9300 (24 hours)

International: 1-202-483-7616 (24 hours)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liq. 2 H225

Acute Tox. 4 (Oral) H302

Acute Tox. 4 (Dermal) H312

Acute Tox. 4 (Inhalation) H332

Eye Irrit. 2 H319

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

F; R11

Full text of R-phrases: see section 16

Classification (GHS-US)

Flam. Liq. 2 H225

Acute Tox. 4 (Oral) H302

Acute Tox. 4 (Dermal) H312

Acute Tox. 4 (Inhalation) H332

Eye Irrit. 2A H319

Adverse physicochemical, human health and environmental effects

Lungs, Blood, Kidney, Liver, Central nervous system.

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Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

2.2. Label elements

Labeling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS02

GHS07

Signal word (CLP) :

Danger

Hazardous ingredients :

ACETONITRILE UNLABELED

Hazard statements (CLP) :

H225 - Highly flammable liquid and vapor
H302+H312+H332 - Harmful if swallowed, in contact with skin or if inhaled
H319 - Causes serious eye irritation

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P261 - Avoid breathing fume, mist, spray, vapors
P264 - Wash both hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS02

GHS07

Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H225 - Highly flammable liquid and vapor
H302+H312+H332 - Harmful if swallowed, in contact with skin or if inhaled
H319 - Causes serious eye irritation

Precautionary statements (GHS-US) :

P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical, lighting, ventilating equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P261 - Avoid breathing fume, mist, spray, vapors
P264 - Wash Both hands thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear eye protection, face protection, protective clothing, protective gloves
P301+P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a POISON CENTER/doctor/physician if you feel unwell
P330 - If swallowed, rinse mouth
P337+P313 - If eye irritation persists: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P370+P378 - In case of fire: Use Alcohol resistant foam., Carbon dioxide., Dry chemical., Water spray for extinction
P403+P235 - Store in a well-ventilated place. Keep cool
P501 - Dispose of contents/container to Comply with applicable regulations.

2.3. Other hazards

No additional information available

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Directive 67/548/EEC
ACETONITRILE UNLABELED	(CAS No) 75-05-8 (EC no) 200-835-2 (EC index no) 608-001-00-3	99.9909	F; R11
TRIETHYL PHOSPHATE (D15, 98%)	(CAS No) 78-40-0 (unlabeled) (EC no) 201-114-5 (EC index no) 015-013-00-7	0.0013	Xn; R22
TRIPROPYL PHOSPHATE (D21, 98%)	(CAS No) 513-08-6 (unlabeled) (EC no) 208-151-6	0.0013	Xn; R20/21/22 Xn; R22 Xi; R38
TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%)	(CAS No) 13674-87-8 (Unlabeled) (EC no) 237-159-2	0.0013	Carc.Cat.3; R40 N; R51/53
TRIBUTYL PHOSPHATE (D27, 98-99%)	(CAS No) 126-73-8 (Unlabeled) (EC no) 204-800-2 (EC index no) 015-014-00-2	0.0013	Xn; R22 N; R51/53
TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) substance listed as REACH Candidate (Tris(2-chloroethyl)phosphate) substance listed in REACH Annex XIV (Tris (2-chloroethyl) phosphate (TCEP))	(CAS No) 115-96-8 (EC no) 204-118-5 (EC index no) 015-102-00-0	0.0013	Carc.Cat.3; R40 Repr.Cat.1; R60 Repr.Cat.1; R61 Xn; R22 N; R51/53
TRIS(2-CHLOROISOPROPYL)PHOSPHATE (D18, 98%)	(CAS No) 13674-84-5 (Unlabeled) (EC no) 237-158-7	0.0013	Xn; R22
TRIPHENYL PHOSPHATE (D15, 98%)	(CAS No) 1173020-30-8 (EC no) 204-112-2	0.0013	Xn; R22 Xn; R48/22 N; R50/53

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
ACETONITRILE UNLABELED	(CAS No) 75-05-8 (EC no) 200-835-2 (EC index no) 608-001-00-3	99.9909	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2, H319
TRIETHYL PHOSPHATE (D15, 98%)	(CAS No) 78-40-0 (unlabeled) (EC no) 201-114-5 (EC index no) 015-013-00-7	0.0013	Acute Tox. 4 (Oral), H302 Eye Irrit. 2, H319
TRIPROPYL PHOSPHATE (D21, 98%)	(CAS No) 513-08-6 (unlabeled) (EC no) 208-151-6	0.0013	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319
TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%)	(CAS No) 13674-87-8 (Unlabeled) (EC no) 237-159-2	0.0013	Acute Tox. 4 (Oral), H302 Aquatic Chronic 2, H411
TRIBUTYL PHOSPHATE (D27, 98-99%)	(CAS No) 126-73-8 (Unlabeled) (EC no) 204-800-2 (EC index no) 015-014-00-2	0.0013	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Inhalation:dust,mist), H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Carc. 2, H351
TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) substance listed as REACH Candidate (Tris(2-chloroethyl)phosphate) substance listed in REACH Annex XIV (Tris (2-chloroethyl) phosphate (TCEP))	(CAS No) 115-96-8 (EC no) 204-118-5 (EC index no) 015-102-00-0	0.0013	Acute Tox. 4 (Oral), H302 Carc. 2, H351 Repr. 1B, H360F Aquatic Chronic 2, H411
TRIS(2-CHLOROISOPROPYL)PHOSPHATE (D18, 98%)	(CAS No) 13674-84-5 (Unlabeled) (EC no) 237-158-7	0.0013	Acute Tox. 4 (Oral), H302
TRIPHENYL PHOSPHATE (D15, 98%)	(CAS No) 1173020-30-8 (EC no) 204-112-2	0.0013	Acute Tox. 4 (Oral), H302 STOT RE 2, H373 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Name	Product identifier	%	Classification (GHS-US)
ACETONITRILE UNLABELED	(CAS No) 75-05-8	99.9909	Flam. Liq. 2, H225 Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2A, H319

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of R-, H- and EUH-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
First-aid measures after inhalation	: If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.
First-aid measures after skin contact	: Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Wash contaminated clothing before reuse.
First-aid measures after eye contact	: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
First-aid measures after ingestion	: Rinse mouth. Call a POISON CENTER/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: May be harmful if inhaled. Causes respiratory tract irritation.
Symptoms/injuries after skin contact	: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Fire hazard	: Highly flammable liquid and vapor.
Explosion hazard	: May form flammable/explosive vapor-air mixture.
Reactivity	: Vapors may form explosive mixture with air.

5.3. Advice for firefighters

Firefighting instructions	: Use water spray to cool unopened containers.
Protection during firefighting	: Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Remove ignition sources. Use special care to avoid static electric charges. No naked lights. No smoking.

6.1.1. For non-emergency personnel

Emergency procedures : Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

6.3. Methods and material for containment and cleaning up

For containment : Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed	: Handle empty containers with care because residual vapors are flammable.
Precautions for safe handling	: No naked lights. No smoking. Use only non-sparking tools.
Hygiene measures	: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

7.2. Conditions for safe storage, including any incompatibilities

Technical measures	: Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment.
Storage conditions	: Store at room temperature away from light and moisture.
Incompatible materials	: Heat sources.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE

Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	20.0000000000 ppm Lower Respiratory Tract irritation. Not classifiable as a human carcinogen.
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ACETONITRILE UNLABELED (75-05-8)

Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	20.0000000000 ppm Lower Respiratory Tract irritation. Not classifiable as a human carcinogen.
USA OSHA	OSHA PEL (TWA) (ppm)	40.0000000000 ppm
USA OSHA	OSHA PEL (STEL) (ppm)	60.0000000000 ppm

TRIBUTYL PHOSPHATE (D27, 98-99%) (126-73-8 (Unlabeled))

Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	0.2000000000 ppm Eye & Upper Respiratory Tract irritation, Headache, Nausea
USA OSHA	OSHA PEL (TWA) (ppm)	0.2000000000 ppm

TRIPHENYL PHOSPHATE (D15, 98%) (1173020-30-8)

Italy - Portugal - USA ACGIH	ACGIH TWA (mg/m ³)	3.0000000000 mg/m ³ Remark: Not classifiable as a human carcinogen. Cholinesterase inhibition.
USA OSHA	OSHA PEL (TWA) (mg/m ³)	3.0000000000 mg/m ³ Remark: Not classifiable as a human carcinogen. Cholinesterase inhibition.

8.2. Exposure controls

Personal protective equipment : Gas mask with filter type NO at conc. in air >. Protective clothing. Protective goggles. Self-contained breathing apparatus. Gloves.



Hand protection	: Wear suitable protective clothing and gloves.
Eye protection	: Wear safety glasses with side shields (or goggles) and a face shield.
Skin and body protection	: Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Respiratory protection	: When appropriate, use NIOSH/CEN approved respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

The properties listed below are for the solvent, the main component of this mixture.

Physical state	: Liquid
Appearance	: Liquid, clear.
Molecular mass	: 41.05
Color	: Colourless.
Odor	: ether-like.
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: -48 °C (-54°F)
Freezing point	: No data available
Boiling point	: 81 - 82 °C (178 - 180 °F)
Flash point	: 2.0 °C (35.6 °F) - closed cup

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Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Self ignition temperature	: 523 °C (973 °F)
Decomposition temperature	: No data available
Flammability (solid, gas)	: Highly flammable liquid and vapor
Vapor pressure	: 73.18 hPa (54.89 mmHg) at 15°C (59 °F), 119.81 hPa (89.86 mmHg) at 25°C(77 °F)
Relative vapor density at 20 °C	: 1.42 - (Air = 1.0)
Relative density	: No data available
Solubility	: Water: 100 %
Log Pow	: -0.34
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Explosive limits	: 4.4 - 16 vol %

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Vapors may form explosive mixture with air.

10.2. Chemical stability

See storage and expiration date on CoA.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Open flame. Direct sunlight.

10.5. Incompatible materials

Acids, Bases, Oxidizing agents, Reducing agents, Alkali metals.

10.6. Hazardous decomposition products

May release flammable gases.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed. Harmful in contact with skin. Harmful if inhaled.

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE	
LD50 oral rat	2460 mg/kg
LD50 dermal rabbit	2000 mg/kg
LC50 inhalation rat (mg/l)	≥ 26.8 mg/l
LC50 inhalation rat (ppm)	7551 ppm - 8h
ATE (oral)	500.000 mg/kg body weight
ATE (dermal)	1100.000 mg/kg body weight
ATE (gases)	4500.000 ppmV/4h
ATE (vapors)	11.000 mg/l/4h
ATE (dust, mist)	1.500 mg/l/4h

TRIETHYL PHOSPHATE (D15, 98%) (78-40-0 (unlabeled))	
LD50 oral rat	1165 mg/kg
ATE (oral)	1165.000 mg/kg body weight

TRIPROPYL PHOSPHATE (D21, 98%) (513-08-6 (unlabeled))	
ATE (oral)	500.000 mg/kg body weight
ATE (gases)	4500.000 ppmV/4h
ATE (vapors)	11.000 mg/l/4h
ATE (dust, mist)	1.500 mg/l/4h

ACETONITRILE UNLABELED (75-05-8)	
LD50 oral rat	2460 mg/kg
LD50 dermal rabbit	2000 mg/kg

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

ACETONITRILE UNLABELED (75-05-8)	
LC50 inhalation rat (mg/l)	≥ 26.8 mg/l
LC50 inhalation rat (ppm)	7551 ppm - 8h
ATE (oral)	500.000 mg/kg body weight
ATE (dermal)	2000.000 mg/kg body weight
ATE (gases)	4500.000 ppmV/4h
ATE (vapors)	11.000 mg/l/4h
ATE (dust, mist)	1.500 mg/l/4h

TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%) (13674-87-8 (Unlabeled))	
LD50 oral rat	> 2000 mg/kg
LD50 dermal rabbit	> 4640 mg/kg
LC50 inhalation rat (mg/l)	> ≥ 5.22 mg/l
ATE (oral)	500.000 mg/kg body weight

TRIBUTYL PHOSPHATE (D27, 98-99%) (126-73-8 (Unlabeled))	
LD50 oral rat	1552 mg/kg
LD50 dermal rabbit	> 3100 mg/kg
LC50 inhalation rat (mg/l)	28000 mg/m ³ 1 h
ATE (oral)	1552.000 mg/kg body weight
ATE (vapors)	28.000 mg/l/4h
ATE (dust, mist)	1.500 mg/l/4h

TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) (115-96-8)	
LD50 oral rat	1150 mg/kg
LC50 inhalation rat (mg/l)	> 5 mg/l 4 h
ATE (oral)	1150.000 mg/kg body weight

TRIS(2-CHLOROISOPROPYL)PHOSPHATE (D18, 98%) (13674-84-5 (Unlabeled))	
LD50 oral rat	≤ 1101 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat (mg/l)	> 7 mg/l male and female - 4 h

TRIPHENYL PHOSPHATE (D15, 98%) (1173020-30-8)	
LD50 oral rat	> 20000 mg/kg
LD50 dermal rabbit	> 7900 mg/kg
ATE (oral)	500.000 mg/kg body weight

Skin corrosion/irritation	: Not classified Skin - rabbit - No skin irritation
Serious eye damage/irritation	: Causes serious eye irritation. Eyes - Rabbit - Irritating to eyes
Respiratory or skin sensitization	: Did not cause sensitization on laboratory animals. Buehler Test - guinea pig - Did not cause sensitisation on laboratory animals.
Germ cell mutagenicity	: Not classified
Carcinogenicity	: No evidence of carcinogenicity in animal studies (when indicated).
Reproductive toxicity	: Animal testing did not show any effects on fertility.
Specific target organ toxicity (single exposure)	: Not classified The substance or mixture is not classified as specific target organ toxicant.
Specific target organ toxicity (repeated exposure)	: Not classified The substance or mixture is not classified as specific target organ toxicant.
Aspiration hazard	: Not classified
Potential Adverse human health effects and symptoms	: Harmful if swallowed. Harmful in contact with skin.
Symptoms/injuries after inhalation	: May be harmful if inhaled. Causes respiratory tract irritation.
Symptoms/injuries after skin contact	: Repeated exposure to this material can result in absorption through skin causing significant health hazard. Harmful in contact with skin.
Symptoms/injuries after eye contact	: Causes eye irritation.
Symptoms/injuries after ingestion	: Swallowing a small quantity of this material will result in serious health hazard.

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 12: Ecological information

12.1. Toxicity

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE	
LC50 fish 1	1640.00 mg/l Pimephales promelas (fathead minnow) - 96h
EC50 Daphnia 1	3600 mg/l Daphnia magna (Water flea) - 48h
NOEC (chronic)	640 mg/l Daphnia magna (Water flea) - 14d
TRIETHYL PHOSPHATE (D15, 98%) (78-40-0 (unlabeled))	
LC50 fish 1	1000 mg/l Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	330 mg/l Daphnia - 96 h
ACETONITRILE UNLABELED (75-05-8)	
LC50 fish 1	1640.00 mg/l Pimephales promelas (fathead minnow) - 96h
EC50 Daphnia 1	3600 mg/l Daphnia magna (Water flea) - 48h
NOEC (chronic)	640 mg/l Daphnia magna (Water flea) - 14d
TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%) (13674-87-8 (Unlabeled))	
LC50 fish 1	1.1 mg/l semi-static test Oncorhynchus mykiss (rainbow trout) - 96 h
EC50 Daphnia 1	3.8 mg/l Immobilization Daphnia magna (Water flea) - 48 h
TRIBUTYL PHOSPHATE (D27, 98-99%) (126-73-8 (Unlabeled))	
LC50 fish 1	8.8 mg/l Carassius auratus (goldfish) - 96 h
EC50 Daphnia 1	3.6 mg/l Daphnia magna (Water flea) - 48 h
ErC50 (algae)	1.1 mg/l Desmodesmus subspicatus (green algae) - 72 h
TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) (115-96-8)	
EC50 Daphnia 1	170 mg/l Daphnia magna (Water flea) - 48 h
ErC50 (algae)	450 mg/l Pseudokirchneriella subcapitata - 72 h
TRIS(2-CHLOROISOPROPYL)PHOSPHATE (D18, 98%) (13674-84-5 (Unlabeled))	
LC50 fish 1	51 mg/l - Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	33 mg/l - Pseudokirchneriella subcapitata (green algae) - 72 h
ErC50 (algae)	784 mg/l - Sludge treatment - 3 h
TRIPHENYL PHOSPHATE (D15, 98%) (1173020-30-8)	
LC50 fish 1	0.87 mg/l Pimephales promelas (fathead minnow) - 96 h
EC50 Daphnia 1	1 mg/l Daphnia magna (Water flea) - 48 h
ErC50 (algae)	1 mg/l Desmodesmus subspicatus (green algae) - 72 h
LOEC (acute)	1 mg/l Desmodesmus subspicatus (green algae) - 72 h

12.2. Persistence and degradability

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE	
Persistence and degradability	Biodegradability Result: - Readily biodegradable.
TRIETHYL PHOSPHATE (D15, 98%) (78-40-0 (unlabeled))	
Persistence and degradability	No data available.
TRIPROPYL PHOSPHATE (D21, 98%) (513-08-6 (unlabeled))	
Persistence and degradability	Not available.
ACETONITRILE UNLABELED (75-05-8)	
Persistence and degradability	Biodegradability Result: - Readily biodegradable.
TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%) (13674-87-8 (Unlabeled))	
Persistence and degradability	Biodegradability aerobic - Exposure time 28 d.
TRIBUTYL PHOSPHATE (D27, 98-99%) (126-73-8 (Unlabeled))	
Persistence and degradability	Not available.
TRIPHENYL PHOSPHATE (D15, 98%) (1173020-30-8)	
Persistence and degradability	No data available.

12.3. Bioaccumulative potential

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE	
Log Pow	-0.34
Bioaccumulative potential	No bioaccumulation is to be expected (log Pow <= 4).

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

TRIETHYL PHOSPHATE (D15, 98%) (78-40-0 (unlabeled))	
Bioaccumulative potential	No data available.
TRIPROPYL PHOSPHATE (D21, 98%) (513-08-6 (unlabeled))	
Bioaccumulative potential	Not available.
ACETONITRILE UNLABELED (75-05-8)	
Log Pow	-0.34
Bioaccumulative potential	No bioaccumulation is to be expected (log Pow <= 4).
TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%) (13674-87-8 (Unlabeled))	
Log Pow	3.69 at 20 °C (68 °F)
TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) (115-96-8)	
Log Pow	1.7 at 20 °C (68 °F)
TRIS(2-CHLOROISOPROPYL)PHOSPHATE (D18, 98%) (13674-84-5 (Unlabeled))	
Log Pow	- 3.04
Bioaccumulative potential	Not available.
TRIPHENYL PHOSPHATE (D15, 98%) (1173020-30-8)	
Log Pow	4.6

12.4. Mobility in soil

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE	
Ecology - soil	Not expected to absorb on soil.
TRIETHYL PHOSPHATE (D15, 98%) (78-40-0 (unlabeled))	
Ecology - soil	No data available.
TRIPROPYL PHOSPHATE (D21, 98%) (513-08-6 (unlabeled))	
Ecology - soil	Not available.
ACETONITRILE UNLABELED (75-05-8)	
Ecology - soil	Not expected to absorb on soil.
TRIS(1,3-DICHLORO-2-PROPYL)PHOSPHATE (D15, 98%) (13674-87-8 (Unlabeled))	
Ecology - soil	Not available.
TRIBUTYL PHOSPHATE (D27, 98-99%) (126-73-8 (Unlabeled))	
Ecology - soil	Not available.
TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) (115-96-8)	
Ecology - soil	Not available.
TRIS(2-CHLOROISOPROPYL)PHOSPHATE (D18, 98%) (13674-84-5 (Unlabeled))	
Ecology - soil	Not available.
TRIPHENYL PHOSPHATE (D15, 98%) (1173020-30-8)	
Ecology - soil	No data available.

12.5. Results of PBT and vPvB assessment

TRIS(2-CHLOROETHYL)PHOSPHATE (D12, 98%) (115-96-8)	
This substance/mixture does not meet the PBT criteria of REACH, annex XIII.	
This substance/mixture does not meet the vPvB criteria of REACH, annex XIII.	

12.6. Other adverse effects

Other adverse effects : Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Regional legislation (waste)	: Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations.
Waste disposal recommendations	: Dispose in a safe manner in accordance with local/national regulations.
Additional information	: Handle empty containers with care because residual vapors are flammable.

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT) : 1648
DOT NA no. : UN1648

14.2. UN proper shipping name

DOT Proper Shipping Name : Acetonitrile
Department of Transportation (DOT) Hazard Classes : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT) : 3 - Flammable liquid



Packing group (DOT) : II - Medium Danger
DOT Special Provisions (49 CFR 172.102) : IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
DOT Packaging Exceptions (49 CFR 173.xxx) : 150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242

14.3. Additional information

Other information : No supplementary information available.

Overland transport

Packing group (ADR) : II
Class (ADR) : 3 - Flammable liquid
Hazard identification number (Kemler No.) : 33
Classification code (ADR) : F1
Danger labels (ADR) : 3 - Flammable liquids



Orange plates : An orange rectangular label with a black border. It is divided into two horizontal sections. The top section contains the number '33' and the bottom section contains the number '1648'.

Tunnel restriction code : D/E
Limited quantities (ADR) : 1L
EAC : •2YE
Excepted quantities (ADR) : E2

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Transport by sea

DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"

MFAG-No : 127

Air transport

DOT Quantity Limitations Passenger aircraft/rail : 5L
(49 CFR 173.27)

DOT Quantity Limitations Cargo aircraft only (49 : 60 L
CFR 175.75)

Civil Aeronautics Law : Flammable liquids

14.4. Environmental hazards

Other information : No supplementary information available.

14.5. Special precautions for user

14.6. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE

Listed on SARA Section 313 (Specific toxic chemical listings)

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
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ACETONITRILE UNLABELED (75-05-8)

Listed on SARA Section 313 (Specific toxic chemical listings)

SARA Section 311/312 Hazard Classes	Fire hazard Immediate (acute) health hazard Delayed (chronic) health hazard
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15.2. International regulations

CANADA

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE

Listed on the Canadian DSL (Domestic Substances List) inventory.

ACETONITRILE UNLABELED (75-05-8)

Listed on the Canadian DSL (Domestic Substances List) inventory.

15.2.1. National regulations

No additional information available

15.3. US State regulations

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE()

State or local regulations	U.S. - Massachusetts - Right To Know List U.S. - Pennsylvania - RTK (Right to Know) List U.S. - New Jersey - Right to Know Hazardous Substance List This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.
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ACETONITRILE UNLABELED (75-05-8)

U.S. - Massachusetts - Right To Know List

PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

ACETONITRILE UNLABELED (75-05-8)

U.S. - Pennsylvania - RTK (Right to Know) List

U.S. - New Jersey - Right to Know Hazardous Substance List

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: Other information

Other information : This product is not radioactive. The data given for this product are those of the corresponding unlabeled compound, unless specifically indicated otherwise. Health and safety data for labeled compounds are generally not available, but are assumed to be similar or identical to the corresponding unlabeled compound.

Full text of R-, H- and EUH-phrases::

Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment - Chronic Hazard Category 2
Carc. 2	Carcinogenicity Category 2
Eye Irrit. 2	Serious eye damage/eye irritation Category 2
Flam. Liq. 2	Flammable liquids Category 2
Repr. 1B	Reproductive toxicity Category 1B
Skin Irrit. 2	skin corrosion/irritation Category 2
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
H225	Highly flammable liquid and vapor
H302	Harmful if swallowed
H312	Harmful in contact with skin
H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H351	Suspected of causing cancer
H360F	May damage fertility
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H411	Toxic to aquatic life with long lasting effects
R11	Highly flammable
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed
R22	Harmful if swallowed
R38	Irritating to skin
R40	Limited evidence of a carcinogenic effect
R48/22	Harmful: danger of serious damage to health by prolonged exposure if swallowed
R50/53	Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment
R60	May impair fertility
R61	May cause harm to the unborn child
F	Highly flammable
N	Dangerous for the environment
Xi	Irritant
Xn	Harmful

NFPA health hazard

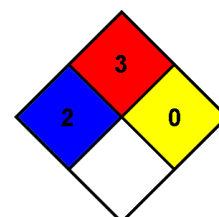
: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard

: 3 - Liquids and solids that can be ignited under almost all ambient conditions.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



PHOSPHORUS FLAME RETARDANT STANDARD MIXTURE (D, 98%) 10 UG/ML IN ACETONITRILE ES-5529

Safety Data Sheet

according to Regulation (EC) No. 453/2010 and according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

HMIS III Rating

Health	: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability	: 3 Serious Hazard
Physical	: 0 Minimal Hazard

CIL Mixture SDS

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product