

SECTION 1: Identification**1.1. Identification**

Product form : Mixture
Product name : RETARDER
Product code : FAD0060

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

No additional information available

1.3. Details of the supplier of the safety data sheet

Endura Manufacturing Co. Ltd
12425 149 Street
Edmonton, T5L 2J6 - Canada
T 780-451-4242 - F 780-452-5079
info@endura.ca - www.endura.ca

1.4. Emergency telephone number

Emergency number : In the event of an emergency involving dangerous goods:
in Canada call CANUTEC at 613-996-6666 or *666 on a cellular phone.
in the US call CHEMTREC at 800-424-9300 (Account Name for US is Polyglass Coatings)

SECTION 2: Hazard(s) identification**2.1. Classification of the substance or mixture****GHS-US classification**

Flam. Liq. 3 H226 - Flammable liquid and vapour
Carc. 2 H351 - Suspected of causing cancer

Full text of H-phrases: see section 16

2.2. Label elements**GHS-US labeling**

Hazard pictograms (GHS-US) :



GHS02

GHS08

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : H226 - Flammable liquid and vapor
H351 - Suspected of causing cancer

Precautionary statements (GHS-US) : P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking
P233 - Keep container tightly closed
P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical/ventilating/lighting equipment
P242 - Use only non-sparking tools
P243 - Take precautionary measures against static discharge
P280 - Wear protective gloves/protective clothing/eye protection/face protection
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P308+P313 - If exposed or concerned: Get medical advice/attention
P370+P378 - In case of fire: Use dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2) to extinguish
P403+P235 - Store in a well-ventilated place. Keep cool
P405 - Store locked up
P501 - Dispose of contents/container in accordance with all local, regional, national and international regulations.

2.3. Other hazards

No additional information available

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2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Name	Product identifier	%	GHS-US classification
tris[2-chloro-1-(chloromethyl)ethyl] phosphate	(CAS No) 13674-87-8	60 - 70	Carc. 2, H351
2-butoxyethylacetate	(CAS No) 112-07-2	20 - 30	Flam. Liq. 4, H227 Acute Tox. 4 (Dermal), H312 Acute Tox. 4 (Inhalation:dust,mist), H332
2,4-pentanedione	(CAS No) 123-54-6	5 - 10	Flam. Liq. 3, H226 Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: IF exposed or concerned: Get medical advice/attention.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact	: Rinse skin with water/shower. Remove/Take off all contaminated clothing immediately.
First-aid measures after eye contact	: Rinse eyes with water as a precaution.
First-aid measures after ingestion	: Call a poison center or a doctor if you feel unwell.

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

No additional information available

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

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Flammable liquid and vapor.
Reactivity : Flammable liquid and vapor.

5.3. Advice for firefighters

Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. NO open flames, NO sparks, and NO smoking.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8 Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material. Notify authorities if product enters sewers or public waters.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 8 : Exposure-controls/personal protection".

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapors may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Ground/bond container and receiving equipment.
- Storage conditions : Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

2-butoxyethylacetate (112-07-2)		
ACGIH	ACGIH TWA (ppm)	20 ppm (2-Butoxyethyl acetate (EGBEA); USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH	Remark (ACGIH)	Hemolysis

2,4-pentanedione (123-54-6)		
ACGIH	ACGIH TWA (ppm)	25 ppm (2,4-Pentanedione; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)
ACGIH	Remark (ACGIH)	Neurotoxicity; CNS impair

8.2. Exposure controls

- Appropriate engineering controls : Ensure good ventilation of the work station.
- Hand protection : Protective gloves.
- Eye protection : Safety glasses.
- Skin and body protection : Wear suitable protective clothing.
- Respiratory protection : In case of insufficient ventilation, wear suitable respiratory equipment.
- Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Color : Mixture contains one or more component(s) which have the following colour(s):
Colourless Colourless to light yellow
- Odor : There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.
Mixture contains one or more component(s) which have the following odour(s):
Almost odourless Pleasant odour Fruity odour Strong odour Mild odour Ether-like odour
- Odor threshold : No data available
- pH : No data available
- Melting point : Not applicable
- Freezing point : No data available
- Boiling point : 138 °C
280.4 °F
- Flash point : 35 °C
95 °F
- Relative evaporation rate (butyl acetate=1) : No data available
- Flammability (solid, gas) : No data available
- Explosion limits : 0.9 - 11.4 vol %
- Explosive properties : No data available

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Oxidizing properties	: No data available
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Specific gravity / density	: 1.2209 g/cm ³
Solubility	: Water: Solubility in water of component(s) of the mixture : • tris[2-chloro-1-(chloromethyl)ethyl] phosphate: 0.0007 g/100ml (24 °C) • 2-butoxyethylacetate: 1.5 g/100ml • 2,4-pentanedione: 17 g/100ml • 2-methoxy-1-methylethyl acetate: 19.8 g/100ml (20 °C, soluble)
Log Pow	: No data available
Auto-ignition temperature	: 407.2 °C 765 °F
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

9.2. Other information

VOC content (Regulatory - Less water and exempt solvents)	: 465.699 g/l 3.886 lb/gal
VOC content (Material - Actual)	: 465.699 g/l 3.886 lb/gal
Percent Solids (Weight)	: 61.86 %
Percent Solids (Volume)	: 50.923 %
Percent Volatile (Weight)	: 38.144 %
Percent Volatile (Volume)	: 49.077 %

SECTION 10: Stability and reactivity

10.1. Reactivity

Flammable liquid and vapor.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, No sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

No additional information available

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
LD50 oral rat	> 2000 mg/kg (Rat)
LD50 dermal rat	> 2000 mg/kg (Rat)
LD50 dermal rabbit	> 23700 mg/kg (Rabbit)
LC50 inhalation rat (mg/l)	> 5.22 mg/l/4h (Rat)
2-butoxyethylacetate (112-07-2)	
LD50 oral rat	2400 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Experimental value; 3000 mg/kg; Rat; Experimental value; 1880 mg/kg; Rat; Experimental value)
LD50 dermal rat	1580 mg/kg (Rat; Literature study)

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2-butoxyethylacetate (112-07-2)	
LD50 dermal rabbit	1500 mg/kg (Rabbit; Experimental value)
LC50 inhalation rat (mg/l)	> 2.7 mg/l/4h (Rat; Literature study)
ATE US (oral)	2400.000 mg/kg body weight
ATE US (dermal)	1500.000 mg/kg body weight
ATE US (dust, mist)	1.500 mg/l/4h

2,4-pentanedione (123-54-6)	
LD50 oral rat	760 mg/kg body weight (Rat; Experimental value; 570 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rabbit	790 mg/kg body weight (Rabbit; Experimental value; 1370 mg/kg bodyweight; Rabbit; Experimental value)
ATE US (oral)	760.000 mg/kg body weight
ATE US (dermal)	790.000 mg/kg body weight

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Suspected of causing cancer.

Reproductive toxicity : Not classified
Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment.

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
LC50 fish 1	1.1 mg/l (LC50; OECD 203: Fish, Acute Toxicity Test; 96 h; Oncorhynchus mykiss; Semi-static system; Fresh water; Experimental value)
EC50 Daphnia 2	3.8 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Flow-through system; Fresh water; Experimental value)
Threshold limit algae 1	4.5 mg/l (ErC50; OECD 201: Alga, Growth Inhibition Test; 72 h; Pseudokirchneriella subcapitata; Static system; Fresh water; Experimental value)

2-butoxyethylacetate (112-07-2)	
LC50 fish 2	80 mg/l (LC50; 48 h; Leuciscus idus)
EC50 Daphnia 2	37 mg/l (EC50; 48 h)
Threshold limit algae 2	> 500 mg/l (EC50; 72 h)

2,4-pentanedione (123-54-6)	
LC50 fish 1	71.6 mg/l (LC50; 96 h; Salmo gairdneri)

12.2. Persistence and degradability

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
Persistence and degradability	Not readily biodegradable in water. Low potential for mobility in soil.

2-butoxyethylacetate (112-07-2)	
Persistence and degradability	Readily biodegradable in water. Photodegradation in the air.
ThOD	2.1 g O ₂ /g substance

2,4-pentanedione (123-54-6)	
Persistence and degradability	Readily biodegradable in water. Low potential for adsorption in soil.
Chemical oxygen demand (COD)	1.787 g O ₂ /g substance

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2,4-pentanedione (123-54-6)	
ThOD	1.92 g O ₂ /g substance
BOD (% of ThOD)	0.056

12.3. Bioaccumulative potential

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
BCF fish 1	0.3 - 3.3 (BCF; 6 weeks; Cyprinus carpio)
BCF fish 2	50 - 89 (BCF; 720 h; Oryzias latipes; Static system)
Log Pow	3.69 (Experimental value; EU Method A.8: Partition Coefficient; 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

2-butoxyethylacetate (112-07-2)	
Log Pow	1.51 - 1.79
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

2,4-pentanedione (123-54-6)	
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

12.4. Mobility in soil

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)	
Log Koc	log Koc, OECD 106: Adsorption/Desorption Using a Batch Equilibrium Method; 3.25; Experimental value; GLP

2-butoxyethylacetate (112-07-2)	
Surface tension	0.026 N/m (20 °C)

2,4-pentanedione (123-54-6)	
Surface tension	0.0312 N/m (20 °C)

12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.
Additional information : Flammable vapors may accumulate in the container.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN1263 Paint related material (including paint thinning, drying, removing, or reducing compound), 3, III

UN-No.(DOT) : UN1263

Proper Shipping Name (DOT) : Paint related material
including paint thinning, drying, removing, or reducing compound

Transport hazard class(es) (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120

Hazard labels (DOT) : 3 - Flammable liquid



Packing group (DOT) : III - Minor Danger

DOT Packaging Non Bulk (49 CFR 173.xxx) : 173

DOT Packaging Bulk (49 CFR 173.xxx) : 242

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DOT Special Provisions (49 CFR 172.102)	: 149 - When transported as a limited quantity or a consumer commodity, the maximum net capacity specified in 173.150(b)(2) of this subchapter for inner packaging may be increased to 5 L (1.3 gallons). B52 - Notwithstanding the provisions of 173.24b of this subchapter, non-reclosing pressure relief devices are authorized on DOT 57 portable tanks. 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. T4 - 2.65 178.274(d)(2) Normal..... 178.275(d)(3) TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling. TP8 - A portable tank having a minimum test pressure of 1.5 bar (150 kPa) may be used when the flash point of the hazardous material transported is greater than 0 C (32 F). TP28 - A portable tank having a minimum test pressure of 2.65 bar (265 kPa) may be used provided the calculated test pressure is 2.65 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 150
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 60 L
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.
Other information	: No supplementary information available.

TDG

Transport document description	: UN1263 PAINT RELATED MATERIAL (PAINT RELATED MATERIAL), 3, III
UN-No. (TDG)	: UN1263
TDG Proper Shipping Name	: PAINT RELATED MATERIAL
TDG Primary Hazard Classes	: 3 - Class 3 - Flammable Liquids
Packing group	: III - Minor Danger
TDG Special Provisions	: 59 - Substances that are listed by name in Schedule 1 must not be transported under this shipping name. Substances transported under this shipping name may contain not more than 20 per cent nitrocellulose if the nitrocellulose contains not more than 12.6 per cent nitrogen (by dry mass).,83 - Section 5.12 of Part 5, Means of Containment, does not apply to these dangerous goods if a) the dangerous goods are included in Packing Group II or III; b) the dangerous goods are in quantities less than or equal to 5 L and are in a metal or plastic means of containment; c) the metal or plastic means of containment is inside an outer means of containment and the gross mass of the outer means of containment is less than or equal to 40 kg; d) the means of containment are designed, constructed, filled, closed, secured and maintained so that under normal conditions of transport, including handling, there will be no accidental release of the dangerous goods that could endanger public safety; e) the dangerous goods are transported in palletized loads, a pallet box or unit load device so that individual means of containment are placed or stacked and secured to the pallet by strapping, shrink- or stretch-wrapping or other suitable means; and f) when the dangerous goods are on a road vehicle or a railway vehicle that is to be transported by ship, the pallets, pallet boxes or unit load devices are secured inside the vehicle and the vehicle is closed.
Explosive Limit and Limited Quantity Index	: 5
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index	: 60

Transport by sea

UN-No. (IMDG)	: 1263
Proper Shipping Name (IMDG)	: PAINT RELATED MATERIAL
Class (IMDG)	: 3 - Flammable liquids
Packing group (IMDG)	: III - substances presenting low danger

Air transport

No additional information available

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SECTION 15: Regulatory information

15.1. US Federal regulations

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

2-butoxyethylacetate (112-07-2)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

2,4-pentanedione (123-54-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

EPA TSCA Regulatory Flag

S - S - indicates a substance that is identified in a proposed or final Significant New Uses Rule.

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

No additional information available

15.3. US State regulations

tris[2-chloro-1-(chloromethyl)ethyl] phosphate (13674-87-8)

U.S. - California -
Proposition 65 -
Carcinogens List

U.S. - California -
Proposition 65 -
Developmental Toxicity

U.S. - California -
Proposition 65 -
Reproductive Toxicity -
Female

U.S. - California -
Proposition 65 -
Reproductive Toxicity -
Male

No significance risk
level (NSRL)

Yes

No

No

No

2-butoxyethylacetate (112-07-2)

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

2,4-pentanedione (123-54-6)

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

SECTION 16: Other information

Full text of H-phrases:

Acute Tox. 3 (Dermal)	Acute toxicity (dermal) Category 3
Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Carc. 2	Carcinogenicity Category 2
Flam. Liq. 3	Flammable liquids Category 3
Flam. Liq. 4	Flammable liquids Category 4
H226	Flammable liquid and vapor
H227	Combustible liquid
H302	Harmful if swallowed
H311	Toxic in contact with skin
H312	Harmful in contact with skin
H332	Harmful if inhaled
H351	Suspected of causing cancer

SDS US Endura

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