

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION PRODUCT NAME: Lipid Peroxidation Assay **PRODUCT CODES:** Cat# MA-0102 RESTRICTIONS ON USE: For laboratory research purposes only. Not for drug or household use. MANUFACTURER: AkrivisBio, Inc. 48511 Warm Springs Blvd, Suite 213, Fremont, CA 94539 ADDRESS: **EMERGENCY PHONE:** 408-739-9315 CHEMTREC PHONE: OTHER CALLS: FAX PHONE: Email: SDS@akrivisbio.com

SECTION 2: HAZARDS IDENTIFICATION

Component	Description	Volume	Safety Information
Assay Buffer	Proprietary Buffer with some SDS (< 25 mM)	25 ml	No hazards
Phosphotungstic Acid Solution	contains phosphotungstic acid	10 ml	See below
BHT	5% in ethanol	1 ml	See below
Thiobarbituric Acid (TBA)	powder	250 mg	No hazards
MDA Standard	1,1,3,3,tetraethoxypropane (< 8.4 M)	100 ul	See below

Phosphotungstic acid:

Health Hazard: 2

Reactivity Hazard: 0

Fire: 1

Emergency Overview

GHS Classification: skin corrosion (category 1B), serious eye damage (category 1) GHS Label elements, including precautionary statements Pictogram:

Signal word:	danger
Hazard statement(s):	H314 Causes severe skin burns and eye damage
	P264 Wash skin thoroughly after handling.
	P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
	P301 + P330 + P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
	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.
	P310 Immediately call a POISON CENTER or doctor/ physician. P321 Specific treatment.
	P363 Wash contaminated clothing before reuse.
	P405 Store locked up.
	P501 Dispose of contents/ container to an approved waste disposal plant.
HMIS Classification Health hazard: 3	
Flammability: 0	
Physical hazards: 0	
NFPA Rating	
Health Hazard: 3	
Fire: 0	
Reactivity Hazard: 0	
Potential Health Effects	ul if inheled. May appear apprintery tract initiation
	iul if inhaled. May cause respiratory tract irritation. bsorbed through skin. May cause skin irritation.
Eyes: Causes eye damad	
Ingestion: May be harmfu	
0	
BHT:	
GHS Classification: Acute ac	quatic toxicity (category 1); chronic aquatic toxicity (category 1)
Pictogram:	ing precautionary statements
r ictogram.	¥.
Signal word:	warning
Hazard statement(s):	Very toxic to aquatic life with long lasting effects
Precautionary statement(s):	P273 Avoid release to the environment.
	P391 Collect spillage. P501 Dispose of contents/ container to an approved waste disposal plant.
HMIS Classification	i son Dispose of contents, container to an approved waste disposal plant.
Health hazard: 0	
Flammability: 1	
Physical hazards: 0	
NFPA Rating	



	e liquid, Target organ effect, Irritant, Carcinogen
Target Organs: Nerves, Live GHS Classification:	Flammable liquids (Category 3) Skin irritation (Category 2) Eye irritation (Category 2B) Specific target organ toxicity – single exposure (Category 3)
GHS Label elements, includ Pictogram:	ding precautionary statements
Signal word: Hazard statement(s):	Warning H226 Flammable liquid and vapor. H315+H320 Causes skin and eye irritation. H335 May cause respiratory irritation.
Precautionary statement(s)	 P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking. P261 Avoid breathing dust/fume/gas/mist/vapors/spray. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
HMIS Classification Health hazard: 2 Chronic health hazard:	
Flammability: 2 Physical hazards: 0 NFPA Rating Health Hazard: 2	
Fire: 2 Reactivity Hazard: 0 Potential Health Effects	
	- ble liquid (category 4), acute toxicity, oral (category 4)
GHS Label elements, incluc Pictogram:	ding precautionary statements
r iologram.	
Signal word: Hazard statement(s):	warning H227 Combustible liquid.
Precautionary statement(s)	H302 Harmful if swallowed. P210 Keep away from heat/sparks/open flames/hot surfaces No smoking. P264 Wash skin thoroughly after handling.
	P270 Do not eat, drink or smoke when using this product. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.
	P330 Rinse mouth. P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
	P403 + P235 Store in a well-ventilated place. Keep cool. P501 Dispose of contents/ container to an approved waste disposal plant.
HMIS Classification Health hazard: 1	
Flammability: 2 Physical hazards: 0	
NFPA Rating Health Hazard: 1 Fire: 2	
Reactivity Hazard: 0 Potential Health Effects	
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	iful if inhaled. May cause respiratory tract irritation. absorbed through skin. May cause skin irritation. ge.
Skin: May be harmful if a Eyes: Causes eye dama Ingestion: May be harmf	absorbed through skin. May cause skin irritation. ge.

Component	CAS Number	EC-No.	Molecular Weight	Chemical Formula
Phosphotungstic acid	12501-23-4	235-087-6	2880.2	H3PW12O40
(2,6-Di-tert-butyl-4- methylphenol) BHT	128-37-0	204-881-4	220.36	C15H24O
Ethanol	64-17-5	200-578-6	46.07	C2H6O
1,1,3,3-Tetraethoxypropane	122-31-6	204-533-1	220.31	C11H24O4



Emergency Overview

SDS DATE: 29May2023

GHS Classification: Not a dangerous substance according to GHS GHS Label elements, including precautionary statements Pictogram: none Signal word: none Hazard statement(s): none Precautionary statement(s): none **HMIS Classification** Health hazard: 0 Flammability: 0 Physical hazards: 0 NFPA Rating Health Hazard: 0 Fire: 0 Reactivity Hazard: 0 Potential Health Effects Inhalation: May be harmful if inhaled. May cause respiratory tract irritation. Skin: May be harmful if absorbed through skin. May cause skin irritation. Eyes: May cause eve irritation. Ingestion: May be harmful if swallowed.

SECTION 4: FIRST AID MEASURES

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. In case of skin contact: Wash off with soap and plenty of water. In case of eye contact: Flush eyes with water as a precaution. If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water.

5: FIRE-FIGHTING MEASURES

Ethanol:

Condition of flammability: Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Special protective equipment for fire-fighters: Wear self-contained breathing apparatus for firefighting if necessary. Hazardous combustion products: Hazardous decomposition products formed under fire conditions— see section 10. Further information: Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Avoid dust formation. Avoid breathing vapors, mist, gas, or dust. **Environmental precautions:** Do not let product enter drains. **Methods for cleaning up:** Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling

Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection. **Conditions for safe storage**

Keep container tightly closed in a dry and well-ventilated place.

Recommended storage temperature: -20 °C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Components	CAS-No.	Value	Control parameters	Basis
BHT	128-37-0	TWA	2 mg/m3	USA. ACGIH (TLV)
	Remarks:	Upper respiratory tract irritation; Not classifiable as a human carcinogen		itation; Not classifiable as a human carcinogen
		TWA	10 mg/m3	USA. NIOSH RecommendedExposure Limits

Components	CAS-No.	Value	Control parameters	Basis	
Ethanol	64-17-5	TWA	1,000 ppm	USA. ACGIH Threshold Limit Values (TLV)	
Remark	Remarks: Upper respiratory tract irritation. Confirmed animal carcinogen with unknown relevance to humans.				
		TWA	1,000 ppm	USA. OSHA: TABLE Z-1 Limits for Air Contaminants –	
		IWA	1,900 mg/m ³	1910.1000	
		TWA	1,000 ppm	USA. Occupational Exposure Limits (OSHA): Table Z-1 Limits	
			1,900 mg/m ³	for Air Contaminants	
	The value in mg/m ³ is approximate.				
		TWA	1,000 ppm 1,900 mg/m³	USA. NIOSH recommended exposure limits	

Phosphotungstic acid1,1,3,3-Tetraethoxypropane,

Contains no substances with occupational exposure limit values.



Personal protective equipment

Respiratory protection

Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand 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.

Eye protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Choose body protection in relation to its type, to the concentration and amount of dangerous substance, and to the specific workplace. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

General industrial hygiene practice.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Property	Phosphotungstic acid solution	Ethanol	ВНТ	1,1,3,3- Tetraethoxypropane
Appearance:	liquid	Clear liquid	white crystals	clear liquid
pH:	No data available	No data available	No data available	No data available
Water Solubility:	No data available	Completely soluble	No data available	No data available
Other Solubility:	No data available	No data available	No data available	No data available
Boiling Point (°C):	No data available	78-80 °C (172.4-176 °F)	265.0 °C	220 °C
Melting Point (°C):	No data available	-144 °C (-227.2 °F)	69.0 - 70.0 °C	-90 °C
Flash Point (°C):	No data available	14 °C (57.2 °F)	127.0 °C	88 °C
Ignition Temperature (°C):	No data available	363 °C (685°F)	No data available	No data available
Density	No data available	0.79 g/cm ³	No data available	0.919 g/cm3

SECTION 10: STABILITY AND REACTIVITY

Property	Phosphotungstic acid solution	Ethanol	внт	1,1,3,3- Tetraethoxypropane
Chemical stability	Stable under recommended storage conditions			
Conditions to avoid:	No data available	Heat, flames, sparks, extreme temperatures, direct sunlight	No data available	Heat, flames, sparks
Materials to avoid:	Strong bases, Strong oxidizing agents	Oxidizing agents, alkali metals, ammonia, peroxides	Acid chlorides, Acid anhydrides, Oxidizing agents, Bases, Brass, Copper	Strong oxidizing agents, Strong acids
Hazardous decomposition products:	No data available	Carbon oxides	No data available	No data available

SECTION 11: TOXICOLOGICAL INFORMATION

Phosphotungstic acid:

Acute toxicity: no data available

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

- IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity – single exposure (GHS): no data available

Specific target organ toxicity - repeated exposure (GHS): no data available

Aspiration hazard: no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation. **Skin:** May be harmful if absorbed through skin. May cause skin irritation.



Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects: no data available Additional information: RTECS: not available

BHT:

Acute toxicity: LD50 Oral - Rat - male and female - > 6,000 mg/kg LD50 Dermal - Rat - male and female - > 2,000 mg/kg Skin corrosion/irritation: no data available Serious eye damage/eye irritation: no eye irritation Respiratory or skin sensitization: no data available Germ cell mutagenicity: Ames test S. typhimurium Result: negative Carcinogenicity: IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (2,6-di-tert-Butyl-p-cresol) ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. Reproductive toxicity: no data available Teratogenicity: no data available Specific target organ toxicity - single exposure (GHS): no data available Specific target organ toxicity - repeated exposure (GHS): no data available Aspiration hazard: no data available Potential Health Effects Inhalation: May be harmful if inhaled. May cause respiratory tract irritation. Skin: May be harmful if absorbed through skin. May cause skin irritation. Eyes: May cause eye irritation. Ingestion: May be harmful if swallowed. Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Synergistic effects: no data available Additional information: RTECS: GO7875000 Ethanol: Acute toxicity: LD50 Oral – rat – 7,060 mg/kg→ Remarks: Lungs, thorax, or respiration : other changes LC50 Inhalation - rat - 10 h - 20000 ppm Skin corrosion/irritation: Skin - rabbit - irritating to skin - 24 h Serious eye damage/eye irritation: Eyes - rabbit - mild eye irritation - 24 h (Draize test) Respiratory or skin sensitization: no data available Germ cell mutagenicity: no data available Carcinogenicity: Carcinogenicity – mouse – oral → Tumorigenic: equivocal tumorigenic agent by RTECS criteria. Liver: tumors. Blood: Lymphomas including Hodgkin's disease. IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC. ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA. Reproductive toxicity: Reproductive toxicity – human – female – oral → Effects on newborn: apgar score (human only), other neonatal measures or effects, and drug dependence. Teratogenicity: no data available Specific target organ toxicity - single exposure (GHS): Inhalation - may cause respiratory irritation. Specific target organ toxicity - repeated exposure (GHS): no data available Aspiration hazard: no data available Potential Health Effects Inhalation: May be harmful if inhaled. Causes respiratory tract irritation. Skin: May be harmful if absorbed through skin. Causes skin irritation. Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: Exposure may cause central nervous system depression, narcosis, and/or damage to the heart. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

1,1,3,3-Tetraethoxypropane

Acute toxicity: LD50 Oral - Rat - 1,610 mg/kg Remarks: Behavioral:Muscle contraction or spasticity. Lungs, Thorax, or Respiration:Dyspnea. Cyanosis Skin corrosion/irritation: Skin - Rabbit: Mild skin irritation - 24 h Serious eye damage/eye irritation: no data available Respiratory or skin sensitization: no data available Germ cell mutagenicity: Rat: Morphological transformation. Carcinogenicity:



IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity – single exposure (GHS): no data available Specific target organ toxicity – repeated exposure (GHS): no data available

Aspiration hazard: no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects: no data available Additional information: RTECS: ON8750000

SECTION 12: ECOLOGICAL INFORMATION

Phosphotungstic acid:

Persistence and degradability: no data available Toxicity: no data available Bioaccumulative potential: no data available Mobility in soil: no data available PBT and vPvB assessment: no data available Other adverse effects: no data available

BHT:

Persistence and degradability: no data available Toxicity: fish: LC50 - Oryzias latipes - 5.3 mg/l - 48 h Bioaccumulative potential: no data available Mobility in soil: no data available PBT and vPvB assessment: no data available Other adverse effects: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Very toxic to aquatic life with long lasting effects.

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Observe all federal, state, and local environmental regulations. Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

Phosphotungstic acid:

DOT(US): UN number: 3264 Class: 8 Packing group: II Proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Phosphotungstic acid hydrate) Reportable Quantity (RQ): Marine pollutant: No Poison Inhalation Hazard: No IMDG: UN number: 3264 Class: 8 Packing group: II EMS-No: F-A, S-B Proper shipping name: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Phosphotungstic acid hydrate) Marine pollutant: No IATA: UN number: 3264 Class: 8 Packing group: II Proper shipping name: Corrosive liquid, acidic, inorganic, n.o.s. (Phosphotungstic acid hydrate) BHT: DOT (US) Not dangerous goods IMDG UN number: 3077 Class: 9 Packing group: III EMS-No: F-A, S-F Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (2,6-di-tert-Butyl-p-cresol) Marine pollutant:yes IATA UN number: 3077 Class: 9 Packing group: III Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (2,6-di-tert-Butyl-p-cresol) EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.



<u>Ethanol:</u> DOT (US):				
UN-number: 1170	Class: 3	Packing group: II		
Proper shipping na	me: Ethanol			
Marine pollutant: No	0			
Poison inhalation h	azard: No			
IMDG:				
UN-number: 1170		Packing group: II	EMS-No: F-E, S-D	
Proper shipping na				
Marine pollutant: No	0			
IATA:				
UN-number: 1170		Packing group: II		
Proper shipping na	me: Ethanol			
Thiobarbituric aci	<u>d:</u>			
DOT (US)				
UN number: 3335				
		ulated solid, n.o.s. (2-Thio	barbituric acid)	
Marine pollutant: Ne Poison Inhalation H				
IMDG	lazard: No			
Not dangerous goo	do			
IATA	us			
UN number: 3335	Class: 9	Packing group: III		
		ated solid, n.o.s. (2-Thioba	arbituric acid)	
r toper snipping na	ne. Aviation regul			
1,1,3,3-Tetraethox	<u>ypropane</u>			
DOT (US)				
NA-Number: 1993		Packing group: III		
		quid, n.o.s. (1,1,3,3-Tetrae	ethoxypropane)	
Poison Inhalation H	lazard: No			
IMDG				
Not dangerous goo	ds			
IATA				
Not dangerous goo	ds			
SECTION 15: REG				

OSHA HAZARDS: Ethanol: Highly flammable liquid, Target organ effect, Irritant, Carcinogen SARA 302 Components: SARA 302: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302. SARA 313 Components: The following components are subject to reporting levels established by SARA Title II, Section 313: Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01 SARA 311/312 Hazards: Phosphotungstic acid: acute health hazard Ethanol, 1, 1, 3, 3-Tetraethoxypropane : Fire Hazard, Acute Health Hazard, Chronic Health Hazard Massachusetts Right To Know Components: 2,6-di-tert-Butyl-p-cresol CAS-No. 128-37-0 Revision Date 1993-04-24 Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01 Pennsylvania Right To Know Components: Phosphotungstic acid hydrate CAS-No. 12501-23-4 2,6-di-tert-Butyl-p-cresol CAS-No. 128-37-0 Revision Date 1993-04-24 Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01 1,1,3,3-Tetraethoxypropane CAS-No. 122-31-6 New Jersey Right To Know Components: Phosphotungstic acid hydrate CAS-No. 12501-23-4 2,6-di-tert-Butyl-p-cresol CAS-No. 128-37-0 Revision Date 1993-04-24 Ethanol, CAS-No. 64-17-5, Revision Date: 2007-03-01 1,1,3,3-Tetraethoxypropane CAS-No. 122-31-6

California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

EU regulations:

Component	Risk Phrases	Safety Phrases
Phosphotungstic acid	R34	S26, S36/37/38
BHT	R22, R36/38, R51/53	S22, S24/25,S26,S29, S36/37/39, S57,S61
Ethanol	R11, R20/21/22	S16, S36/37/39, S45
2-Thiobarbituric acid	R36/37/38	S24/25, S36/37/39
	R22	S36/37/39

SECTION 16: OTHER INFORMATION

DISCLAIMER:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. AkrivisBio, Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.