According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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SECTION 1. IDENTIFICATION		
Product name	: FormulaShell SAE 10W-30 Motor Oil	
Product code	: 001D7227	
Manufacturer or supplier's	details	
Manufacturer/Supplier	: Shell Oil Products US P.O. Box 4427 Houston TX 77210-4427 USA	
SDS Request Customer Service	: (+1) 877-276-7285 :	
Emergency telephone num	ber	
	: 877-504-9351 : 877-242-7400	
Recommended use of the of Recommended use	chemical and restrictions on use : Engine oil.	

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification

Not a hazardous substance or mixture.

GHS Label element

Hazard pictograms	: No Hazard Symbol required
Signal word	: No signal word
Hazard statements	 PHYSICAL HAZARDS: Not classified as a physical hazard under GHS criteria. HEALTH HAZARDS: Not classified as a health hazard under GHS criteria. ENVIRONMENTAL HAZARDS: Not classified as an environmental hazard under GHS criteria.
Precautionary statements	 Prevention: No precautionary phrases. Response: No precautionary phrases. Storage: No precautionary phrases. Disposal: No precautionary phrases.

Other hazards which do not result in classification

Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

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Used oil may contain harmful impurities. Not classified as flammable but will burn.

The classification of this material is based on OSHA HCS 2012 criteria.

Under normal conditions of use or in a foreseeable emergency, this product does not meet the definition of a hazardous chemical when evaluated according to the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature	 Highly refined mineral oil. Synthetic base oil and additives. The highly refined mineral oil contains <3% (w/w) DMSO- extract, according to IP346.
	 * contains one or more of the following CAS-numbers: 64742- 53-6, 64742-54-7, 64742-55-8, 64742-56-9, 64742-65-0, 68037-01-4, 72623-86-0, 72623-87-1, 8042-47-5, 848301-69- 9.

Hazardous components

Chemical Name	Synonyms	CAS-No.	Concentration (%)
Polyolefin Amide Alke- neamine Polyol		Not Assigned	1 - 3
Alkaryl amine		Not Assigned	1 - 3
Interchangeable low vis- cosity base oil (<20,5 cSt @40°C) *		Not Assigned	0 - 90

SECTION 4. FIRST-AID MEASURES

General advice	:	Not expected to be a health hazard when used under normal conditions.
If inhaled	:	No treatment necessary under normal conditions of use. If symptoms persist, obtain medical advice.
In case of skin contact	:	Remove contaminated clothing. Flush exposed area with wa- ter and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.
In case of eye contact	:	Flush eye with copious quantities of water. If persistent irritation occurs, obtain medical attention.
If swallowed	:	In general no treatment is necessary unless large quantities are swallowed, however, get medical advice.
Most important symptoms and effects, both acute and delayed	:	Oil acne/folliculitis signs and symptoms may include formation of black pustules and spots on the skin of exposed areas. Ingestion may result in nausea, vomiting and/or diarrhoea.

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Protection of first-aiders	: When administering first aid, ensu appropriate personal protective ec incident, injury and surroundings.	
Immediate medical attention, special treatment	: Treat symptomatically.	

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media	:	Foam, water spray or fog. Dry chemical powder, carbon dio- xide, sand or earth may be used for small fires only.
Unsuitable extinguishing media	:	Do not use water in a jet.
Specific hazards during fire- fighting	:	Hazardous combustion products may include: A complex mixture of airborne solid and liquid particulates and gases (smoke). Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds.
Specific extinguishing me- thods	:	Use extinguishing measures that are appropriate to local cir- cumstances and the surrounding environment.
Special protective equipment for firefighters	:	Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protec- tive equipment and emer- gency procedures	:	Avoid contact with skin and eyes.
Environmental precautions	:	Use appropriate containment to avoid environmental contami- nation. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Local authorities should be advised if significant spillages cannot be contained.
Methods and materials for containment and cleaning up	:	Slippery when spilt. Avoid accidents, clean up immediately. Prevent from spreading by making a barrier with sand, earth or other containment material. Reclaim liquid directly or in an absorbent. Soak up residue with an absorbent such as clay, sand or other suitable material and dispose of properly.

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Additional advice	: For guidance on selection of pe see Chapter 8 of this Safety Da For guidance on disposal of spil this Safety Data Sheet.	ta Sheet.

SECTION 7. HANDLING AND STORAGE

Technical measures	:	Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
Precautions for safe handling	:	Avoid prolonged or repeated contact with skin. Avoid inhaling vapour and/or mists. When handling product in drums, safety footwear should be worn and proper handling equipment should be used. Properly dispose of any contaminated rags or cleaning mate- rials in order to prevent fires.
Avoidance of contact	:	Strong oxidising agents.
Product Transfer	:	This material has the potential to be a static accumulator. Proper grounding and bonding procedures should be used during all bulk transfer operations.
Storage		
Other data	:	Keep container tightly closed and in a cool, well-ventilated place. Use properly labeled and closable containers.
		Store at ambient temperature.
Packaging material	:	Suitable material: For containers or container linings, use mild steel or high density polyethylene. Unsuitable material: PVC.
Container Advice	:	Polyethylene containers should not be exposed to high tem- peratures because of possible risk of distortion.

SECTION 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ĺ	Components	CAS-No.	Value type	Control parame-	Basis
			(Form of	ters / Permissible	
			exposure)	concentration	
	Oil mist, mineral	Not Assigned	TWA ((inhal-	5 mg/m3	US. ACGIH
			able frac-		Threshold
			tion))		Limit Values
			(Mist)	5 mg/m3	OSHA_TRA

Components with workplace control parameters

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NS NS

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances http://www.hse.gov.uk/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany http://www.dguv.de/inhalt/index.jsp

L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

Engineering measures	 The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Adequate ventilation to control airborne concentrations.
	Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.
	 General Information: Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation. Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or subsequent recycle. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Personal protective equipment

Respiratory protection	: No respiratory protection is ordinarily required under normal conditions of use. In accordance with good industrial hygiene practices, precau-
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	tions should be taken to avoid be If engineering controls do not me tions to a level which is adequat select respiratory protection equi- cific conditions of use and meet Check with respiratory protective Where air-filtering respirators and priate combination of mask and Select a filter suitable for the con- and vapours [Type A/Type P be	naintain airborne concentra- te to protect worker health, uipment suitable for the spe- ting relevant legislation. re equipment suppliers. re suitable, select an appro- l filter. ombination of organic gases
Hand protection Remarks	: Where hand contact with the pr gloves approved to relevant sta US: F739) made from the follow suitable chemical protection. PV gloves Suitability and durability usage, e.g. frequency and dura sistance of glove material, dext glove suppliers. Contaminated Personal hygiene is a key elem Gloves must only be worn on cl gloves, hands should be washe cation of a non-perfumed moist For continuous contact we reco through time of more than 240 of 480 minutes where suitable glo short-term/splash protection we recognize that suitable gloves of may not be available and in this time maybe acceptable so long and replacement regimes are for a good predictor of glove resists dependent on the exact compos Glove thickness should be typic depending on the glove make a	Indards (e.g. Europe: EN374, ving materials may provide VC, neoprene or nitrile rubber of a glove is dependent on tion of contact, chemical re- erity. Always seek advice from gloves should be replaced. ent of effective hand care. lean hands. After using ed and dried thoroughly. Appli- urizer is recommended. Immend gloves with break- minutes with preference for > ves can be identified. For e recommend the same, but offering this level of protection a case a lower breakthrough as appropriate maintenance blowed. Glove thickness is not ance to a chemical as it is sition of the glove material. cally greater than 0.35 mm
Eye protection	: If material is handled such that protective eyewear is recomme	
Skin and body protection	: Skin protection is not ordinarily work clothes. It is good practice to wear chem	
Protective measures	: Personal protective equipment mended national standards. Ch	
Environmental exposure of	controls	
General advice	: Take appropriate measures to f vant environmental protection le of the environment by following necessary, prevent undissolved charged to waste water. Waste municipal or industrial waste wa discharge to surface water. Local guidelines on emission lir	egislation. Avoid contamination advice given in Chapter 6. If I material from being dis- water should be treated in a ater treatment plant before

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	must be observed for the discharge of exhaust air containing vapour.
ECTION 9. PHYSICAL AND CHE	EMICAL PROPERTIES
Appearance	: Liquid at room temperature.
Colour	: amber
Odour	: Slight hydrocarbon
Odour Threshold	: Data not available
рН	: Not applicable
pour point	: -43 °C / -45 °FMethod: Unspecified
Initial boiling point and boiling range	: > 280 °C / 536 °Festimated value(s)
Flash point	: 228 °C / 442 °F Method: Unspecified
Evaporation rate	: Data not available
Flammability (solid, gas)	: Data not available
Upper explosion limit	: Typical 10 %(V)
Lower explosion limit	: Typical 1 %(V)
Vapour pressure	: < 0.5 Pa (20 °C / 68 °F) estimated value(s)
Relative vapour density	: > 1estimated value(s)
Relative density	: 0.880 (15 °C / 59 °F)
Density	: 880 kg/m3 (15.0 °C / 59.0 °F) Method: Unspecified
Solubility(ies) Water solubility	: negligible
Solubility in other solvents	: Data not available
Partition coefficient: n- octanol/water	: Pow: > 6(based on information on similar products)
Auto-ignition temperature	: > 320 °C / 608 °F

Viscosity

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Viscosity, dynamic	: Data not available	
Viscosity, kinematic	: 69.05 mm2/s (40.0 °C / 104.0 °F) Method: Unspecified	
	10.42 mm2/s (100 °C / 212 °F) Method: Unspecified	
Conductivity	: This material is not expected to be	a static accumulator.
Decomposition temperature	: Data not available	

SECTION 10. STABILITY AND REACTIVITY

Reactivity	: The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.	
Chemical stability	: Stable.	
Possibility of hazardous reac- tions	: Reacts with strong oxidising agents.	
Conditions to avoid	: Extremes of temperature and direct sunlight.	
Incompatible materials	: Strong oxidising agents.	
Hazardous decomposition products	: Hazardous decomposition products are not expected to for during normal storage.	m

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment	:	Information given is based on data on the components and the toxicology of similar products.Unless indicated otherwise,
		the data presented is representative of the product as a whole, rather than for individual component(s).

Information on likely routes of exposure

Skin and eye contact are the primary routes of exposure although exposure may occur following accidental ingestion.

Acute toxicity

Product:	
Acute oral toxicity	: LD50 (rat): > 5,000 mg/kg Remarks: Expected to be of low toxicity:
Acute inhalation toxicity	: Remarks: Not considered to be an inhalation hazard under normal conditions of use.
Acute dermal toxicity	: LD50 (Rabbit): > 5,000 mg/kg Remarks: Expected to be of low toxicity:

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Skin corrosion/irritation

Product:

Remarks: Expected to be slightly irritating., Prolonged or repeated skin contact without proper cleaning can clog the pores of the skin resulting in disorders such as oil acne/folliculitis.

Serious eye damage/eye irritation

Product:

Remarks: Expected to be slightly irritating.

Respiratory or skin sensitisation

Product:

Remarks: Not expected to be a skin sensitiser.

Germ cell mutagenicity

Product:

: Remarks: Not considered a mutagenic hazard.

Carcinogenicity

Product:

Remarks: Not expected to be carcinogenic.

Remarks: Product contains mineral oils of types shown to be non-carcinogenic in animal skinpainting studies., Highly refined mineral oils are not classified as carcinogenic by the International Agency for Research on Cancer (IARC).

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.
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.
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.

Reproductive toxicity

Product:

Remarks: Not expected to impair fertility., Not expected to be

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a developmental toxicant.

STOT - single exposure

Product:

Remarks: Not expected to be a hazard.

STOT - repeated exposure

Product:

Remarks: Not expected to be a hazard.

Aspiration toxicity

Product:

Not considered an aspiration hazard.

Further information

Product:

Remarks: Used oils may contain harmful impurities that have accumulated during use. The concentration of such impurities will depend on use and they may present risks to health and the environment on disposal., ALL used oil should be handled with caution and skin contact avoided as far as possible.

Remarks: Continuous contact with used engine oils has caused skin cancer in animal tests.

Remarks: Slightly irritating to respiratory system.

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment :	Ecotoxicological data have not been determined for this product. Information given is based on a knowledge of th and the ecotoxicology of similar products. Unless indicated otherwise, the data presented tive of the product as a whole, rather than for in ponent(s).(LL/EL/IL50 expressed as the nominal product required to prepare aqueous test extract	ne components is representa- dividual com- al amount of
Ecotoxicity		
Product: Toxicity to fish (Acute toxic- : ity)	Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l	
Toxicity to daphnia and other aquatic invertebrates (Acute toxicity)	Remarks: Expected to be practically non toxic: LL/EL/IL50 > 100 mg/l	
Toxicity to algae (Acute toxic- : ity)	Remarks: Expected to be practically non toxic:	
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		LL/EL/IL50 > 100 mg/l	
Toxicity to fish (Chronic toxic- ity)	:	Remarks: Data not available	
Toxicity to daphnia and other aquatic invertebrates (Chron- ic toxicity)	:	Remarks: Data not available	
Toxicity to bacteria (Acute toxicity)	:	Remarks: Data not available	
Persistence and degradability	у		
Product:			
Biodegradability	:	Remarks: Expected to be not rea Major constituents are expected ble, but contains components that ment.	to be inherently biodegrada
Bioaccumulative potential			
Product:			
Bioaccumulation	:	Remarks: Contains components cumulate.	with the potential to bioac-
Mobility in soil			
Product:			
Mobility	:	Remarks: Liquid under most env If it enters soil, it will adsorb to so mobile.	
		Remarks: Floats on water.	
Other adverse effects			
no data available			
Product:			
Additional ecological informa- tion	:	Product is a mixture of non-volat expected to be released to air in Not expected to have ozone dep cal ozone creation potential or gl	any significant quantities. letion potential, photochem
		Poorly soluble mixture. May cause physical fouling of ac	quatic organisms.

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SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods	
Waste from residues :	Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste.
	Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or na- tional requirements and must be complied with.
Contaminated packaging :	Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand. Disposal should be in accordance with applicable regional, national, and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

Not regulated as a dangerous good

International Regulation

IATA-DGR

Not regulated as a dangerous good

IMDG-Code

Not regulated as a dangerous good

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

Pollution category Ship type Product name Special precautions	:	Not applicable Not applicable Not applicable Not applicable
Special precautions for user	•	

Remarks

: Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

Additional Information : MARPOL Annex 1 rules apply for bulk shipments by sea.

SECTION 15. REGULATORY INFORMATION

- **OSHA Hazards**
- : No OSHA Hazards

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EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ., Shell classifies this material as an "oil" under the CERCLA Petroleum Exclusion, therefore releases to the environment are not reportable under CERCLA.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	:	No SARA Hazards
SARA 302	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

California Prop 65	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other re- productive harm.
•	act are reported in the following inventories:All components listed or polymer exempt.
TSCA	: All components listed.
DSL	: All components listed.

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reac- 0, 1, 0 tivity)

		indicates an amendment from the previous version. The standard abbreviations and acronyms used in this docu- ment can be looked up in reference literature (e.g. scientific dictionaries) and/or websites.
		ACGIH = American Conference of Governmental Industrial Hygienists ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road AICS = Australian Inventory of Chemical Substances ASTM = American Society for Testing and Materials BEL = Biological exposure limits BTEX = Benzene, Toluene, Ethylbenzene, Xylenes
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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.



SECTION 1: PRODUC	T AND COMPANY IDENTIFICATION	
PRODUCT NAME: OTHER PRODUCT NAMES:	Lead Acid Battery Wet, Filled Wit Electric Storage Battery, UN2794	h Acid
MANUFACTURER: ADDRESS:	East Penn Manufacturing Company Deka Road Lyon Station, PA 19536 USA	y, Inc.
EMERGENCY TELEPH	IONE NUMBERS:	US/CN: CHEMTREC 1-800-424-9300 Outside US/CN: CHEMTREC 1-703-527-3887
NON-EMERGENCY HE	EALTH/SAFETY INFORMATION:	610-682-6361
CHEMICAL FAMILY:	This product is a wet lead lead acid battery types.	d acid storage battery. May also include gel/absorbed electrolye
PRODUCT USE:	Industrial/Commercial ele	ectrical storage batteries.

GHS Classification:		
Health	Environmental	Physical
Acute Toxicity – Category 4 Skin Corrosion – Category 1A Eye Damage – Category 1A Reproductive – Category 1A Carcinogenicity (lead)– Category 1B Carcinogenicity (arsenic)– Category 1A Carcinogenicity(acid mist)–Category 1A Specific Target Organ Toxicity (repeated exposure) –Category 2 GHS Label:	Aquatic Chronic – 1 Aquatic Acute – 1	Explosive Chemical, Division 1.3
	¥2	

Signal Word: DANGER !



Hazard Statements	Precautionary Statements
Health	Prevention
Harmful if swallowed, inhaled, or in contact with skin.	Wash thoroughly after handling.
Causes severe skin burns and eye damage.	Do not eat, drink or smoke when using this product.
Causes serious eye damage.	Wear protective gloves/protective clothing, eye protection/face
May damage fertility or the unborn child if ingested or	protection.
inhaled.	Avoid breathing dust/fume/gas/mist/vapors/spray.
May cause cancer if ingested or inhaled.	Use only outdoors or in a well-ventilated area.
Causes damage to central nervous system, blood and	Causes skin irritation, serious eye damage.
kidneys through prolonged or repeated exposure if	Contact with internal components may cause irritation or
ingested or inhaled.	severe burns.
May cause harm to breast-fed children.	Avoid contact with internal acid.
	Irritating to eyes, respiratory system, and skin.
Environmental	Avoid contact during pregnancy/while nursing.
Very toxic to aquatic life with long lasting effects.	
	Response
Physical	IF SWALLOWED OR CONSUMED: rinse mouth, Do NOT
May form explosive air/gas mixture during charging.	induce vomiting.
Extremely flammable gas (hydrogen).	Call a poison center/doctor if you feel unwell.
Explosive; fire, blast or projection hazard.	IF ON CLOTHING OR SKIN (or hair): Remove/Take off
Obtain special instructions before use.	immediately all contaminated clothing and wash it before
Do not handle until all safety precautions have been read	reuse. Rinse skin with water/shower.
and understood.	IF INHALED: Remove person to fresh air and keep
	comfortable for breathing.
	Immediately call a POISON CENTER or doctor/physician.
	IF IN EYES: Rinse cautiously with water for several minutes.
	Remove contact lenses, if present and easy to do. Continue
	rinsing.
	If exposed/concerned, or if you feel unwell seek medical
	attention/advice.
	Storage and Disposal
	Store locked up, in a well-ventilated area. In accordance with
	local and national regulation.
	Avoid release to the environment.
	Collect spillage.
	Dispose of contents/container in accordance with local/
	regional/national/international regulations.
	Keep away from heat/sparks/open flames/hot surfaces.
	No smoking.
	Use only outdoors or in well ventilated area
	Keep out of reach of children.

EMERGENCY OVERVIEW:

May form explosive air/gas mixture during charging. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. Prolonged inhalation or ingestion may result in serious damage to health. Pregnant women exposed to internal components may experience reproductive/developmental effects.

Additional Information

No health effects are expected related to normal use of this product as sold.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical/Common Names):	CAS No.:	% by Wt:	EC No.:
Lead and Lead Compounds, inorganic	<u>7439-92-1</u>	43-70 (average: 65)	231-100-4
Electrolyte (Sulfuric acid and water)	7664-93-9	20-44 (average: 25)	231-639-5
Antimony	7440-36-0	0-4 (average: <1)	231-146-5
PAGE 2 OF 9		East Penn Manufac	cturing Co., I



Polypropylene

9003-07-0

5-10 (average: 8) NA NA – Not applicable/ND – Not determined

Additional Information

These ingredients reflect components of the finished product related to performance of the product as distributed into commerce. Inorganic lead, lead compounds and electrolyte (sulfuric acid) are the primary components. Other metals (ie. Sn, Cu, As) may be present at concentrations below the applicable reporting threshold.

SECTION 4: FIRST AID MEASURES

EYE CONTACT:	Sulfuric Acid and Lead: Flush eyes immediately with large amounts of water for at least 15 minutes while lifting lids. Seek immediate medical attention if eyes have been exposed directly to acid.
SKIN CONTACT:	Sulfuric Acid: Flush affected area(s) with large amounts of water using deluge emergency shower, if available, shower for at least 15 minutes. Remove contaminated clothing, including shoes. If symptoms persist, seek medical attention. Wash contaminated clothing before reuse. Discard contaminated shoes. Lead: Wash immediately with soap and water.
INGESTION:	, , ,
INHALATION:	Sulfuric Acid: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician. Lead: Remove from exposure, gargle, wash nose and lips; consult physician.

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT: Not Applicable.

FLAMMABLE LIMITS: LEL= 4.1% (Hydrogen Gas in air); UEL=74.2%

EXTINGUISHING MEDIA: CO_2 ; foam; dry chemical. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use appropriate media for surrounding fire.

FIRE-FIGHTING PROCEDURES: Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down.

HAZARDOUS COMBUSTION PRODUCTS: Highly flammable hydrogen gas is generated during charging and operation of batteries. If ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

Additional Information

Fire-fighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Stop flow of material, contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime,etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of un-neutralized acid to sewer. Acid must be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.

Additional Information

Lead acid batteries are recyclable. Contact your East Penn representative for recycling information.

SECTION 7: HANDLING AND STORAGE

Handling: Unless involved in recycling operations, do not breach the casing or empty the contents of the battery. Handle

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carefully and avoid tipping, which may allow electrolyte leakage. There may be increasing risk of electric shock from strings of connected batteries. Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Keep vent caps on and cover terminals to prevent short circuits. Place cardboard between layers of stacked automotive batteries to avoid damage and short circuits. Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water. Use banding or stretch wrap to secure items for shipping.

Storage: Store batteries under roof in cool, dry, well-ventilated areas separated from incompatible materials and from activities that may create flames, spark or heat. Store on smooth, impervious surfaces provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit.

Charging: There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients	OSHA PEL	ACGIH	US NIOSH	Quebec PEV	Ontario OEL	EU OEL
Lead, inorganic	0.05	0.05	0.05	0.05	0.05	0.15 (b)
Antimony	0.5	0.5	0.5	0.5	0.5	0.5 (b,d)
Tin	2	2	2			
Copper	1	1	1	1	1 (a)	0.1 (e)
Arsenic	0.01	0.01	0.01			
Sulfuric Acid	1	0.2	1	1	0.2	0.05 (c)
Polypropylene	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.

Exposure Limits (mg/m³)

(a) As dusts/mists (b) As inhalable aerosol (c) Thoracic fraction (d) Based on OEL's of Austria, Belgium, Denmark, France, Netherlands, Switzerland, & U.K. (e) Based on OEL of Netherlands

ENGINEERING CONTROLS/SYSTEM DESIGN INFORMATION:

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant . Handle batteries cautiously, do not tip to avoid spills. Make certain vent caps are on securely. If battery case is damaged, avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when filling, charging, or handling batteries. Do not allow metallic materials to simultaneously contact both the positive and negative terminals of the batteries. Charge batteries in areas with adequate ventilation. General dilution ventilation is acceptable.

RESPIRATORY PROTECTION (NIOSH/MSHA approved):

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

EYE PROTECTION:

If battery case is damaged, use chemical goggles or face shield.

SKIN PROTECTION:

If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing and boots.

OTHER PROTECTION: In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply. Chemically impervious apron and face shield recommended when adding water or electrolyte to batteries. **Wash Hands after handling.**

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Additional Information

- Batteries are housed in polypropylene cases which are regulated as total dust or respirable dust only when they are ground up during recycling. The OSHA PEL for dust is 15 mg/m³ as total dust or 5 mg/m³ as respirable dust.
- May be required to meet Domestic Requirements for a Specific Destination(s).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Industrial/commercial lead acid battery			
ODOR:	Odorless			
ODOR THRESHOLD:	Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp,			
ODOR MIREONOED.	penetrating, pungent odor.			
PHYSICAL STATE:	Sulfuric Acid: Liquid; Lead: solid			
pH:	~1 to 2			
BOILING POINT:	203-240° F (as sulfuric acid)			
MELTING POINT:	NA			
FREEZING POINT:	NA			
VAPOR PRESSURE:	10 mmHg			
VAPOR PRESSORE. VAPOR DENSITY (AIR = 1):	> 1			
· /				
SPECIFIC GRAVITY (H ₂ O = 1):	1.215–1.350			
EVAPORATION RATE (n-BuAc=1):	<1			
SOLUBILITY IN WATER:	100% (as sulfuric acid)			
FLASH POINT:	Below room temperature (as hydrogen gas)			
AUTO-IGNITION TEMPERATURE:	NA			
LOWER EXPLOSIVE LIMIT (LEL):	4% (as hydrogen gas)			
UPPER EXPLOSIVE LIMIT (UEL):	74% (as hydrogen gas)			
PARTITION COEFFICIENT:	NA			
VISCOSITY (poise @ 25° C):	Not Available			
DECOMPOSITION TEMPERATURE:	Not Available			
SECTION 10: STABILITY AND REACTIVITY				

STABILITY: INCOMPATIBILITY (MATERIAL TO AVOID):	This product is stable under normal conditions at ambient temperature. <u>Electrolyte</u> : Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas. <u>Lead compounds</u> : Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents. <u>Arsenic compounds</u> : strong oxidizers; bromine azide. NOTE: hydrogen
HAZARDOUS DECOMPOSITION BY- PRODUCTS:	gas can react with inorganic arsenic to form the highly toxic gas-arsine <u>Electrolyte</u> : Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide. <u>Lead compounds</u> : Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or prescence of nascent hydrogen may generate highly toxic arsine gas.
HAZARDOUS POLYMERIZATION: CONDITIONS TO AVOID:	Will not occur Prolonged overcharge at high current; sources of ignition.

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE TOXICITY (Test Results Basis and Comments): Inhalation LD_{50} : <u>Electrolyte</u>: LC_{50} rat 375 mg/m³; LC_{50} : guinea pig: 510 mg/m³

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Elemental Lead: Acute Toxicity Point Estimate =4500 ppm V (based on lead bullion) Elemental Arsenic: No data Oral LD₅₀: Electrolyte: rat 2140 mg/kg Elemental Lead: Acute Toxicity Estimate (ATE) = 500mg/kg body weight (based on lead bullion) Elemental Arsenic: LD₅₀ mouse: 145 mg/kg Elemental Antimony: LD₅₀ rat: 100 mg/kg

Routes of Entry: <u>Sulfuric Acid</u>: Harmful by all routes of entry. <u>Lead Compounds</u>: Hazardous exposure can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, vapor or fume. The prescence of nascent hydrogen may generate highly toxic arsine gas.

Inhalation: <u>Sulfuric Acid</u>: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation. <u>Lead Compounds</u>: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

Ingestion: <u>Sulfuric Acid</u>: May cause severe irritation of mouth, throat, esophagus and stomach. <u>Lead Compounds</u>: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

Skin Contact: <u>Sulfuric Acid</u>: Severe irritation, burns and ulceration. <u>Lead Compounds</u>: Not absorbed through the skin. <u>Arsenic Compounds</u>: Contact may cause dermatitis and skin hyperpigmentation.

Eye Contact: <u>Sulfuric Acid</u>: Severe irritation, burns, cornea damage, and blindness. <u>Lead Compounds</u>: May cause eye irritation.

Effects of Overexposure Acute: <u>Sulfuric Acid</u>: Severe skin irritation, damage to cornea, upper respiratory irritation. <u>Lead</u> <u>Compounds</u>: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability.

Effects of Overexposure – Chronic: <u>Sulfuric Acid</u>: Possible erosion of tooth enamel, inflammation of nose, throat & bronchial tubes. <u>Lead Compounds</u>: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females. Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

Carcinogenicity: <u>Sulfuric Acid</u>: The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category I carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharginging, may result in the generation of sulfuric acid mist. <u>Lead Compounds</u>: Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present. <u>Arsenic</u>: Listed by National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

Medical Conditions Generally Aggravated by Exposure: Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

Additional Health Data:

All heavy metals, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion. Most inhalation problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8. Follow good personal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving the work site. Keep contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of food, tobacco and cosmetics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated areas and never taken home or laundered with personal non-contaminated clothing. This product is intended for industrial use only and should be isolated from children and their environment.

The 19th Ammendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

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SECTION 12: ECOLOGICAL INFORMATION

Environmental Fate: Lead is very persistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments is slow. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants but little bioaccumulation occurs through the food chain. Most studies include lead compounds and not elemental lead.

Environmental Toxicity:

 Sulfuric acid:
 24-hr LC₅₀, fresh water fish (*Brachydanio rerio*): 82 mg/l

 96-hr LOEC, fresh water fish (*Cyprinus carpio*): 22 mg/l (lowest observable effect concentration)

 Lead :
 48-hr LC₅₀ (modeled for aquatic invertebrates): <1mg/L, based on lead bullion</td>

 Arsenic:
 24-hr LC₅₀, freshwater fish (Carrassisus auratus)>5000g/L

Additional Information

- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)
- Water Endangering Class (WGK): NA

SECTION 13: DISPOSAL CONSIDERATIONS (UNITED STATES)

WASTE DISPOSAL
METHOD:Spent batteries: Send to secondary lead smelter for recycling. Contact your East Penn Mfg.
representative for more information related to lead acid battery recycling. Spent lead acid
batteries are not regulated as hazardous waste when the requirements of 40 CFR Section
266.80 are met. If applicable; EPA hazardous waste number D002 (corrosivity) and D008
(lead). Electrolyte: Place neutralized slurry into sealed acid resistant containers and
dispose of as hazardous waste, as applicable. Large water diluted spills, after neutralization
and testing, should be managed in accordance with approved local, state, and federal
requirements. Consult state environmental agency and/or federal EPA.Follow local, State/Provincial, and Federal/National regulations applicable to as-used, end-
of-life characteristics to be determined by end-user.

SECTION 14: TRANSPORT INFORMATION

DOT rules specified in 49 CFR 173.159 Batteries, wet, regulate the transport of wet spillable batteries.

49 CFR 173.159 (e) specifies that when transported by highway or rail, electric storage batteries containing electrolyte or corrosive battery fluid are not subject to any other requirements of this subchapter, if all of the following are met:

- (1) No other hazardous materials may be transported in the same vehicle;
- (2) The batteries must be loaded or braced so as to prevent damage and short circuits in transit;
- (3) Any other material loaded in the same vehicle must be blocked, braced, or otherwise secured to prevent contact with or damage to the batteries; and

(4) The transport vehicle may not carry material shipped by any person other than the shipper of the batteries. If any of these requirements are not met, the batteries must be shipped as fully regulated Class 8 Corrosive hazardous materials.

GROUND - US-DOT/CAN-TDG/EU-ADR/APEC-ADR:

Proper Shipping Name	Batteries, Wet, Filled with Acid			
Hazard Class	8	ID Number	UN2794	
Packing Group	NA	Labels	Corrosive	
AIRCRAFT – ICAO-IATA:				
Proper Shipping Name	Batteries, Wet, Filled with Acid			
Hazard Class	8	ID Number	UN2794	
Packing Group	NA	Labels	Corrosive	
Reference IATA packing instructions 870				
VESSEL – IMO-IMDG:				
Proper Shipping Name	Batteries, Wet, Filled with Acid			
Hazard Class	8	ID Number	UN2794	
Packing Group	NA	Labels	Corrosive	
Reference IMDG packing instructions P801				



Additional Information

Transport requires proper packaging and paperwork, including the Nature and Quantity of goods, per applicable origin/destination/customs points as-shipped.

SECTION 15: REGULATORY INFORMATION

INVENTORY STATUS:

All components are listed on the TSCA; EINECS/ELINCS; and DSL, unless noted otherwise below.

U.S. FEDERAL REGULATIONS:

TSCA Section 8b – Inventory Status: All chemicals comprising this product are either exempt or listed on the TSCA Inventory.

TSCA Section 12b – (40 CFR Part 707.60(b)) No notice of export will be required for articles, except PCB articles, unless the Agency so requires in the context of individual section 5,6, or 7 actions.

TSCA Section 13 –(40 CFR Part 707.20): No import certification required (EPA 305-B-99-001, June 1999, Introduction to the Chemical Import Requirements of the Toxic Substances Control Act, Section IV.A)

RCRA: Spent Lead Acid Batteries are subject to streamlined handling requirements when managed in compliance with 40 CFR section 266.80 or 40 CFR part 273. If applicable; EPA hazardous waste number D002 (corrosivity) and D008 (lead).

STATE REGULATIONS (US): *Proposition 65 Warning Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. Batteries also contain other chemicals known to State of California to cause cancer. Wash hands after handling.

EPA SARA Title III:

<u>Section 302 EPCRA Extremely Hazardous Substances (EHS)</u>: Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs. EPCRA Section 302 notification is required if 500 lbs. or more of sulfuric acid is present at one site (40 CFR 370.10). For more information consult 40 CFR Part 355.

<u>Section 304 CERCLA Hazardous Substances</u>: Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.

Section 311/312 Hazard Categorization: EPCRA Section 312 Tier II reporting is required for non-automotive batteries if sulfuric acid is present in quantities of 500 lbs. or more and/or if lead is present in quantities of 10,000 lbs. or more. For more information consult 40 CFR 370.10 and 40 CFR 370.40.

<u>Section 313 EPCRA Toxic Substances</u>: 40 CFR Section 372.38(b) states: If toxic chemical is present in an article at a covered facility, a person is not required to consider the quantity of the toxic chemical present in such article when determining whether an applicable threshold has been met under 40 CFR's 372.25,372.27, or 372.28 or determining the amount of release to be reported under 40 CFR 372.30. This exemption applies whether the person received the article from another person or the person produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article.

The reporting of lead and sulfuric acid (and their releases) in leadacid batteries used in cars, trucks, most cranes, forklifts, locomotive engines, and aircraft for the purposes of EPCRA Section 313 is not required. Lead acid batteries used for these purposes are exempt for Section 313 reporting per the "Motor Vehicle Exemption." See page B-22 of the <u>U.S. EPA</u> <u>Guidance Document for Lead and Lead Compound Reporting under EPCRA Section 313</u> for additional information of this exemption.

Always check your state/local requirements as they may differ.

Supplier Notification: This product contains toxic chemicals that may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. For a manufacturing facility under SIC codes 20 through 39, the following information is provided to enable you to complete the required reports:

Toxic Chemical	CAS Number	Approximate % by Weight
Lead	7439-92-1	65
Electrolyte (Sulfuric Acid/Water Solution)	7664-93-9	25
Antimony	7440-36-0	< 1.0
Arsenic	7440-38-2	<0.1

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See 40 CFR Part 370 for more details.

Additional Information

This product may be subject to Restriction of Hazardous Substances (RoHS) regulations in Europe and China, or may be regulated under additional regulations and laws not identified above, such as for uses other than described or asdesigned/as-intended by the manufacturer, or for distribution into specific domestic destinations.

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:

NFPA Hazard Rating for Sulfuric acid: Flammability (Red) = 0 Health (Blue) = 3 Reactivity (Yellow) = 2 Sulfuric acid is water-reactive if concentrated.

Distribution into Quebec to follow Canadian Controlled Product Regulations (CPR) 24(1) and 24(2). Distribution into the EU to follow applicable Directives to the Use, Import/Export of the product as-sold.

SDS PREPARATION INFORMATION:

DATE OF ISSUE: 13 May 2015

DISCLAIMER:

This Safety Data Sheet is based upon information and sources available at the time of preparation or revision date. Information in the SDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose or any other Warranty, Expressed or Implied, with respect to such information and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning East Penn Manufacturing Co., Inc. products or questions concerning the content of this SDS please contact your East Penn representative.