Safety Data Sheet
AEROCHEM 40

1. Identification

Product identifier	AEROPHOS 40
Product code	FLAERO4020LT
Other means of identification	N.Av.
Recommended use of the chemical and restrictions on use	lLime, scale, tartar and stain remover. Not recommended for any other use not detailed on product data sheet or label.
Manufacturer	AEROCHEM Inc. 5977 Trans Canada Highway Pointe-Claire, QC H9R 1C1 Canada Tel. 514-630-2800 General Information: 1-888-592-5837 Fax 514-630-2828 www.aerochem.ca
Emergency phone number	Quebec Poison Center: 1-800-463-5060 (toll free in QC) Ontario and Manitoba Poison Centres: 1-800-268-9017 or 419-813-5900 BC Drug and Poison Information Centre: 1-800-567-8911 (toll free in BC) or contact your local poison control centre in the state/province or territory where you live. INFOTRAC® 1-800-535-5053. International call collect: 1-352-323-3500 24 hours/day, 7 days/week.

2. Hazard identification

Summary	Corrosive liquid. May cause burns. Avoid all contact with the skin, eyes and clothing. Do not breathe vapours, mists or aerosols. Do not ingest. If medical advice is needed, have this SDS or label at hand. Wear eye protection, gloves and other protective clothing that are adapted to the task being performed and the risks involved.

WHMIS 2015/OSHA HCS 2012/GHS

Skin corrosion/irritation (Category 1B)
Serious eye damage (Category 1)
Health hazards not otherwise classified (HHNOC)

DANGER

H314: Causes severe skin burns and eye damage.
H3xx: May cause burns and serious injury to the respiratory tract.
P260: Do not breathe mist, vapours and spray.
P264: Wash face, hands and any exposed skin thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves, protective clothing and eye protection.
P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+361+353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P363: Wash contaminated clothing before reuse.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+351+338: IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or a doctor.
P405: Store locked up.
P501: Dispose of contents and container to a licensed chemical disposal agency in accordance with local, regional and national

regulations.

3. Composition/information on ingredients

Common name	CAS	Weight % content
Phosphoric acid	7664-38-2	55 - 85 %

4. First-aid measures

Inhalation	Move person to fresh air. If breathing is difficult, give oxygen by trained personnel. If not breathing, give artificial respiration. Seek medical attention immediately. Symptoms of lung edema (mainly cough and difficulty breathing) often occur after some hours and they are aggravated by physical effort. Rest and medical observation are therefore essential.
Skin contact	IMMEDIATELY! Flush with water for at least 20 minutes while removing contaminated clothing and shoes. Speed is essential. Avoid touching eyes with contaminated body parts. Seek medical attention or contact a Poison Centre immediately. Wash contaminated clothing before reuse.
Eye contact	IMMEDIATELY flush with plenty of water. Speed is essential. Remove contact lenses if easy to do. Hold eyelids apart to rinse properly. Flush with water for at least 20 minutes. Seek medical attention immediately. Have an opthalmologist make an evaluaton of eye injury.
Ingestion	DO NOT induce vomiting, unless recommended by medical personnel. If victim is conscious wash out mouth with water and give 1-2 glasses of water to drink. Never give anything by mouth if victim is unconscious or convulsing. If spontaneous vomiting occurs, keep head below hip level to prevent aspiration into the lungs. Seek medical attention or contact a Poison Centre immediately.
Other	Immediate first aid is needed to prevent damage. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Do not use mouth-to-mouth resuscitation unless you use a buccal protective device.
Symptoms	The severity of symptoms may vary depending on exposure conditions. Causes burns to the respiratory tract, gastrointestinal tract, eyes and skin.
Notes to the physician	Treat according to person's condition and specifics of exposure. If gastric lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. For severe exposures, monitor for delayed onset of pulmonary edema.

5. Fire-fighting measures

Suitable extinguishing media	Use appropriate extinguisher for surrounding fire. Do not use a heavy water jet.
Specific hazards arising from the chemical	Contact with water will generate heat or splashing. Under the effect of heat phosphoric acid is dehydrated and forms pyrophosphoric acid (around 200°C), metaphosphoric acid (over 300°C) and then polyphosphoric acid and phosphorus oxides.
Special protective equipment	Firefighters must wear self contained breathing apparatus with full face mask. Firefighting suit may not be efficient against chemicals.
Special protective actions for fire-fighters	Use water spray to cool fire-exposed containers.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Do not touch damaged containers or spilled material. Make sure to wear personal protective equipment mentioned in this Safety Data Sheet.
Environmental precautions	Prevent entry into sewers, closed areas and release to the environment. For a large spill, consult the Department of Environment or the relevant authorities.
Methods and materials for containment and cleaning up	No action shall be taken involving any personal risk or without suitable training. Evacuate unauthorized personnel. Ventilate the area well. Stop leak, if it's possible to do so without risk. Do not pour water on the spill or leak point. Avoid splashing. Neutralize carefully, using a commercial absorbent for spills acid or absorb with non-combustible material (a mixture of sodium carbonate, bentonite and sand) and place in an appropriate waste disposal container. The neutralization will be to be exothermic (heat formation). Finish cleaning by rinsing with water contaminated surface. Drains must have retention basins for pH adjustment and neutralization of spilled materials and flushing prior to discharge. Dispose via a licensed waste disposal contractor.

7. Handling and storage

Precautions for safe handling	This product must be manipulated by qualified personnel. Use only in well ventilated area. Do not inhale the fumes produced at high temperature. Avoid formation of vapours or mists. Avoid all contact with the skin, eyes and clothing. Make sure to wear personal protective equipment mentioned in this Safety Data Sheet. Open and handle container with care. Nerver add water directly in this product. Add this product instead in small quantity to stirring water to avoid splashing. DO NOT dispose residue in sewers, streams or drinking water supply. Corrosive to metals. Avoid contact with incompatible materials. Keep only the quantities necessary for the work being performed in the work area. Keep containers tightly closed when not in use. Do not eat, do not drink and do not smoke during use. Wash hands, forearms and face thoroughly after handling this compound and before eating, drinking or using toiletries. Remove contaminated clothing and wash before reuse.
Conditions for safe storage, including any incompatibilities	Store tightly closed and in properly labelled containers in a cool, dry and well ventilated place. Keep away from direct sunlight and heat. Keep away from moisture. Store away from bases and incompatible materials (see section 10). Bulk storage tanks should be constructed of corrosion-resistant materials, should have an overfill protection device and electrically grounded.
Storage temperature	18 to 25°C (64.4 to 77°F)

8. Exposure controls/personal protection

Immediately Dangerous to Life or Health	Phosphoric acid: 1000 mg/m3.		
Phosphoric acid	STEL	3 mg/m^3	ACGIH , BC, ON, RSST
	TWA (8h)	1 mg/m^3	ACGIH , BC, ON, OSHA, RSST
Appropriate engineering controls	Provide sufficient mechanical ventilation (general or local exhaust) to keep the airborne concentrations of vapours, mists, aerosols or dust below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are close to the workstation.		
Individual protection measures			
Eye	Wear chemical splash goggles. If risk of contact with eyes or the face wear chemical splash goggles and a face shield. If respiratory hazards exist, a full face respirator may be required instead.		
Hands	Chemical-resistant, impervious gloves should be worn at all times when handling this chemical product. Wear nitrile or neoprene gloves. Before using, user should confirm impermeability. Discard gloves with tears, pinholes, or signs of wear. Gloves must only be worn on clean hands. Wash gloves with water before removing them. After using gloves, hands should be washed and dried thoroughly.		

Skin	Personal protective equipment for the body should be selected based on the task being performed and the risks involved. Wear normal work clothing covering arms and legs as required by employer code. Wear appropriate chemical impervious clothing. If necessary, wear an apron or long-sleeve protective coverall suit.
Respiratory	Where the conditions in the workplace require a respirator, it is necessary to follow a respiratory protection program. Moreover, respiratory protection equipment (RPE) must be selected, fitted, maintained and inspected in accordance with regulations and standard 29 CFR 1910.134 (OSHA), ANSI Z88.2 or CSA Z 94.11 (Canada) and approved by NIOSH/MSHA. In case of insufficient ventilation or in enclosed area until maximum 100 times of exposure limit, wear full face mask respirator fitted with a particulate filter N100 (P100 and R100 in the presence of oil). For concentrations higher than the Threshold Limit Value, wear any self-contained breathing apparatus that has a full face piece and is operated in a pressure-demand or other positive-pressure mode.
Feet	Wear rubber boots to clean up a spill.


Goggles


Nitrile gloves

9. Physical and chemical properties

Physical state	Viscous liquid	**Flammability**	Non-flammable
Colour	Green, amber or colorless	**Flammability limits**	N/Ap.
Odour	Odourless	**Flash point**	N/Ap.
Odour threshold	N/Ap.	**Auto-ignition temperature**	N/Av.
pH	1	**Sensibility to electrostatic charges**	N.Av.
Melting point	-17 to 21°C (1.4 to 69.8°F)	**Sensibility to sparks and/or friction**	No
Freezing point	-17 to 21°C (1.4 to 69.8°F)	**Vapour density**	3.41 (Air = 1)
Boiling point	135 to 160°C (275 to 320°F)	**Relative density**	1.35 to 1.81 kg/L (Water = 1)
Solubility	Fully soluble in water.	**Partition coefficient n-octanol/water**	N/Ap.
Evaporation rate	< Butyl Acetate	**Decomposition temperature**	213°C (415.4°F)
Vapour pressure	0.28 to 0.76kPa (2.1 to 5.7 mm Hg) @ 20°C (68°F)	**Viscosity**	15 to 30 cSt @ 20°C (68°F)
Percent Volatile	100%	**Molecular mass**	98.0

N/Av.: Not Available N/Ap.: Not Applicable Und.: Undetermined N/E: Not Established

10. Stability and reactivity

Reactivity	Violent reaction with bases. Corrosive to iron, aluminum and zinc. Contact with some metals causes formation of flammable and explosive hydrogen gas.
Chemical stability	Stable under recommended storage conditions.
Possibility of hazardous reactions (including	Hazardous polymerization will not occur.

polymerizations)	
Conditions to avoid	Avoid contact with incompatible materials. Nerver add water directly in this product.
Incompatible materials	Strong oxidizing agents (e.g. chlorine, fluorine, nitric acid, perchloric acid, peroxides, nitrates, chlorates, chromates, permanganates and perchlorates), strong bases (e.g. hydroxides, solutions of ammonia, amines, carbonates), reducing agents, some metals.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced. Under the effect of heat phosphoric acid is dehydrated and forms pyrophosphoric acid (around 200°C), metaphosphoric acid (over 300°C) and then polyphosphoric acid and phosphorus oxides.

11. Toxicological information

Numerical measures of toxicity	Phosphoric acid	Ingestion 1530 mg/kg Rat LD50 Inhalation >0.42 mg/l/4h Rat LC50 Skin 2740 mg/kg Rabbit LD50
Likely routes of exposure	Skin, eyes, inhalation, ingestion.	
Delayed, immediate and chronic effects	**Eye contact**	May cause burns and damages to eyes. Eye Irritation/Corrosion, Rabbit (OECD TG 405): 75 to 85% phosphoric acid solution (0.1 ml/1h) is corosive.
	Skin contact	Causes skin burns. Skin Irritation/Corrosion, Rabbit : 75% phosphoric acid solution/4h, irritating. 80% phosphoric acid solution/4h, severely irritating. 85% phosphoric acid solution/4h, corrosive. The severity of symptoms may vary depending on exposure conditions.
	Inhalation	Vapors and mists may irritate the eyes, nose, throat and lungs. Exposure to high concentrations of vapour may cause burns of to nose, throat and respiratory tract, pulmonary oedema. Symptoms of lung edema (mainly cough and difficulty breathing) often occur after some hours and they are aggravated by physical effort. Repeated or prolonged exposure may cause chronic bronchitis. The severity of symptoms may vary depending on exposure conditions.
	Ingestion	Causes burns to mouth, throat and stomach. May cause oedema of the larynx, blood vomiting, perforation of the oesophagus and of the stomach, a shock, death can occur.
	IARC/NTP Classification	No ingredients listed.
	Carcinogenicity	Ingredients present at levels greater than or equal to 0.1% of this product are not listed as a carcinogen by IARC, ACGIH, NIOSH, NTP or OSHA.
	Mutagenicity	Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause mutagenic effects.
	Reproductive toxicity	Ingredients in this product present at levels greater than or equal to 0.1% are not known to cause reproduction effects.
	Specific target organ toxicity - single exposure	No target organ is listed.
	Specific target organ toxicity - repeated exposure	No target organ is listed.
Interactive effects	No information available.	
Other information	No information available.	

12. Ecological information

Ecological toxicity	Fish - Medaka - Oryzias latipes - fresh water	LC50	75.1 mg/L; 96 hr (pH 3.39 - 4.45) [OECD 203]
	Fish - Lepomis macrochirus - Bluegill	LC50	pH 3-3.5; 96 hr
	Aquatic Invertebrate - Daphnia magna	EC50	>376 mg/L; 48 hr (pH 7.53-7.95) [OECD 202]
	Aquatic Invertebrate - Daphnia pulex	EC50	pH 4.1; 12 hr
	Aquatic Invertebrate - Crustaceans - Gammarus pulex (fresh water)	EC50	pH 3.4; 12 hr
	Aquatic Plant - Algea, Pseudokirchnerilla subcapitata	EC50	77.9 mg/L; 72 hr (pH 3.40-5.61) [OECD 201]
	Algea, Pseudokirchneriella subcapitata	EC50	32 mg/L; 72 hr (pH 5.61-7.48) [OECD 201]
	Bacteria - activated sludge	EC50	pH 2.55
	Terrestrial Plants (Peas, beans, beets, rapeseed and weeds)	ECx	Sprayed with 15-20% solution of H3PO4: Foliage was destroyed on all plants.
Persistence	May persist in the environment.		
Degradability	Simple inorganic salts are not susceptible to photodegradation. The Phosphorus cycle is well understood. Phosphates are converted to calcium or iron/aluminum phosphates or are incorporated with the organic soil matter. Under anaerobic conditions, microorganisms may degrade phosphate to phosphine.		
Bioaccumulative potential	No bioaccumulation. Bioconcentration Factor (BCF) of 3.1.		
Mobility in soil	During transport through the soil, phosphoric acid will dissolve some of the soil material, in particular, carbonate-based materials. Under acidic soil conditions, sparsely soluble phosphates tend to solubilize and may migrate to water. Under alkaline soil conditions, soluble phosphates are translocated in the soil only over very short periods and are then immobilized under calcium or magnesium salts.		
Other adverse effects	The observed ecological toxicity presented by this product for the environment was considered a result of pH effects. This compound will release phosphates which will result in algae growth, increased turbidity, and depleted oxygen. At extremely high concentrations, this may be hazardous to fish or other marine organisms. Release to watercourses may cause effects downstream. This chemical does not deplete the ozone layer.		

13. Disposal considerations

Container 	Important! Prevent waste generation. Use in full. DO NOT dispose residue in sewers, streams or drinking water supply. Residues and empty containers must be considered as hazardous waste. Dispose via a licensed waste disposal contractor. Observe all federal, state/provincial and municipal regulations. If necessary consult the Department of Environment or the relevant authorities.

14. Transport information

UN Number	UN 1805
UN Proper Shipping Name	PHOSPHORIC ACID, LIQUID
Environmental hazards	This material is not listed as a marine pollutant.
Special precautions for user	Permit required for transportation with proper DANGER placards displayed on vehicle.
TDG - Transportation of Dangerous Goods (Canada)	

Transport hazard class(es)	 Class 8
Packing group	III
Emergency response guidebook 2016	154
IMO/IMDG - International Maritime Transport	
Classification	UN 1805. PHOSPHORIC ACID, SOLUTION. Class 8, PG III. Emergency schedules (EmS-No) F-A, S-B
IATA - International Air Transport Association	
Classification	UN 1805. PHOSPHORIC ACID, SOLUTION. Class 8, PG III.

These transportation classifications are provided as a customer service. As the shipper YOU remain responsible for complying with all applicable laws and regulations, including proper transportation classification and packaging. In addition, if a domestic exemption exists, it is the responsibility of the shipper to define the application of it.

15. Regulatory information

CANADA

Common name	CAS	CEPA	DSL	NDSL	NPRI
Phosphoric acid	7664-38-2		X		X

- CEPA: List of Toxic Substances Managed Under Canadian Environmental Protection Act
- DSL: Domestic Substances List Inventory
- NDSL: Non-Domestic Substances List Inventory
- NPRI: National Pollutant Release Inventory Substances

UNITED STATE OF AMERICA

Common name	CAS	TSCA	CER CLA	EPCRA 313	EPCRA 302/304	CAA 112(b) HON	CAA 112(b) HAP	CAA 112(r)	CWA 311	CWA Prio.
Phosphoric acid	7664-38-2	X	X	X					X	

- TSCA: Toxic Substance Control Act
- CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act list of hazardous substances
- EPCRA 313: Emergency Planning and Community Right-to-Know Act, Section 313 Toxic Chemicals
- EPCRA 302/304: Emergency Planning and Community Right-to-Know Act, Section 302/304 Extremely Hazardous Substances
- CAA 112(b) HON: Clean Air Act - Hazardous Organic National Emission Standard for Hazardous Air Pollutant
- CAA 112(b) HAP: Clean Air Act - Hazardous Air Pollutants lists pollutants
- CAA 112(r): Clean Air Act - Regulated Chemicals for Accidental Release Prevention
- CWA 311: Clean Water Act - List of Hazardous Substances
- CWA Priority: Clean Water Act - Priority Pollutant list

California Proposition 65

No ingredients listed.

Other regulations	CANADA : - Canadian National Pollutant Release Inventory Substances (NPRI): This material is listed in Phosphore (total) (Substance Identifier NA - 22).

WHMIS 1988

E

Class E : Corrosive material

HMIS

NFPA

16. Other information

Date (YYYY-MM-DD)	Aerochem inc. 2018-08-14
Version	03
Other information	REFERENCES: - Haz-Map, Information on Hazardous Chemicals and Occupational Diseases, http://hazmap.nlm.nih.gov/index.php - TOXNET Databases, Toxicology Data Network, NIH U.S. National Library of Medicine, http://toxnet.nlm.nih.gov/ - IPCS INCHEM, Chemical Safety Information from Intergovernmental Organizations, Canadian Centre for Occupational Health and Safety (CCOHS), Copyright International Programme on Chemical Safety (IPCS), http://www.inchem.org - Service du répertoire toxicologique de la Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST), http://www.reptox.csst.qc.ca - Database, Institut National de Recherche et de Sécurité, http://www.inrs.fr/accueil/produits/bdd.html - NIOSH Pocket Guide to Chemical Hazards, Centers for Disease Control and Prevention, NIOSH Publications, 2007, http://www.cdc.gov/niosh/npg/npg.html DATE OF FIRST VERSION OF SDS: 2013-06-10 CHANGES MADE IN THE VERSION 02: sections 2, 4, 8, 11 and 15. DATE OF SECOND VERSION OF SDS: 2016-01-27. CHANGES MADE IN THE VERSION 03: sections 1, 3 and 9. ACGIH: American Conference of Governmental Industrial Hygienists AIHA: American Industrial Hygiene Association HMIS: Hazardous Materials Identification System NFPA: National Fire Protection Association OSHA: Occupational Safety and Health Administration (USA) NIOSH: National Institute for Occupational Safety and Health NTP: National Toxicology Program RSST: Règlement sur la santé et la sécurité du travail (Québec) GHS: Globally Harmonized System IARC: International Agency for Research on Cancer IDLH: Immediately Dangerous to Life or Health STEL: Short Term Exposure Limit (15 min) TWA: Time Weighted Averages WHMIS: Workplace Hazardous Materials Information System

	liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.