

# MATERIAL SAFETY DATA SHEET

VigorOx® LS-15



MSDS Ref. No.: 79-21-0-16

Date Approved: 07/31/2009

Revision No.: 10

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This document has been prepared to meet the requirements of the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200 and Canada's Workplace Hazardous Materials Information System (WHMIS) requirements.

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** VigorOx® LS-15

**SYNONYMS:** Peroxyacetic Acid, Acetyl Hydroperoxide

**GENERAL USE:** EPA Registration No. 65402-3

Circulation cleaning and sanitizing of equipment such as tanks, pipelines, evaporators, fillers, pasteurizers, and aseptic equipment in dairies, wineries, breweries and beverage plants.

Sanitizing of inanimate, non-food contact surfaces (general environmental surfaces).

Disinfection of hard surfaces in general commercial and medical environments.

### MANUFACTURER

FMC CORPORATION  
FMC Peroxygens  
1735 Market Street  
Philadelphia, PA 19103  
(215) 299-6000 (General Information)  
msdsinfo@fmc.com (Email - General Information)

### EMERGENCY TELEPHONE NUMBERS

(303) 595-9048 (Medical - U.S. - Call Collect)

For leak, fire, spill, or accident emergencies, call:  
(800) 424-9300 (CHEMTREC - U.S.A. & Canada)

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## 2. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW:

- Colorless liquid with a sharp, pungent, vinegar-like odor.
- Oxidizer: Stabilized peracetic acid, an ingredient in this product, decomposes under fire conditions to release oxygen that intensifies the fire. Use water to keep fire-exposed containers cool.
- Severely irritating to skin and eyes.

**POTENTIAL HEALTH EFFECTS:** Liquid and mist are corrosive (causing burns); direct contact could cause irreversible damage to eyes including blindness and/or irreversible destruction of skin tissue. Vapor/mist will irritate nose, throat and lungs but will usually subside when exposure ceases.

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### 3. COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Name	CAS#	Wt.%	EC No.	EC Class
Peroxyacetic Acid	79-21-0	15 - 17	201-186-8	O, C, Xn, N; R7-R10-R20/21/22-R35-R50
Hydrogen Peroxide	7722-84-1	9 - 11	231-765-0	O, C, Xn; R5- R8-R20/22-R35
Acetic Acid	64-19-7	33 - 38	200-580-7	C; R10-35
Water	7732-18-5	30 - 44	231-791-2	Not classified

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### 4. FIRST AID MEASURES

**EYES:** Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.

**SKIN:** Immediately flush with plenty of water while removing contaminated clothing and/or shoes, and thoroughly wash with soap and water. Obtain immediate medical attention. Contact a medical doctor if necessary.

**INGESTION:** Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

**INHALATION:** Remove to fresh air. If breathing discomfort occurs and persists, see a medical doctor. If breathing has stopped, give artificial respiration and see a medical doctor immediately.

**NOTES TO MEDICAL DOCTOR:** This product can be corrosive to skin, eyes and mucous membranes. Consideration should be given to careful endoscopy as stomach or esophageal burns, perforations or strictures may occur. Careful gastric lavage with an endotracheal tube in place should be considered. Observation may be warranted. Treatment is controlled removal of exposure followed by symptomatic and supportive care.

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## 5. FIRE FIGHTING MEASURES

**EXTINGUISHING MEDIA:** Use water to keep fire exposed containers cool.

**FIRE FIGHTING PROCEDURES:** Use flooding quantities of water only. Use water spray to keep fire exposed containers cool. Fight fire from protected location or maximum distance. Chemical type extinguishers are not effective with peracetic acid or hydrogen peroxide, which are ingredients in this product. Use proper personal protective equipment and positive pressure self contained breathing apparatus.

**FLAMMABLE LIMITS:** Not available

**SENSITIVITY TO IMPACT:** Not available

**SENSITIVITY TO STATIC DISCHARGE:** Not available

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## 6. ACCIDENTAL RELEASE MEASURES

**RELEASE NOTES:** Approach release from upwind. Stop or control leak using special protective clothing and positive pressure self-contained breathing apparatus. Control run off and isolate discharged material for proper disposal. Do not allow undiluted material to enter storm or sanitary sewer systems.

Combustible materials exposed to hydrogen peroxide, an ingredient in this product, should be immediately submerged in, or rinsed with, large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

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## 7. HANDLING AND STORAGE

**HANDLING:** General - Transfer product from drums (IBC) to process in closed system (hermetically) and if not possible use effective local exhaust ventilation.

Drums - Empty as thoroughly as possible. Triple rinse drum before disposal. Avoid contamination; impurities accelerate decomposition. Never return product to original container.

IBCs (Tote) - IBCs should be emptied as thoroughly as possible and returned without rinsing.

**STORAGE:** Do not store near reducing agents, fuels or other non-compatible materials. Store in a cool, dry, well ventilated area. For quality purposes, avoid temperatures above 86° F. Higher temperatures will accelerate decomposition resulting in a loss of assay. When stored at continuous 100° F, product shelf life is 4 months without loss in assay. Avoid storing in direct sunlight. Do not store near sources of ignition or heat. Do not double stack. Use first in, first out storage system. Containers must be vented.

**COMMENTS:** VENTILATION: Use local and general exhaust or equally effective ventilation to meet established control standard. If ventilation is inadequate or not available, use a respirator.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE LIMITS

Chemical Name	ACGIH	OSHA	Supplier
Hydrogen Peroxide	1 ppm (TWA)	1 ppm (PEL) 1.4 mg/m <sup>3</sup> (PEL)	
Acetic Acid	15 ppm (STEL)	10 ppm (PEL) 25 mg/m <sup>3</sup> (PEL)	

**ENGINEERING CONTROLS:** Provide mechanical local exhaust ventilation to prevent the release of vapors or mist into the work area. If release is expected, use respiratory protection.

### PERSONAL PROTECTIVE EQUIPMENT

**EYES AND FACE:** Use cup type chemical goggles. Full face shield may be used.

**RESPIRATORY:** Wear appropriate respirator when ventilation and/or engineering controls are inadequate and occupational exposure limits may be exceeded. Use approved acid/gas cartridge or canister with full face-piece unless break-through occurs, then use airline supplied or self contained breathing apparatus with full face-piece.

**PROTECTIVE CLOTHING:** Rubber or neoprene footwear. Rubber or neoprene aprons or full protective clothing. Hydrogen peroxide is an ingredient in this product; completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

**GLOVES:** Rubber or neoprene gloves. Thoroughly wash the outside of gloves with soap and water prior to removal. Inspect regularly for leaks.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>ODOR:</b>	Sharp, pungent, vinegar like odor
<b>APPEARANCE:</b>	Colorless liquid
<b>AUTOIGNITION TEMPERATURE:</b>	305 °C (581 °F)
<b>BOILING POINT:</b>	About 109 °C (228 °F)
<b>COEFFICIENT OF OIL / WATER:</b>	Not available

<b>DENSITY / WEIGHT PER VOLUME:</b>	9.42 lb/gal @ 20 °C
<b>EVAPORATION RATE:</b>	Above 1 (Butyl Acetate = 1)
<b>FLASH POINT:</b>	80 °C (176 °F) (CC) Open Cup - No measurable flash point up to 110°C. Fire Point - No fire point. This material will not sustain a flame.
<b>MELTING POINT:</b>	-49 °C (-56 °F)
<b>ODOR THRESHOLD:</b>	Not available
<b>OXIDIZING PROPERTIES:</b>	Strong oxidizer
<b>PERCENT VOLATILE:</b>	99
<b>pH:</b>	Less than 1
<b>SOLUBILITY IN WATER:</b>	% by wt. @ 25°C (77°F): 100
<b>SPECIFIC GRAVITY:</b>	1.13 @ 20 °C (H <sub>2</sub> O=1)
<b>VAPOR DENSITY:</b>	Not available (Air = 1)
<b>VAPOR PRESSURE:</b>	22 mm Hg @ 25°C

**COMMENTS:**

pH (1% solution) @ 25°C: 2-3

Self Accelerating Decomposition Temperature (SADT) &gt; 55°C (55 gallon drum)

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## 10. STABILITY AND REACTIVITY

<b>CONDITIONS TO AVOID:</b>	Open flames, elevated temperatures, any source of heat, combustibles such as paper and wood and contamination. For quality purposes, avoid temperatures above 86°F. Higher temperatures will accelerate decomposition resulting in a loss of assay.
<b>STABILITY:</b>	Stable (contamination or heat could initiate decomposition).
<b>POLYMERIZATION:</b>	Will not occur
<b>INCOMPATIBLE MATERIALS:</b>	Dirt, alkali (caustic), reducing agents, oxidizing agents, organics and heavy metals such as iron, copper, chromium, nickel, aluminum and cobalt.
<b>HAZARDOUS DECOMPOSITION PRODUCTS:</b>	Oxygen that supports combustion and acetic acid.

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## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** Severely irritating, corrosive (rabbit) [FMC Study I83-719]

**SKIN EFFECTS:** Severely irritating, corrosive (rabbit) [FMC Study I83-720]

**DERMAL LD<sub>50</sub>:** > 200 mg/kg (rabbit) [FMC Study I83-721]

**ORAL LD<sub>50</sub>:** No data available for the product.  
35% Peracetic Acid: 50 - 500 mg/kg [FMC Study I86-935]

**INHALATION LC<sub>50</sub>:** No data available for the product.  
5% Peracetic Acid: 4,080 mg/l (4157 ppm) (4 h) (rat) [FMC Study I96-2138]  
100% Peracetic Acid: 204 mg/l (66 ppm) (4 h) (rat) [FMC Study I96-2138]

**TARGET ORGANS:** Eyes, skin, nose, throat, lungs

**ACUTE EFFECTS FROM OVEREXPOSURE:** Liquid may cause severe burns and irreversible tissue damage to eyes, including blindness. Inhalation of peracetic acid vapors causes lacrimation and irritation of the mucous membranes, eyes and nasal passages.

**CHRONIC EFFECTS FROM OVEREXPOSURE:** No data available for the product. The International Agency for Research on Cancer (IARC) has concluded that there is inadequate evidence for carcinogenicity of hydrogen peroxide in humans, but limited evidence in experimental animals (Group 3 - not classifiable as to its carcinogenicity to humans). The American Conference of Governmental Industrial Hygienists (ACGIH) has concluded that hydrogen peroxide is a 'Confirmed Animal Carcinogen with Unknown Relevance to Humans' (A3). Repeated inhalation of the mist may cause inflammation of the upper respiratory tract, chronic bronchitis and etching of the dental enamel.

### CARCINOGENICITY:

Chemical Name	IARC	NTP	OSHA	Other
Hydrogen Peroxide	3	Not listed	Not listed	(ACGIH) A3

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## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGICAL INFORMATION:** No data available for the product.

5% Peracetic Acid:  
96-hour LC<sub>50</sub> = 1.6 mg/L (Rainbow trout) [FMC I95-2023]  
96-hour LC<sub>50</sub> = 1.1 mg/L (Bluegill sunfish) [FMC I95-2029]  
48-hour EC<sub>50</sub> = 0.73 mg/L (Daphnia magna) [FMC I95-2021]  
120-hour EC<sub>50</sub> = 0.18 mg/L (Selenastrum, green algae) [FMC I95-2027]

**CHEMICAL FATE INFORMATION:** No data available for the product. Peracetic acid is completely miscible with water. Aqueous solutions of peracetic acid hydrolyze to acetic acid and hydrogen peroxide.

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## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Discharge as a hazardous waste into a suitable treatment system in accordance with local, state and federal governmental agencies.

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## 14. TRANSPORT INFORMATION

### U.S. DEPARTMENT OF TRANSPORTATION (DOT)

<b>PROPER SHIPPING NAME:</b>	Organic Peroxide Type F, Liquid (<=17% Peracetic Acid with <= 26% Hydrogen Peroxide)
<b>PRIMARY HAZARD CLASS / DIVISION:</b>	5.2 (Organic Peroxide), Subsidiary Risk: 8 (Corrosive)
<b>UN/NA NUMBER:</b>	UN 3109
<b>PACKING GROUP:</b>	II
<b>LABEL(S):</b>	5.2 Organic Peroxide and Subsidiary Risk - 8 (Corrosive)
<b>PLACARD(S):</b>	5.2 Organic Peroxide
<b>MARKING(S):</b>	Organic Peroxide Type F, Liquid (with <= 17% Peracetic Acid with <= 26% Hydrogen Peroxide), UN 3109
<b>ADDITIONAL INFORMATION:</b>	Hazardous Substance/RQ: Not applicable 49 STCC Number: Not applicable Material is shipped in 5 gal. (45 lb.), 30 gal. (250 lb.) and 55 gal. (450 lb.) vented linear (not cross linked) polyethylene containers, as well as linear (not cross linked) polyethylene IBC's (300 gal.). Do not ship on wooden pallets.

### INTERNATIONAL MARITIME DANGEROUS GOODS (IMDG)

<b>PROPER SHIPPING NAME:</b>	Organic Peroxide Type F, Liquid (<=17% Peracetic Acid with <= 26% Hydrogen Peroxide)
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**INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) /  
INTERNATIONAL AIR TRANSPORT ASSOCIATION (IATA)**

**PROPER SHIPPING NAME:** Organic Peroxide Type F, Liquid (<=17%  
Peracetic Acid with <= 26% Hydrogen  
Peroxide)

**ADDITIONAL INFORMATION:** NOTE: Venting of packages is not  
permitted for air transport.

**OTHER INFORMATION:**

Dike any spills. Protect against damage. Use proper personal protective equipment and positive pressure self-contained breathing apparatus when handling spills or leaks.

If this material is ever shipped via vessel, containers require subsidiary placarding in addition to main hazard class placards.

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**15. REGULATORY INFORMATION****UNITED STATES****SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)****SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355, APPENDIX A):**

Peracetic Acid: Planning Threshold = 500 lbs.

**REPORTABLE QUANTITY:**

<u>Chemical Name</u>	<u>RQ</u>
Peroxyacetic Acid	500 lb

**SECTION 311 HAZARD CATEGORIES (40 CFR 370):**

Fire Hazard, Immediate (Acute) Health Hazard, Reactive

**SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):**

The Threshold Planning Quantity (TPQ) for this product, if treated as a mixture, is 10,000 lbs; however, this product contains the following ingredients with a TPQ of less than 10,000 lbs.:  
500 lb

**SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):**

Peracetic acid

**CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND  
LIABILITY ACT)****CERCLA DESIGNATION & REPORTABLE QUANTITIES (RQ) (40 CFR 302.4):**

15 % Peracetic Acid (Unlisted), RQ = 100 lbs., Ignitability, Corrosivity  
Acetic Acid (Listed), Category D

<u>Chemical Name</u>	<u>RQ</u>	
Peroxyacetic Acid	100 lb	Reactivity
Acetic Acid	5,000 lb	

**TSCA (TOXIC SUBSTANCE CONTROL ACT)****TSCA INVENTORY STATUS (40 CFR 710):**

Listed

**RESOURCE CONSERVATION AND RECOVERY ACT (RCRA)****RCRA IDENTIFICATION OF HAZARDOUS WASTE (40 CFR 261):**

Waste Number: D001 (ignitability), D002 (corrosivity)

**CANADA****WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations.

Hazard Classification / Division: C  
B3  
D2B  
E

Ingredient Disclosure List: Listed  
Domestic Substance List: Listed

**INTERNATIONAL LISTINGS**

Peroxyacetic acid:  
Australia (AICS): Listed  
China: Listed  
Japan (ENCS): (2)-689  
Philippines (PICCS): Listed

Hydrogen peroxide:  
China: Listed  
Japan (ENCS): (1)-419  
Korea: KE-20204  
Philippines (PICCS): Listed

Acetic acid:  
Australia (AICS): Listed  
China: Not listed  
Japan (ENCS): (2)-688  
Korea: KE-00013

**HAZARD AND RISK PHRASE DESCRIPTIONS:**

EC Symbols: O (Oxidizer)

	C	(Corrosive)
	Xn	(Harmful)
	N	(Dangerous for the environment)
EC Risk Phrases:	R5	(Heating may cause an explosion.)
	R7	(May cause fire)
	R8	(Contact with combustible material may cause fire)
	R10	(Flammable)
	R20/21/22	(Harmful by inhalation, in contact with skin and if swallowed.)
	R20/22	(Harmful by inhalation and if swallowed.)
	R35	(Causes severe burns.)
	R50	(Very toxic to aquatic organisms.)

## 16. OTHER INFORMATION

### HMIS

Health	3
Flammability	1
Physical Hazard	2
Personal Protection (PPE)	H

Protection = H (Safety goggles, gloves, apron, the use of a supplied air or SCBA respirator is required in lieu of a vapor cartridge respirator)

HMIS = Hazardous Materials Identification System

Degree of Hazard Code:

- 4 = Severe
- 3 = Serious
- 2 = Moderate
- 1 = Slight
- 0 = Minimal

### NFPA

Health	3
Flammability	1
Reactivity	2
Special	OX

SPECIAL = OX (Oxidizer)

NFPA (National Fire Protection Association)

Degree of Hazard Code:

- 4 = Extreme
- 3 = High

2 = Moderate  
1 = Slight  
0 = Insignificant

**REVISION SUMMARY:**

This MSDS replaces Revision #9, dated April 29, 2009.

Changes in information are as follows:

Section 7 (Handling and Storage)

Section 14 (Transport Information)

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