

SAFETY DATA SHEET**SECTION 1: PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME: **JET-OXIDE[®] 15**

REGISTRATION NO: 54289-4-84059

DISTRIBUTOR: Marrone Bio Innovations

ADDRESS: 1540 Drew Ave., Davis CA, 95618

EMERGENCY PHONE: **INFOTRAC Chemical Response System**
US and Canada 1-800-535-5053 (24 hours)
International 1-352-323-3500 (24 hours)

OTHER CALLS: Marrone Bio Innovations 530-750-2800 (9am to 5 pm PST)

FAX PHONE: Marrone Bio Innovations 530-750-2808

PRODUCT USE: Fungicide, bactericide, and algacide for agricultural and horticultural uses

SECTION 2: HAZARDS IDENTIFICATION**EMERGENCY OVERVIEW:**

Combustible liquid.
Heating may cause a fire.
May be corrosive to metals.
Harmful if swallowed, in contact with skin or if inhaled.
Causes severe skin burns and eye damage.
May cause respiratory irritation.
Toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.

HAZARD SYMBOLS:

Pictogram



Signal Word

Danger**HEALTH HAZARD STATEMENTS**

H227 Combustible liquid.
H242 Heating may cause a fire.
H290 May be corrosive to metals.

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H302 + H312 + H332	Harmful if swallowed, in contact with skin or if inhaled.
H314	Causes severe skin burns and eye damage.
H335	May cause respiratory irritation.
H400	Toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.

PRECAUTIONARY STATEMENTS

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234	Keep only in original packaging.
P240	Ground and bond container and receiving equipment.
P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
P310	Immediately call a POISON CENTER/doctor.
P321	Specific treatment (see First Aid instructions on this label)
P330	Rinse mouth.
P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower].
P363	Wash contaminated clothing before reuse.
P304 + P340	IF INHALED: Remove person to fresh air and keep 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.
P362	Take off contaminated clothing and wash it before reuse.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.
P403 + P233	Store in a well-ventilated place. Keep container tightly closed.
P405	Store locked up.
P410	Protect from sunlight.
P411	Store at temperatures not exceeding 40°C/ 104°F.
P420	Store separately.
P501	Dispose of contents/ container to an approved waste disposal plant.

POTENTIAL ROUTES OF ENTRY: Oral, eye, and inhalation.

Risk of decomposition in contact with incompatible substances, impurities, metals, alkalis, reducing agents. Danger of decomposition if exposed to heat Release of oxygen may support combustion. This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

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<u>ACTIVE INGREDIENTS:</u>	<u>CAS NO:</u>	<u>% WT:</u>	<u>EXPOSURE LIMITS:</u>
Hydrogen Peroxide	7722-84-1	20 – 25 %	1 ppm Permissible exposure limit:(OSHA Z1)
Peroxyacetic Acid	79-21-0	14 – 17 %	0.4 ppm Short Term Exposure Limit (STEL):(ACGIH)

OTHER INGREDIENTS:

Acetic acid	64-19-7	15 – 20 %	10 ppm Permissible exposure limit:(OSHA Z1)
Inert, non-reactive	multiple	balance	

SECTION 4: FIRST AID MEASURES**Description of necessary first-aid measures**

General information: Pay attention to self-protection. Remove victims from hazardous area. Immediately remove soiled or soaked clothing and remove it to a safe distance. Keep victim warm, in a stabilized position and covered. Do not leave victims unattended. If the casualty is unconscious: Place the victim in the recovery position.

Inhalation: Potential for exposure by inhalation if aerosols or mists are generated. Move victims into fresh air. With labored breathing: Provide with oxygen. Consult a doctor. If the casualty is not breathing: Perform mouth-to-mouth resuscitation, notify emergency physician immediately.

Skin Contact: Take off all contaminated clothing immediately. Wash off affected area immediately with plenty of water for at least 15 minutes. If symptoms persist, consult a physician for treatment.

Eye contact: With eye held open, thoroughly rinse immediately with plenty of water for at least 10 minutes. Consult an ophthalmologist immediately if the symptoms persist. When dealing with caustic substances, notify emergency physician immediately (key words: burns in eye).

Ingestion: Rinse mouth. Immediately give large quantities of water to drink. Do NOT induce vomiting. Do not administer activated charcoal. Obtain medical attention. When dealing with caustic substances, notify emergency physician immediately.

Personal Protection for First-aid Responders: In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit

Most important symptoms/effects, acute and delayed

Symptoms: Strongly irritating to corrosive. Daze, headache, vertigo, somnolence (sleepiness), nausea.

Hazards: Strongly irritating to corrosive. Harmful by inhalation, in contact with skin and if swallowed. Vapors may cause drowsiness and dizziness.

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Indication of immediate medical attention and special treatment needed

Treatment: The initial focus is only on the local action, characterized by quickly progressing deep tissue damage. In the eye, caustic/ irritating and harmful liquids cause, depending on the intensity of exposure, various levels of irritation, destruction, and ablation of the epithelium of the conjunctiva and cornea, corneal clouding, edema and ulcerations. Danger! Possible loss of eyesight! Superficial irritations and damage up to ulcerations and scarring develop on the skin. After accidental absorption in the body, the pathology and clinical findings are dependent on the kinetics of the substance (quantity of absorbed substance, the absorption time, and the effectiveness of early elimination measures (first aid)/ excretion - metabolism). A specific action of the substance is unknown. In case of substances with high water solubility, irritations up to formation of necrosis in the upper respiratory tract may result after inhalation of caustic/ irritating aerosols and mists. The initial focus is on the local action: signs of irritation of the respiratory tract such as coughing, burning behind the sternum, tears, burning in the eyes or nose. There is a risk of pulmonary edema!

SECTION 5: FIRE-FIGHTING MEASURES

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media: Do not use full-force water jet in order to avoid dispersal and spread of the fire. Organic compounds.

Specific hazards arising from the chemical: Involved in fire, it may decompose yielding oxygen. Release of oxygen may support combustion. Risk of overpressure and burst due to decomposition in confined spaces and pipes. Hazardous substances might be released in case of fire. carbon monoxide, carbon dioxide

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Evacuate personnel to safe areas. Keep out unprotected persons. Remove sources of ignition. In case of fire, remove the endangered containers and bring to a safe place, if this can be done safely. In the case of fire, cool the containers that are at risk with water or dilute with water (flooding). Ensure there are sufficient retaining facilities for water used to extinguish fire. Water used to extinguish fire should not enter drainage systems, soil or stretches of water. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Special protective equipment for fire-fighters: In the case of fire, wear respiratory protective equipment independent of surrounding air and chemical protective suit.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Keep out unprotected persons. Evacuate personnel to safe areas.

Accidental release measures: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Evacuate area and do not approach spilled product.

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For emergency responders: In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. Make safe or remove all sources of ignition. Do not inhale vapours / aerosols. Avoid contact with eyes, skin, and clothing. Isolate defective containers immediately, if possible and safe to do. Shut off leak, if possible and safe to do. Place defective containers in waste receptacle (waste packaging receptacle) made of plastic (not metal). Do not seal defective containers or waste receptacles airtight (danger of bursting due to product decomposition). Never return spilled product into its original container for re-use. (Risk of decomposition.). Release of oxygen may support combustion.

Methods and material for containment and cleaning up: Absorb with liquid-binding material (e.g. inert absorbent universalbinder) pick up. Do not use: textiles, saw dust, combustible substances. Rinse away any residue with plenty of water. Dispose of absorbed material in accordance with the regulations. Pack and label wastes like the pure substance. Do not detach label from the delivery containers prior to disposal. Clean contaminated surface thoroughly. Recommended cleaning agent: water. Ventilate room.

Environmental Precautions: Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling: Handle in accordance with good industrial hygiene and safety practice. Use personal protective equipment. Check the proper condition of personal safety equipment before use. Observe ergonomic requirements when selecting personal safety equipment. Avoid contact with eyes, skin, and clothing. The workplace related airborne concentrations have to be kept below of the indicated exposure limits. If workplace exposure limits are exceeded and/or larger amounts are released (leakage, spilling, dust) the indicated respiratory protection should be used. Do not breathe in vapours, aerosols, sprays. Ensure there is good room ventilation. Immediately change moistened and saturated work clothes. Immediately rinse contaminated or saturated clothing with water. Avoid impurities and heat effect. Never return spilled product into its original container for re-use. (Risk of decomposition.). Provide for installation of emergency shower and eye bath. Set up safety and operation procedures.

Conditions for safe storage, including any incompatibilities: Avoid sun rays, heat, heat effect. Temperature requirement during storage max. 40 °C. Store in original container. well ventilated, dry, clean, lockable. Use adequate venting devices on all packages, containers and tanks and check correct operation periodically. Do not confine product in unvented vessels or between closed valves. Risk of overpressure and burst due to decomposition in confined spaces and pipes. Check containers and tanks at regular intervals to detect any special changes such as pressure build-up (distension), damage, leakage. Transport and store container in upright position only. Do not empty container by means of pressure. Always close container tightly after removal of product. Do not keep the container sealed. Assure impermeability at all times. Avoid residues of the product on the containers. Store containers in such a manner that liquids released are collected in a catch vessel in case of leaks. Do not store together with: alkalis, reductants, metallic salts (risk of decomposition). Do not store together with: inflammable substances (risk of fire). Keep away from incompatible substances. Release of oxygen may support combustion. Keep away from sources of ignition - No smoking. Take precautionary measures against static discharges. Regularly verify the availability of water to deal with emergencies (for cooling, tank flooding, fire fighting) and check correct operation periodically. For detailed information on design specifications for the construction of tank- and dosing

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installations ask the producer for advice. Only use containers which are specially permitted for: Peracetic acid. For transport, storage and tank installations only use suitable materials. - Suitable container material: Polyethylene. polypropylene polytetrafluoroethylene Polyvinyl chloride (PVC). glass ceramics. , Inadequate materials are: Iron. Copper brass Bronze aluminium zinc Lead tin Mild steel.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Occupational Exposure Limits: Observe national threshold limit values.

Biological Limit Values: Observe national threshold limit values.

Appropriate Engineering Controls Ensure suitable suction/aeration at the work place and with operational machinery. Suitable measuring processes are: Hydrogen peroxide (H₂O₂) OSHA method ID 006 OSHA method VI-6 Acetic acid NIOSH method 1603 OSHA method ID 186

Individual protection measures, such as personal protective equipment

General information: No data available.

Eye/face protection: wear basket-shaped glasses or safety goggles with side-shields. When handling larger quantities: protective screen.

Skin Protection

Hand Protection: Material: Polychloroprene (PCP) Break-through time: > 480 min Guideline: DIN EN 374

Other: Select materials and equipment for physical protection depending on the concentration and volume of hazardous substances and the workplace involved. Wear suitable protective clothing. acid-proof for example: Usual lab protective clothing Light-duty chemical protective clothing (type2) (DIN

EN 943-1 / DIN EN 943-2) Foot protection: Wear safety boots, high, protection class S2 or S4 (DIN EN 20345)

In case of larger quantities: If open handling is unavoidable: Heavy-duty chemical protective clothing (type1) (DIN EN 943-1 / DIN EN 943-2) Do not wear protective clothes containing cotton. Suitable materials are: PVC, neoprene, nitrile rubber, natural rubber.

Respiratory Protection: If workplace exposure limit is exceeded apply Respiratory protective equipment. If necessary: Provide with fresh air. In case of larger quantities: If open handling is unavoidable: Wear respiratory protection for example: Full face mask with combination filter A2B2E2K1P2 (Draeger) Full face mask with combination filter OV/AG (3M) Full face mask with combination filter ABEK2P3 (3M) A self-contained breathing apparatus must be worn if the ambient oxygen content is < 17 % (v/v) or if the situation is uncertain.

Self-contained breathing apparatus (EN 133) Observe limited wearing time of 30 minutes.

Hygiene measures: Avoid contact with eyes, skin, and clothing. Do not inhale vapour, aerosols, mist. Ensure there is good room ventilation. Immediately rinse contaminated or saturated clothing with water. Immediately change moistened and saturated work clothes. Any contaminated protective equipment is to be cleaned after use. Contaminated work clothing should not be allowed out of the workplace. No eating, drinking, smoking, or snuffing tobacco at work. Wash face and/or hands before break and end of work. Preventive skin protection Use barrier cream regularly.

SAFETY DATA SHEET**SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES**

PHYSICAL STATE:	Liquid
COLOR:	Colorless
ODOR:	Stinging, vinegar-like
pH:	approx. 0 (20 °C) OECD TG 122
DENSITY:	1,14 g/ml (20 °C) (OECD Test Guideline 109)
SOLUBILITY IN WATER:	completely miscible
BOILING POINT/RANGE:	>60 °C, not applicable when decomposed
FREEZING/MELTING POINT:	approx. -73 °C (EEC method 92/69/EEC, A 1) This information is derived from evaluation of or a test result for a similar compound (conclusion based on analogy).
FLASH POINT:	79 °C (ISO 2719)
EVAPORATION RATE:	No data available
FLAMMABILITY (SOLID. GAS):	Not applicable liquid
UPPER FLAMMABILITY LIMITS:	No data available
LOWER FLAMMABILITY LIMITS:	No data available
VAPOR PRESSURE:	approx. 1.700 Pa (20 °C) (OECD Test Guideline 104) Data derived from product of similar composition:
VAPOR DENSITY:	No data available.
RELATIVE DENSITY:	No data available.
SOLUBILITY IN OTHER SOLVENTS:	No data available.
PARTITION COEFFICIENT:	-0,26 (QSAR-Method) calculated pH 7
AUTOIGNITION TEMPERATURE:	The substance or mixture is not classified as pyrophoric. The substance or mixture is not classified as self heating.
DECOMPOSITION TEMPERATURE:	>= 60 °C Self-Accelerating decomposition temperature (SADT)
KINEMATIC VISCOSITY:	1,554 mm ² /s (20 °C, OECD TG 114) 1,017 mm ² /s (40 °C, DIN 51 562)
DYNAMIC VISCOSITY:	No data available
EXPLOSIVE PROPERTIES:	Not explosive
OXIDIZING PROPERTIES:	The substance or mixture is not classified as oxidizing. UN Test O.2 (oxidizing liquids) This information is derived from evaluation of or a test result for a similar compound (conclusion based on analogy).

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Risk of self-accelerating, exothermic decomposition with the development of oxygen at Effect of thermal energy / heat. Product is a(n) oxidizing agent and reactive.

Chemical Stability: Stable under recommended storage conditions. Product is supplied in stabilised form. Commercial products are stabilised to reduce risk of decomposition due to contamination

Possibility of hazardous reactions: Risk of overpressure and burst due to decomposition in confined spaces and pipes. Risk of decomposition in contact with incompatible substances, impurities, metals, alkalis, reducing agents. Release of oxygen may support combustion.

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Conditions to avoid: sun rays, heat, heat effect

Incompatible Materials: impurities, decomposition catalysts metals, nonferrous heavy metal, aluminium, zinc, metallic salts, alkalis, reducing agents Possible hazardous reaction: decomposition. Flammable material. Possible hazardous reaction: Spontaneous ignition. Organic solvent. Possible hazardous reaction: Danger of explosion.

Hazardous Decomposition Products: Steam Oxygen Acetic acid

SECTION 11: TOXICOLOGICAL INFORMATION

ACUTE ORAL TOXICITY LD ₅₀ :	1.015 mg/kg. Category 4.
ACUTE DERMAL TOXICITY LD ₅₀ :	Category 4.
ACUTE INHALATION LC ₅₀ :	2.24 mg/L (vapor). Category 4.
EYE IRRITATION:	Category 1.
SKIN IRRITATION:	Category 1A.
SPECIFIC TARGET ORGAN TOXICITY – SINGLE EXPOSURE (RESPIRATORY SYSTEM)	Category 3
SKIN SENSITIZATION:	No data available.

SECTION 12: ECOLOGICAL INFORMATION

Acute aquatic toxicity Category 2. Toxic to aquatic life. Chronic aquatic toxicity Very toxic to aquatic life with long lasting effects.

Bioconcentration potential: This material has low bioaccumulation potential.

Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high-water mark. Do not contaminate water when disposing of equipment wash water or rinsate.

Do not allow to drift from the manufacturing site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals. Minimize drift away from the manufacturing site.

SECTION 13: DISPOSAL CONSIDERATIONS

Do not reuse containers. Dispose of in accordance with all applicable local, regional, national, and international regulations.

SECTION 14: TRANSPORTATION INFORMATION

International Regulations

IATA-DGR

UN/ID No.	:	UN 3109
Proper shipping name	:	Organic peroxide type F, liquid (contains PEROXYACETIC ACID, TYPE F, stabilized)
Class	:	5.2

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Subsidiary risk	: 74F
Packing group	: Not assigned by regulation
Labels	: 5.2 (74F)
Packing instruction (cargo aircraft)	: 570
Packing instruction (passenger aircraft)	: 570
Remarks	: FOR USA ONLY: When shipping in, by or via USA note of the Reportable Quantity-Regulation!, Must be protected from direct sunlight and stored away from all sources of heat in a well-ventilated area.
IMDG-Code	
UN number	: UN 3109
Proper shipping name	: ORGANIC PEROXIDE TYPE F, LIQUID (contains PEROXYACETIC ACID, TYPE F, stabilized)
Class	: 5.2
Packing group	: Not assigned by regulation
Labels	: 5.2
EmS Code	: F-J, S-R
Marine pollutant	: yes
Remarks	: "Separated from" acids and alkalis., IMDG Code segregation group 16 - Peroxides, Protected from sources of heat., FOR USA ONLY: When shipping in, by or via USA note of the Reportable Quantity-Regulation!, For shipments in Tank container: Shipped in accordance with the approval no. D/BAM/2.2/74/16/IMDG-Code of the competent authority of Germany, Only for USA-Transports in Tank containers: Transport under approval CA2010040001.

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

Not applicable for product as supplied.

Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations

SECTION 15: REGULATORY INFORMATION

INTERNATIONAL REGULATIONS

TSCA: None listed

U.S. FEDERAL REGULATIONS

CERCLA: Acetic acid
 CAS-No.64-19-7
 Reportable Quantity 73529 lbs.

SARA TITLE III HAZARD CLASSIFICATION SECTIONS 311 AND 312:

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Immediate (acute) Health:	Acute Health Hazard
Delayed (chronic) Health:	None
Fire:	None
Sudden Release of Pressure:	None
Reactivity:	None

SARA 313:	Peracetic acid CAS-No. 79-21-0
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U.S. STATE REGULATIONS:	None
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US STATE RIGHT-TO-KNOW REGULATIONS:	None
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SECTION 16: OTHER INFORMATION**SPECIAL HAZARDS:**

HMIS Ratings

Health : 3	Flammability :1	Physical Hazard : 2
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NFPA Ratings

Health : 3	Flammability : 1	Reactivity : 2
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Revision Note:	New document

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