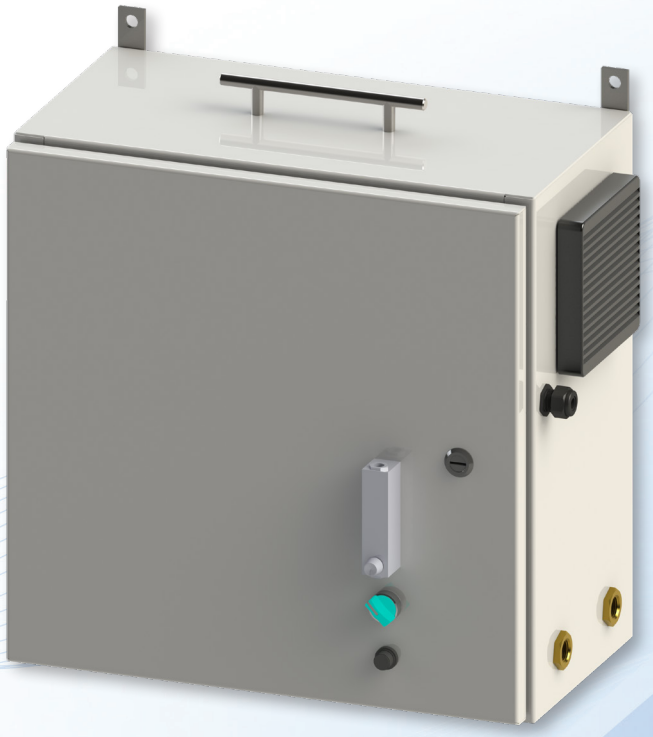
SINKZONE

FOOD AND HAND WASH OZONE GENERATOR

MODEL: SinkZone

INSTALLATION & OPERATIONS MANUAL



OZONE SOLUTIONS®

451 Black Forest Road / Hull, Iowa 51239 USA
P 712.439.6880 / F 712.439.6733

CONTENTS

IMPORTANT SAFETY INSTRUCTIONS, READ AND FOLLOW ALL INSTRUCTIONS.

Read this manual completely before attempting installation.

SAVE THESE INSTRUCTIONS.

SECTION 1

SAFETY PRECAUTIONS

Ozone is a powerful oxidizing agent. Observe strict operating procedures while using ozone equipment. **It is imperative that only ozone compatible materials are used in conjunction with the ozone system.**

NOTE: If the operator has asthma, he or she must not enter an airspace that has a significant ozone concentration. Ozone can induce an asthma attack.

Ensure that the Ozone Generator is in a well-ventilated area. Do not allow rain or condensation to contact the Ozone Generator. The Ozone Generator is not weather proof. The unit must be operated indoors or in an enclosure in a non-condensing environment.

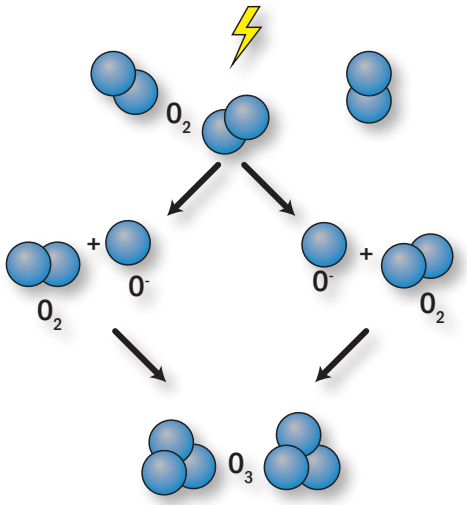
Carefully review and familiarize yourself with the following important safety information concerning the Ozone Generator:

1. Ozone is an extremely aggressive and powerful oxidizer. The Occupational Safety and Health Administration (OSHA) 8 hour exposure limit is 0.10 PPM. The OSHA 15 minute exposure limit for ozone is 0.3 PPM. Above 0.3 PPM, there is the risk of damage to respiratory tissues.
2. People who have no sense of smell should not operate this equipment.
3. Never attempt to verify ozone production by directly breathing or smelling the ozone outlet.
4. The Ozone Generator contains high voltages. Unauthorized entry can result in serious injury or death. For service instructions, contact Ozone Solutions.
5. Make sure all connections are secure and are not leaking. Failure to do so could result in the discharge of ozone into an undesired space.

Do not attempt to modify or enhance the performance of the Generator in any way.

INTRODUCTION

This ozone generator produces ozone gas from atmospheric air. Oxygen is very unstable in its tri-atomic form (ozone) and naturally attaches to most organic chemical contaminants, mold spores, odors, etc., leaving them oxidized and broken down molecularly. This reaction sanitizes the surfaces it comes in contact with.



THEORY OF OPERATION

When the machine is turned on, the ozone generator will begin producing ozone, the solenoid valve will open, and the internal water pump will begin pumping water through the ozone injector. This will create a vacuum pressure on the ozone lines pulling air into the system and injecting ozone into the water.

This ozone generator produces ozone from ambient air around the machine. The air is pulled in through a desiccant air dryer cartridge (to remove moisture), then into the generation module. The generator uses a form of controlled spark, called a corona, to split oxygen molecules into the atomic O^- ion. Some of the ions re-bond with regular oxygen molecules to form ozone.

Water that has been injected with ozone travels through an extended contact vessel, which includes a static mixer cartridge, to allow the ozone a chance to properly mix with the water. The ozonated water then leaves the machine and goes on to the point of use.

SECTION 2

INSTALLATION GUIDELINES

It is recommended that the ozone generator be located indoors in a well ventillated area not far from the point of use. Dry ambient air will improve generator performance and reduce the frequency of service for the desiccant and generator module. Room temperature or cooler ambient conditions will also allow for better performance and longevity of the system.

LOCATION

The system is designed as a fixed, wall-mountable, indoor unit, and will also operate free-standing on level surfaces. For proper operation and safety of the equipment, it should only be operated in areas without excessive dust, debris, and spray.

EXTERNAL COMPONENTS

1. Oxygen Flow Meter with Needle Valve

This flow meter displays the rate of oxygen flowing through the system and into the water. The flow can be regulated via the needle valve attached.

2. Power Switch

This power switch turns on all aspects of the machine, including generator, pump, solenoid valve, and pressure switches. This switch is operated only as ON or OFF.

3. Fuse Holder

This cartridge contains the power fuse in the system. If too much current is drawn by the machine, the fuse will burn out and will need to be replaced.

4. Ventillation Filters

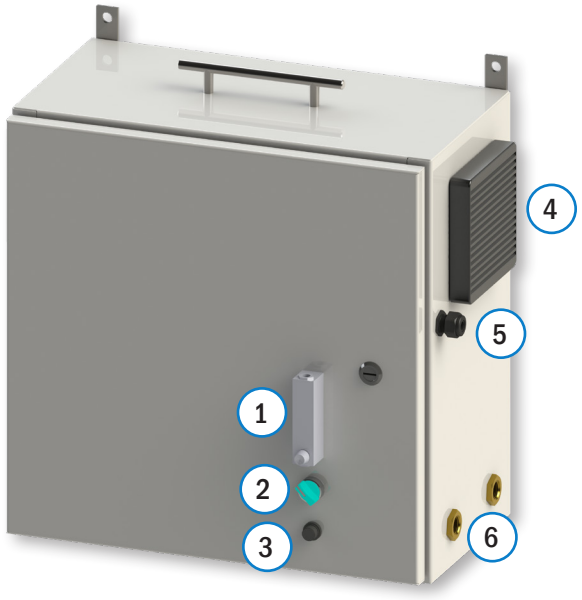
These vents contain a small destruct block that prevents larger airborn particles from passing through, as well as aiding in the destruction of any off-gassed or leaked ozone gas.

5. Power Cable

The power cable to the ozone generator will be mounted through this cord grip.

6. Water Connections

These bulkhead fittings are the water in and ozonated water out fittings. They are both threaded, 1/2” NPT brass fittings.



SPECIFICATIONS

SZ-Series	Required Volts	Amps @ 120V	Amps @ 240V	Power (Watts)	Dimensions - WxDxH (inches)	Weight (lbs)
SinkZone	120-240	0.3	0.15	230	20x20x10	40

GFCI Circuit Required!

INTERNAL COMPONENTS

1. AD-500 Air Dryer

This component is a cylindrical container with an air port on either end. Inside is a desiccant media that absorbs moisture from the air flowing through it. This component requires periodical maintenance in the form of desiccant regeneration or replacement.

2. HG-1500 Ozone Generator Module

This unit (located behind the shield in the diagram) produces ozone from the stream of dried air. This unit is air cooled, so the vents on it should be unobstructed.

3. Pump

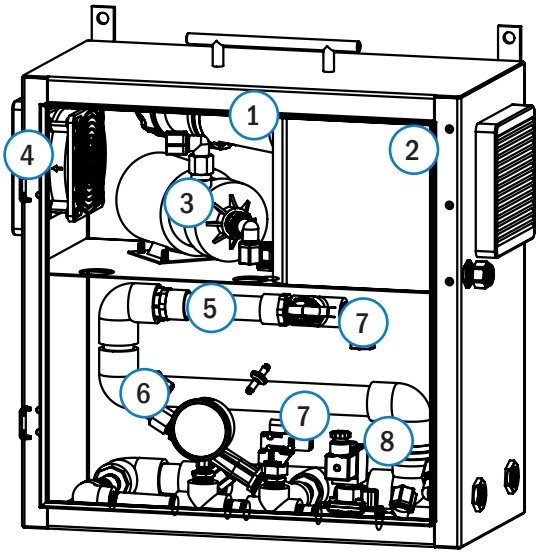
This pump provides forced flow and pressure to the venturi injector, ensuring better performance of the injector.

4. Ventillation Fan

This fan expels hot air from the enclosure. This also pulls in cooler air through the opposite vent.

5. Static Mixer

This component creates turbulence within the water flowing through it. It is the last dedicated mixing opportunity before the treated water leaves the machine toward the process application.



6. Venturi Injector (behind pressure gauge)

As water flows through the injector, internal geometry creates a low pressure, which sucks in ozone. This vacuum pressure is what drives the air and ozone flow through the rest of the system.

7. Pressure Switch

The pressure switches ensure that water pressure requirements are met within the system, to prevent damage to the pump and other components.

8. Solenoid Valve

This valve will open to allow water into the system when the system is powered on.

SECTION 3

WATER FLOW

Water flow through this Ozone Injection System will be dependent upon the supply water connection to maintain pressure on the system. The ozone injection will occur regardless of the rate of flow through the contact pipe, as long as the tank remains full of water.

Higher water usage will result in lower dissolved ozone levels, while lower water usage will result in higher dissolved ozone levels. This is due only to the ratio of ozone to water. Keep this in mind when specific dissolved ozone levels are required for your operation.

WATER PRESSURE

This Ozone Injection System will not operate effectively with high water pressures. If water pressures are expected to be much higher than standard municipal systems, then water pressure should be regulated ahead of the ozone system so that it can be adjusted to maintain lower pressures.

In order to protect the system, two pressure switches have been installed in the system. The low pressure switch will turn the generator off if water pressure is too low, and the high pressure switch will stop the machine if pressure gets too high.

If the water will be used for spraying or washing purposes the water pressure should be kept below 30 PSI. This is to ensure that the ozone will remain dissolved into the water. Higher spray pressures will off-gas a large amount of the dissolved ozone from the water in the spraying process. This reduces the effectiveness of the treated water, and can create unsafe ozone levels in the air around machine operators.

AIR DRYER DESICCANT

The onboard air dryer (shown below) contains a desiccant media which requires periodical regeneration. The frequency of regeneration is dependent upon the moisture content of the air passing through the products.

There are two different desiccants which may be present in your air dryer: a white colored and a pink colored variant. The pink variant will darken to a green color as moisture is absorbed, allowing a visible indication of when it is time to replace or regenerate the media. The white media does not change color, so its condition must be monitored by other means. Replace or regenerate the media after every 75 hours of run time, regardless of incoming air moisture content.

To regenerate the desiccant media:

1. Remove the desiccant cartridge from its bracket inside the SinkZone machine.
2. Remove the threaded cap of the cartridge and pour the media onto a microwaveable or oven-safe tray.
3. If placed in the oven, bake for 1 hour at 350 degrees F. If microwaved, use a low power setting and dry until it returns to the original pink color. (Again, the white media does not turn color).
4. Return the media into the cartridge and replace the cap.
5. Reinstall the cartridge into its bracket in the machine.

The media can be regenerated 4-6 times but should then be replaced with new desiccant media.

AD-500 AIR DRYER

HG-1500

OZONE GENERATOR

OZONE GENERATOR MODULE

The ozone generator module inside the unit is a low-maintenance air-cooled generator. The generator itself can generate up to 1.5 grams of ozone per hour when fed with pure oxygen at 4 lpm. The SinkZone unit was not designed to be used with oxygen, nor has it been designed with an oxygen concentrator onboard. As such, the actual production of ozone will be less than this amount and will vary much more severely if the ambient air quality is dirty or too humid.

The output of the generator module can be adjusted from 0-100%, however this is recommended to be left at 100%. To lessen the concentration of injected ozone, it is recommended to instead use the flow regulating needle valve and flow meter on the front of the machine.

SECTION 4

MAINTENANCE AND REPLACEMENT PARTS

Issue	Maintenance Action	Part #	Quantity
Air too moist	Replace or regenerate air dryer desiccant media	Desiccant	0.75 lbs.
Ambient ozone not being destructed	Replace the ozone destruct media	CBO-800M 115mm	2
Internal fan stopped working	Replace fan	Sunon Fan-ball bearing	1
Ozone Generator does not run	Replace generator	HG-1500	1
Blown Fuse	Replace fuse	5A/250V Fuse	1
Check valve allows water backflow	Replace check valve	CVLP-4	1
Pump not working	Replace pump	SinkZone Pump	1

If these actions do not solve the respective issues, contact the Ozone Solutions service department at 712.439.6880 for further troubleshooting and issue documentation.

WARRANTY

Ozone Solutions warrants all equipment assembled, manufactured, and sold to be free from defects in material and workmanship under normal use and service for a period of one (1) year after date of sale to the original purchaser.

Some products may have a specific warranty period other than what is outlined in this document. For such products, the manufacturer warranty will supercede this warranty. Ozone Solutions will honor the manufacturer's warranty, but if and when advised by the manufacturer, may have the customer deal directly with the manufacturer. This warranty covers all parts that are not outlined in a product maintenance schedule. This warranty will be void if any piece of the equipment is used in a manner other than what is explicitly outlined in the product manuals.

If any part of the equipment manufactured by Ozone Solutions proves to be defective during the warranty period, please call Ozone Solutions at 712.439.6880, or email service@ozonesolutions.com.

Prior authorization is required before working on or shipping a product back to us. Failure to get prior authorization may result in denial of your claim. Once authorized, you may return the defective equipment to Ozone Solutions with the transportation charges prepaid. If Ozone Solutions finds the equipment to be defective, it will be repaired or replaced at our discretion, free of charge, to the original purchaser (F.O.B. factory).

This warranty shall not place any liability on Ozone Solutions for any transportation charges, labor, or cost for, or during the replacement of any parts. The replaced part(s) or product will then continue the original warranty duration. The replaced parts will not start a new one (1) year coverage period. The purchaser by acceptance of the equipment will assume all liability for the consequences of its use or misuse by the purchaser, employees, or others. This warranty shall not apply to any piece of equipment, or part thereof sold by this company which has been subject to any accident caused in transit, alterations by unauthorized service, negligence, abuse, or damage by flood, fire, or act of God.

This warranty shall constitute the entire warranty and/or agreement between Ozone Solutions and the original purchaser, and in lieu of all other warranties, expressed or implied, either oral or written, including the warranty of merchantability and fitness for a particular use and of all other obligations or liabilities on our part. Ozone Solutions neither assumes nor authorizes any other person or entity to assume for us any liability associated with the sale of its products or equipment.

The term "original purchaser," as used in this warranty, means whom the product was originally sold to by Ozone Solutions or by an authorized dealer. Ozone Solutions reserves the right to make changes in its products without notice. Because of this, Ozone Solutions is not obligated to replace warranty defective part(s) and/or product with the same original part or product.

CONTACT INFORMATION

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451 Black Forest Road
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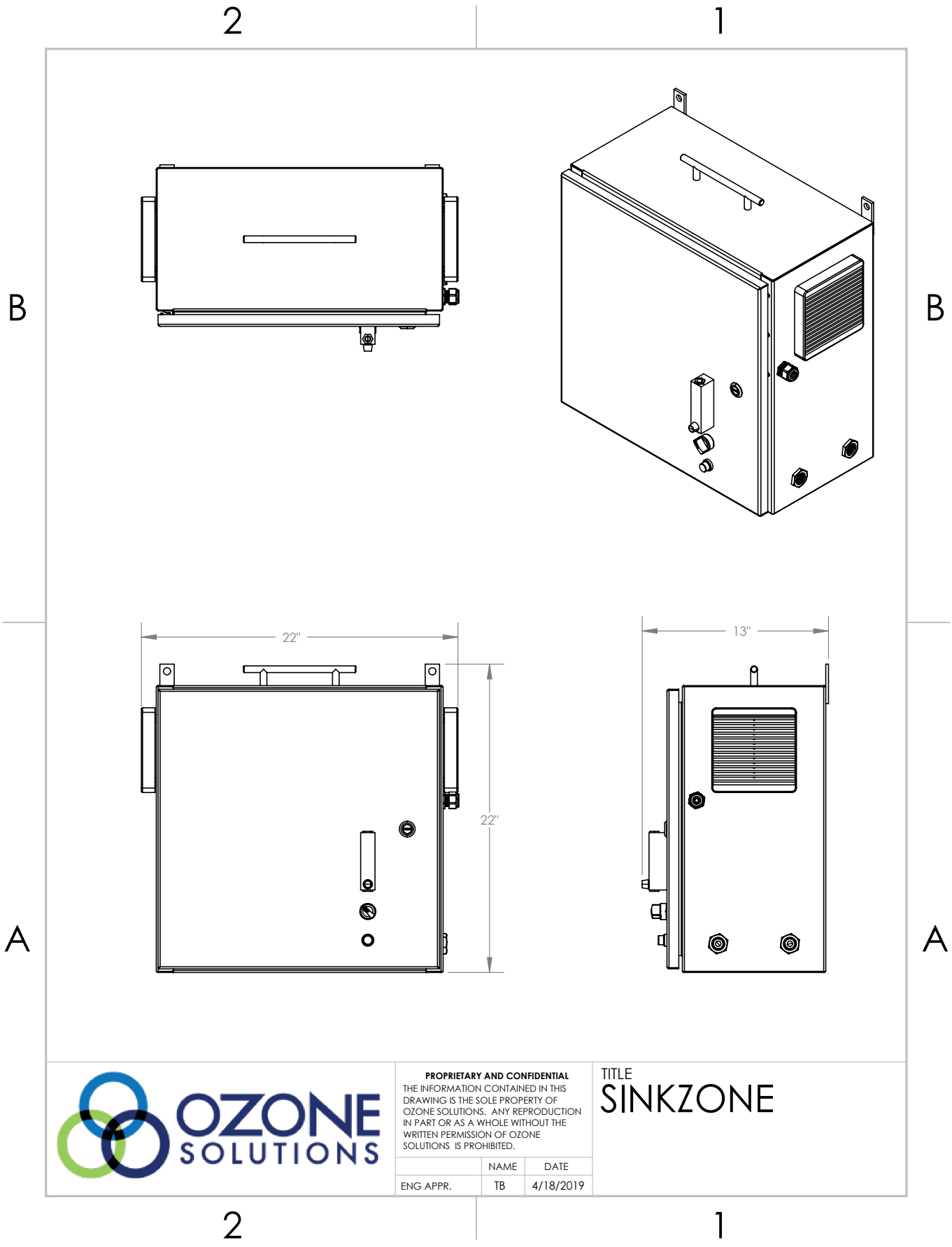
Email: sales@ozonesolutions.com
Website: www.ozonesolutions.com

APPENDIX A - CAD DRAWING



OZONE SOLUTIONS

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ENG APPR.	TB	4/18/2019

TITLE
SINKZONE

APPENDIX B - PERSONAL SAFETY AND EQUIPMENT DAMAGE CONCERNS

Flushing Ozone from the System

NOTE: In most circumstances, a very small amount of ozone will be contained within the system after shut-down and therefore exposure will be minimal.

Eventually the ozone (even while in the system) will safely revert back to oxygen, but in the right conditions the ozone can remain in the system for 24 hours or even longer. In the event that maintenance must be performed on the components in contact with ozone, the following is recommended for reducing the possibility of exposure to the ozone:

- Whenever possible it is recommended that the machine run with maximum permissible air flow for at least 10 minutes with the Ozone Generator OFF in order to flush out most residual ozone.
- If the machine cannot be operated prior to maintenance or repair, a waiting period of 12 to 24 hours (if ozone has been produced recently) is recommended to allow the ozone to decay by reverting back into oxygen.

Isolating energy sources

The SinkZone has electrical and mechanical hazards, and maintenance or repair should not take place unless all energy sources have been turned off, disconnected, and/or drained.

APPENDIX C - SAFETY DATA SHEET

SAFETY DATA SHEET FOR OZONE
FORMERLY MSDS

1. PRODUCT IDENTIFICATION

PRODUCT NAME: Ozone

COMMON NAME / SYNONYMS: Triatomic Oxygen, Trioxygen, O3

OZONE GENERATOR MANUFACTURER / SUPPLIER: Ozone Solutions
451 Black Forest Road / Hull, Iowa 51239
712.439.6880 / www.ozonesolutions.com / tinfo@ozonesolutions.com

PRODUCT USE: This SDS is limited to ozone produced in gaseous form on site by an ozone generator, in varying concentrations, in either air or aqueous solutions, for the purposes of odor abatement, oxidation of organic compounds or antimicrobial intervention, in a variety of applications.

2. HAZARD IDENTIFICATION

GHS CLASSIFICATIONS

PHYSICAL	HEALTH	ENVIRONMENTAL
Oxidizing Gas	Skin Irritation - Category 3 Eye Irritation - Category 2B Respiratory System Toxicity - Category 1 (Single & Repeated)	Severe

WHMIS CLASSIFICATIONS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM, CANADA): C, D1A, D2A, D2B, F
Source: CCOHS CHEMINFO Record Number 774

3. COMPOSITION

CHEMICAL NAME	Ozone
COMMON NAMES	Triatomic Oxygen, Trioxygen
CHEMICAL FORMULA	O_3
CAS REGISTRY NUMBER	10028-15-6

4. FIRST AID MEASURES

ROUTE OF ENTRY		SYMPTOMS	FIRST AID
Skin Contact	Yes	Irritation	Rinse with Water
Skin Absorption	No	NA	NA
Eye Contact	Yes	Irritation	Rinse with Water, Remove Contacts
Ingestion	No	NA	NA
Inhalation	Yes	Headache, Cough, Heavy Chest, Shortness of Breath	Remove to Fresh Air, Provide Oxygen Therapy as Needed

For severe cases, or if symptoms don't improve, seek medical help.

5. FIRE FIGHTING MEASURES

Ozone itself is not flammable. As a strong oxidant if may accelerate, even initiate, combustion or cause explosions. Use whatever extinguishing agents are indicated for the burning materials.

6. ACCIDENTAL RELEASE MEASURES

Turn off the ozone generator and ventilate the area. Evacuate until ozone levels subside to a safe level (<0.1 ppm).

7. HANDLING AND STORAGE

Ozone must be contained within ozone-resistant tubing and pipes from the generation point to the application point.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

OSHA PERMISSABLE EXPOSURE LIMIT	8 hour TWA 0.1 ppm
ANSI / ASTM	8 hour TWA 0.1 ppm, STEL 0.3 ppm
ACGIH	8 hour TWA 0.1 ppm, STEL 0.3 ppm
NIOSH	ELCV 0.1 ppm Light; 0.8 ppm Moderate; 0.5 ppm Heavy; Light, Moderate, Heavy Work TWA <=2 Hours, 0.2 ppm Immediately Dangerous to Life or Health 5.0 ppm

RESPIRATORY PROTECTION: Use full face self-contained breathing apparatus for entering areas with a high concentration of ozone.

ENGINEERING CONTROL: Use ozone destruct unit for off gassing of ozone.

9. PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE	Gas	pH	NA
MOLECULAR WEIGHT	48.0	Decomposition Temperature	NA
APPEARANCE	Clear at Low Concentration, Blue at Higher Concentration	Evaporation Rate	NA
ODOR	Distinct Pungent Odor	Flash Point	NA
ODOR THRESHOLD	0.02 to 0.05 ppm; Exposure Desensitizes	Auto-Ignition Temperature	NA
MELTING POINT	-193° C / -315° F	Relative Density	NA
BOILING POINT	-112° C / -169° F	Partition Coefficient	NA
VAPOR PRESSURE	> 1 atm	Flammability	NA
VAPOR DENSITY	1.6 (Air = 1)	Explosive Limits	NA
SOLUBILITY IN WATER	570 mg / L at 20° C 100% O3; 0.64 at 0° C	Viscosity	NA

10. STABILITY AND REACTIVITY

Ozone is highly unstable and highly reactive. Avoid contact with oxidizable substances. Ozone will readily react and spontaneously decompose under normal ambient temperatures.

11. TOXICOLOGY INFORMATION

ROUTES OF EXPOSURE	Inhalation, Eyes, Skin Exposure
EFFECTS OF ACUTE EXPOSURE	Discomfort; including headache, coughing, dry throat, shortness of breath, pulmonary edema; higher levels of exposure intensify symptoms. Possible irritation of skin and / or eyes.
EFFECTS OF CHRONIC EXPOSURE	Similar to Acute Exposure effects, with possible development of schronic breathing disorders, including asthma.
LC_{50}	Mice 12.6 ppm for 3 hrs / Hamsters 35.5 ppm for 3 hrs
IRRITANCY OF OZONE	Yes
SENSITIZATION TO OZONE	No
CARCINOGENICITY (NTP, IARC, OSHA)	No
REPRODUCTIVE TOXICITY, TERATOGENICITY, MUTAGENICITY	Not Proven
TOXICOLOGICALLY SYNERGISTIC PRODUCTS	Increased susceptibility to allergens, pathogens and irritants

12. ECOLOGICAL INFORMATION

The immediate surrounding area may be adversely affected by an ozone release, particularly plant life. Discharge of ozone in water solution may be harmful to aquatic life. Due to natural decomposition, bioaccumulation will not occur and the area affected will be limited.

13. DISPOSAL CONSIDERATIONS

Off-gassing of ozone should be through an ozone destruct unit which breaks ozone down to oxygen before release into the atmosphere.

14. TRANSPORT INFORMATION

NOT APPLICABLE, as ozone is unstable and either reacts or decomposes and must be generated at the location and time of use.

15. REGULATORY INFORMATION (Source: EPA List of Lists)

SARA TITLE III SECTION 302 EHS TPQ	100 lbs
SARA TITLE III SECTION 304 EHS RQ	100 lbs
SARA TITLE III SECTION 313	> 10,000 lbs used / year

16. OTHER INFORMATION

Half-life of ozone in water at 20° C = 20 minutes; in dry still air at 24° C = 25 hour; decreases significantly with increase in humidity, presence of contaminants, air movement and / or increase in temperature.

Preparer: Tim McConnel and Stacey Eben, Ozone Solutions 5/1/2012 (layout revision (2/13/2018)

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