



HVAC System Antimicrobial Treatment®

Net Contents: 15 oz/0.468 L

- Controls and inhibits odor causing bacteria, fungi, and other odor causing organisms in HVAC Systems and Air Ducts
- Bacteriostat • Fungistat (mold and mildew) • Mildewstat • Deodorizer

FOR COMMERCIAL AND INDUSTRIAL USE.

DILUTE CONTENTS OF THIS PACKAGE BEFORE USE

Active Ingredients:

2 - Bromo - 2 - nitropropane - 1, 3 - diol..... 3.25%

Inert Ingredients..... 96.75%

Total..... 100.00%

KEEP OUT OF THE REACH OF CHILDREN WARNING

EPA Registration No. 67212-2-1677
EPA Est No. 67212-FL-001

9203.417
Disc.



LICENSED

PERIOD 2015-2017 LIC. NO.

DIRECTIONS FOR USE

IT IS A VIOLATION OF FEDERAL LAW TO USE THIS PRODUCT IN A MANNER INCONSISTENT WITH ITS LABELING.
THE PERSON APPLYING THIS PRODUCT IS RESPONSIBLE FOR FOLLOWING THESE
DIRECTIONS UNDER BOTH STATE AND FEDERAL LAWS.

1.0 General

HVAC System Antimicrobial Treatment is designed to be used as one component of a comprehensive HVAC and duct maintenance program. The purpose of such a program is to assure that the HVAC system and ducts function in the manner they were designed to, remain free from mold and other microbial growth and other contamination, and continue in that condition. This product should only be used in only those cases where visible microbial growth has been detected in the system and then only after removing that growth and identifying and correcting the conditions that led to that growth. It may also be used to inhibit growth on surfaces that normally become wet during operation of the system. These normally include (but are not limited to) evaporator coils, un-insulated piping, condensate drain pans, drain lines, mist eliminators and cabinet housing components subject to wetting by mist or carryover of water. If you need help in understanding any part of these instructions or have additional questions after reading these instructions, DO NOT APPLY THIS PRODUCT until you have received the answers for all of your questions.



LICENSED

PERIOD 2012-2014 LIC. NO.

2.0 Inspection

Prior to inspecting, cleaning, treating, repairing or otherwise working on the HVAC or duct section, the HVAC system should be turned off or the section under repair physically isolated from sections in active use.

Prior to any application of *HVAC System Antimicrobial Treatment* the system must be inspected for cleanliness and mechanical condition. When initiating any measures to repair, clean or treat HVAC system components or air ducts, industry standards from the American Society of Heating and Refrigeration Engineers (ASHRAE), National Air Duct Cleaners Association (NADCA), Indoor Air Quality Association (IAQA) and other organizations must be followed.

HVAC systems should be routinely inspected for cleanliness by visual means. The NADCA Standard, Assessment, Cleaning and Restoration of HVAC Systems (ACR 2002 or the latest revision), provides minimum recommended inspection frequency schedules for ducts and other system components. More information on NADCA standards can be obtained from the NADCA web site at www.nadca.com.

2.1 Cleanliness Inspection

According to NADCA Standards, HVAC system cleaning must be performed when any of the following conditions are found in the cleanliness inspection. If any of these deficiencies are found during inspection, cleaning in accordance with industry standards must be performed prior to the application of *HVAC System Antimicrobial Treatment*. At a minimum, these standards require removing all loose soil and debris with a HEPA filter equipped vacuum cleaner and complete cleaning of soil from all heat exchange surfaces using a special cleaner formulated so as to clean such soils effectively yet not damage heat exchange components or release unpleasant or potentially damaging fumes. An Ecolab recommended coil cleaner should be used with *HVAC System Antimicrobial Treatment*.

2.1.1 Contamination

- HVAC systems should be operated in a clean condition. If significant accumulations of contaminants or debris are visually observed within the HVAC system, then cleaning is necessary. Likewise, if evidence of microbial growth is visually observed or confirmed by analytical methods, then cleaning is required.
- If the HVAC system discharges visible particulate into the occupied space, or a significant contribution of airborne particles from the HVAC system into the indoor ambient air is confirmed, then cleaning is necessary.
- Heat exchange coils, cooling coils, air flow control devices, filtration devices, and air-handling equipment determined to have restrictions, blockages, or contamination deposits that may cause system performance inefficiencies, air flow degradation, or that may significantly affect the design intent of the HVAC system, require cleaning.
- Drain pans must be free from slime and sludge or other contamination. Badly rusted or corroded drain pans must either be repaired or replaced.
- Fans and fan housings must be free from accumulations of microbial growth and particulate matter.
- Filters must be in good condition and cleaned or replaced as needed to avoid exceeding the allowable pressure drop for the equipment.

If you need help in understanding existing industry standards, consult a qualified professional for guidance and further direction or consult the information at www.epa.gov (search on "HVAC Systems" or "air ducts"). In addition, the following association and society Internet sites should be consulted for information on standards and guidelines they have developed:

- ACCA - www.acca.org
- ASHRAE - www.ashrae.org
- NADCA - www.nadca.com
- NAIMA - www.naima.org
- SMACNA - www.smacna.org

2.2 Mechanical Inspection

HVAC System Antimicrobial Treatment must be used only on HVAC system components and air ducts in sound mechanical condition as defined in 2.2.1 and 2.2.2 (below). The HVAC system components must be designed and installed in conformance with industry standards and guidelines. Prior to using the product, inspect the HVAC system and ducts and assure that they are in sound mechanical condition. The following general guidelines, supplemented by industry standards from SMACNA, NAIMA, ASHRAE, ACCA and other organizations, must be followed:

2.2.1 Air Leaks and Mechanical Defects

The equipment housing, cabinets and ducts must be free from air leaks and other mechanical defects. Air leaks will promote condensation of water that causes microbial growth and will lead to failure of *HVAC System Antimicrobial Treatment* to protect the system adequately.

2.2.2 Design and Installation

ASHRAE, SMACNA, NAIMA and other industry organizations have established guidelines and standards for the design and installation of HVAC and duct systems. You should determine that the system components you wish to treat conform to industry practice. If you are not knowledgeable of industry guidelines and standards, consult a qualified professional for assistance.

In some situations, the inspection may reveal that a component of the HVAC or duct system is badly damaged or in such poor operating condition that it cannot be corrected through cleaning and/or minor repair. In these situations, the system should be replaced or rebuilt in conformity to the applicable industry standards prior to using *HVAC System Antimicrobial Treatment*. Some (but not all) of the conditions that would indicate the need for major repairs or replacement of the system include:

- Improper size of system or component - The system and all components must be sized to achieve correct airflow and be of the proper capacity for the load. When air-handling equipment is changed or new inlets or outlets added, the size of all components in the system should be recalculated and replacements made as needed.
- Physical damage - Crushed or physically damaged equipment may leak or fail to perform as designed. Deformed air ducts will restrict airflow and may leak (especially at joint areas). Damaged equipment must be repaired or replaced or if there is extensive damage, the entire system should be replaced.
- Badly corroded metal components including duct sections, housings and cabinets, coil assemblies, drain pans, fans and their housings and heat exchange surfaces.
- Loose, damaged, friable or missing insulation - Insulation is important in preventing moisture condensation and subsequent growth of mold and other organisms. If insulation (either interior or exterior) is damaged, missing or not properly fastened it must be repaired or replaced or the associated duct sections replaced. Air handler, mixing, and VAV box housings are also normally insulated and this insulation should be checked for damage in a like manner.

Removed components that are contaminated with mold and other microbial growth may spread contamination while being removed from the building. To prevent this, smaller items should be placed in plastic bags that should then be sealed before being removed. Larger items that cannot be safely packaged should be treated before being moved through occupied spaces. An appropriately labeled disinfectant can be used during treatment. Care must be used during treatment to assure that fumes from the agent being used are not released into occupied spaces. Products used should be used according to their label directions. Please contact Ecolab customer service at 1-800-35-CLEAN for guidance on the appropriate disinfectant to use for treatment.

3.0 General Directions for HVAC System Antimicrobial Treatment Usage

HVAC System Antimicrobial Treatment effectively controls by inhibiting growth of odor causing bacteria, fungi, and other odor, stain or damage causing organisms in HVAC system components and air ducts in residential, commercial, institutional, and industrial buildings. *HVAC System Antimicrobial Treatment* also eliminates odors associated with bacteria, mold, mildew, smoke, animals, cooking, spoilage, musty and other odors and removes odor-causing organisms when used as part of such a comprehensive preventative maintenance program in HVAC systems and air ducts.

HVAC System Antimicrobial Treatment is a bacteriostat, fungistat (mold and mildew), mildewstat and deodorizer for use in commercial and industrial settings. It will not stain or bleach most materials or fabrics and will not harm or damage HVAC system components.

HVAC System Antimicrobial Treatment is formulated for use in all kinds of HVAC components and air ducts including:

- Furnaces
- Air Handlers
- Packaged units including Rooftops and Packaged Terminal Air Conditioner (PTAC) units
- Fan coil units
- Air distribution components such as air handlers, mixing boxes, transfer boxes, transitions, turning vanes, dampers, fans and fan housings, and associated components
- Condensate drain pans
- Unlined sheet metal ducts
- Air supply and return ducts and plenums fabricated with plywood, OSB or other wood like material
- Flexible air ducts fabricated of metal or plastic
- Humidifiers
- Dehumidifiers; both Desiccant and Refrigerated
- Registers, Grills and other air intake and discharge devices

Follow the directions below for the specific type of duct or component being treated. It is vital that the following directions be carefully read and understood prior to using the product. If you have any questions, need further information, require clarification, or do not understand any of the directions, call Ecolab prior to use.

3.1 Mixing Instructions

Prior to using, read and observe the instruction on this label. The contents of this package must be properly diluted with tap water at a rate of 2 ounces of product per gallon of water. The contents of this package will make 7.5 gallons.

3.2 Application Equipment and Devices

Refer to the precautionary statements for the Personal Protective Clothing and other special instructions that must be followed.

3.2.1 Spray Applicators

Spray application is preferred on large surfaces that are easily accessible (such as plenums, coil assemblies, the interior of cabinets, housings with removable access panels, and in long runs of large diameter ducts). The spray equipment chosen should provide a consistent fine (1-300 micron) particle size and uniform spray pattern. Powered medium pressure sprayers are preferred. However, airless sprayers are suitable.

Where airless sprayers are used, the most satisfactory spray pattern will be achieved using a 0.011" spray tip. For other brands and options contact Ecolab.

Pump up garden type sprayers can be used but care must be taken to maintain maximum pressure by pumping frequently and the spray nozzle must be adjusted for the finest spray pattern possible. During application achieve complete uniform coverage. Avoid excessive wetting and do not allow the spray to run or pool.

3.2.2 ULV or Mist Generating Sprayers

ULV or mist or other wet small particle application is preferable where surfaces are irregular or less accessible. Equipment capable of generating particles in the 15 to 60 micron range is most satisfactory. Avoid use of thermal type fog generators.

Generally a fog will carry and provide adequate coverage up to 8 feet from the point of application so adequate penetrations must be cut in cabinets or ducts to ensure complete coverage without over-wetting. SMACNA, NADCA and NAIMA have established standards and guidelines for making and sealing openings in HVAC system components and ducts. Operators should be trained on proper application techniques as well as correct duct penetration and sealing procedures using these standards and guidelines. Operators should also carefully read and follow directions for the brand of equipment used. Ecolab should be contacted for information on training for using various types of equipment. Housing and duct penetrations should be properly closed following application, in accordance with industry standards.

3.2.3 Automated Atomizing or Spray System

There are a number of automated spraying systems on the market including those that are carried by a "robot" through air ducts. These may provide an excellent option for application of *HVAC System Antimicrobial Treatment* in parts of air ducts that are difficult to access if they produce the correct spray pattern and application quantity. These devices must be visually monitored using video or other means while applying spray so proper application rate will be maintained. Please contact Ecolab regarding a specific device should you have questions.

3.2.4 Brush, Mop or Wipe Application

Brush, Mop or Wipe Application may be specified by some facility maintenance or remediation plans. These techniques are generally more labor intensive than other methods and are normally used only when specifications require. These methods are suitable only for smooth uniform surfaces. Do not use on porous or non-uniform surfaces. If in doubt about a given surface, contact Ecolab before proceeding. When using brush or mop application, tools and materials used should be reserved only for application of *HVAC System Antimicrobial Treatment*, kept clean and protected between uses and replaced when worn or visibly soiled. Natural fiber brushes are preferred although any quality brush is acceptable. Mops should be of the types that leave minimal lint behind. Micro-fiber or other non linting cloths are preferable. Where other types of cloths are used, they must be soft enough that they absorb a sufficient quantity of liquid to provide uniform application.

During Brush, Mop or Wipe Application, the applicator must have access to the surfaces being treated. Usually this will require entering the component or air ducts. In such cases, application must start from the point most distant from the point of entry. The applicator will then work from that point back to the entry point covering a 3 foot length of duct at a time. Apply to the top of the area to be treated first, followed by the sides then the floor. Overlap applications to ensure complete coverage. Cover completely while avoiding runs or pooling.

3.3 Application Techniques

HVAC System Antimicrobial Treatment must be applied evenly to surfaces that are being treated. Even and uniform application is essential for satisfactory results. The procedures, equipment and techniques described below have been tested and provide the desired results. Other procedures, equipment or techniques may also achieve satisfactory results but should not be used without discussing the specific situation and equipment with your Ecolab representative.

3.3.1 Application from Exterior of the HVAC System or Air Duct

HVAC System Antimicrobial Treatment may be sprayed into existing access openings where these provide adequate access. Normally these consist of removable panels or access doors. Completely spray all non-electrical components until they are thoroughly and uniformly covered using hand or powered spray equipment. This is the technique of choice for large penthouse or built up air handlers and other components with access panels or doors.

When applying to ductwork, spray into openings at a minimum of every 8 feet. Existing supply openings can be used where they provide a clear view of the surfaces being sprayed so that uniform application can be achieved. However, additional penetrations will have to be made, as needed, so enough openings will be available to achieve total and uniform coverage.

Spray application is not an acceptable technique where openings are greater than 8 feet apart, additional openings cannot be made and properly sealed, and/or the duct geometry does not allow for uniform coverage. In such cases, application from within the HVAC system is necessary (see 3.3.2 below).

3.3.2 Application from Within the HVAC System

When *HVAC System Antimicrobial Treatment* cannot be sprayed into openings at intervals throughout the HVAC or duct system, you must gain entry into the system and spray the product onto interior surfaces until they are thoroughly and uniformly covered using hand or powered spray equipment. This is the most frequently used technique and is the technique of choice for air handlers, other components with access panels or doors and large diameter (generally 20" x 20" minimum) ducts where direct access can be gained to surfaces being treated.

Some protection is provided for drain pans by excess *HVAC System Antimicrobial Treatment* that runs off of cooling coils when they are treated. Additional protection can be provided by spraying *HVAC System Antimicrobial Treatment* onto the surfaces of the pan or pouring into the drain pan until the bottom of the pan is uniformly wetted. Systems greater than 20 tons may require the use of drain pan treatment strips. Before treating the drain pan, check to determine that the drain line is clear and free running and that the drain pan is clean and free of loose corrosion. Replace badly deteriorated pans. Drain pans that do not drain completely and retain water may experience microbial growth even when treated. Level drain pans and otherwise adjust them so water completely drains from them.

3.4.1 Fans and Fan Housings

Fans create air turbulence, which can lead to condensation of water that supports mold and other growth. As a result, fan blade and blower wheel surfaces as well as associated housings are especially prone to fouling from both microbial growth and soil accumulation. It may be necessary to partially or completely remove and disassemble these components so they may be properly cleaned prior to application of *HVAC System Antimicrobial Treatment*. Complete cleaning must take place before attempting to treat these components.

3.4.2 Humidifiers and Dehumidifiers

Because of the amount of water present, humidifiers and dehumidifiers are often sites especially prone to microbial growth. They also attract and hold soil as growth related contamination builds up over time. This accumulated material must be thoroughly removed prior to treatment with *HVAC System Antimicrobial Treatment*. For some units, cleaning may also signal the need to replace pads, belts, wheels or service other components. The manufacturer of the unit being maintained should be consulted on the proper maintenance and cleaning procedure.

3.4 Rate of Application

The recommended rate of application for *HVAC System Antimicrobial Treatment* varies depending on the surface being treated. Users of this product must carefully follow the rate of application instructions provided below:

3.4.1 Bare Metal and Flexible Ducts

Apply until surface is evenly wet. Mist or wipe coverage 1,000 ft² per gallon. Spray coverage 500 ft² per gallon. If the above application rates result in surface runoff or liquid pooling on the bottom of the duct, lower the application rate until the surface is thoroughly and evenly wet without runoff or pooling. The exception to this is when treating coil assemblies. In this case, the spray should be applied generously until there is runoff into the drain pan so as to penetrate the coil assembly to the greatest possible depth.

3.4.2 Semi Porous Surfaces such as Concrete or Plaster

Apply until surface is evenly wet. Mist coverage 500 ft² per gallon. Wipe not recommended. Spray coverage 250 ft² per gallon. *HVAC System Antimicrobial Treatment* must penetrate into surface crevices and irregularities or it will not be effective. Inspect and assure that penetration is satisfactory. It may be helpful to apply half of the quantity needed for full coverage spraying from side to side then repeat the application moving the spray from top to bottom.

3.5 Frequency of Application

Normally, infrequent application (every 3 months for HVAC Systems and every 6 months to every 2 years for air ducts) will provide effective control. Some critical applications such as HVAC and duct systems serving critical health care spaces or clean rooms where it is essential to minimize the generation of particulate matter that may be released as a byproduct of microbial growth may require more frequent treatment. Do not apply more often than monthly and then only if there is evidence of re-growth. This product must only be used in those cases where visible microbial growth has been detected in the system and then only after removing that growth and identifying and correcting the conditions that led to that growth. Prior to reapplication in such cases, investigate to determine the cause of re-growth and correct that problem prior to re-application. Before embarking on a program of frequent application (more frequent than every three months) contact Ecolab and discuss the specific application and situation. Also make sure the reoccurrence of microbial growth does not have another cause such as persistently high humidity, standing water or hidden leaks.

Prior to reapplication, the interior of the ducts and other surfaces must be inspected and found to be free of accumulated soil. If soil or growth is found, the cause should be determined and corrected and then the ducts cleaned in accordance with accepted industry practice.

If microbial growth persists in air ducts following application re-inspect for duct leaks, carryover of water from cooling coils or humidifiers and other sources of moisture promoting growth. Eliminate such sources of moisture before retreating.

3.6 Returning the System to Operation following Application

Equipment being treated and the fans and blowers in the section of duct being treated must be turned off during application of *HVAC System Antimicrobial Treatment*. If the system cannot be shut down, the section of the system being treated must be isolated until treatment is complete. This will prevent the spray of fog from being blown away from the surface that is being treated.

Do not attempt to use the system fan or blower to carry *HVAC System Antimicrobial Treatment* to the surfaces within system. Such a practice will not result in uniform application of the product to the surfaces being treated and will lead to ineffective control. This should never be attempted.

The system can be returned to full operation as soon as treatment is completed or at any time following completion of treatment. *HVAC System Antimicrobial Treatment* will dry on surfaces within 15 minutes following application. Extended drying time does not have an impact on effectiveness of treatment. *HVAC System Antimicrobial Treatment* should not be rinsed off following application so it will continue to inhibit the growth of microorganisms on treated surfaces.

When the above directions are followed properly, there will not be significant concentrations of *HVAC System Antimicrobial Treatment* released to the spaces served by a system being treated. There is no need to have occupants leave the building during application.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

WARNING. Corrosive. Causes substantial but temporary eye injury. Do not get in eyes, or on clothing. Wear protective eyewear such as goggles, face shield, or safety glasses. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, or using tobacco. Remove contaminated clothing and wash before reuse.

ENGINEERING CONTROLS: During ULV, mist or spray application, the duct system interior must be maintained under slight negative pressure (0.015 to 0.025 In. WG) with an outdoor exhaust or using a negative air machine equipped with HEPA filter. Avoid higher pressure differentials that would be likely to disrupt the coverage pattern.

ENVIRONMENTAL HAZARDS: This product is toxic to fish. Do not contaminate water by cleaning of equipment or disposal of wastes.

FIRST AID

If swallowed: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If non-diluted product inhaled: Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

If on skin or clothing: Take off contaminated clothing. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

If in eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

STORAGE AND DISPOSAL

DO NOT CONTAMINATE WATER, FOOD, OR FEED BY STORAGE OR DISPOSAL. KEEP AWAY FROM HEAT.

Pesticide Storage: Store in areas inaccessible to children or persons unfamiliar with its use.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

Container Disposal: Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.