

VOPI-001-HVAC

HVAC:

FOR USE: FOR ANTIMICROBIAL CONTROL OF NON-PATHOGENIC MICRO-ORGANISMS IN HVAC SYSTEMS AND AIR DUCTS (INCLUDING ODOR CAUSING BACTERIA, MOLD FUNGUS AND ODOR-CAUSING FUNGI)

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

This PRODUCT 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 odor-causing 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, uninsulated piping, condensate drain pans, drain lines, silicon caulks, 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.

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 PRODUCT 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 PRODUCT. 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.

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 or contact Customer Service at 1-800-303-5405 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

PRODUCT 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 PRODUCT 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 or contact Customer Service at 1-800- 303-5405 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 PRODUCT. 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 odor-causing 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 odor-causing 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. product used should be used according to their label directions. Please contact Customer Service at 1-800-303-5405 for guidance on the appropriate disinfectant to use for treatment.

3.0 General Directions for Product usage PRODUCT 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. PRODUCT also eliminates odors associated with odor-causing 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. PRODUCT is a bacteriostat, fungistat (mold and mildew), mildewstat and deodorizer for use in residential, commercial and industrial settings.

PRODUCT 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, and 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 Customer Service at 1-800-303-5405 prior to use.

3.1 Application Instructions

Wet the surfaces with the spray, giving special attention to cracks and crevices. We suggest testing for compatibility on surface of concern first. Allow ten to twenty minutes for drying. No rinsing or wiping is required. Following the elapsed drying time it is best practice to purge the system, by increasing the negative pressure through the outdoor exhaust or negative air machine or by turning on the vacuum used to pre-clean the HVAC system, while removing the duct openings seals. This will minimize the release of scent into the spaces served by the system.

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 0.01 1" spray tip. For other brands and options contact Customer Service at 1-800-303- 5405. 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. Contact Customer Service at 1-800-303-5405 for information on other devices. 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 assure 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. Customer Service personnel should be contacted at 1-800-303-5405 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 PRODUCT 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 Customer Service at 1-800-303-5405 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 Customer Service at 1-800- 303-5405 before proceeding. When using brush or mop application, tools and materials used should be reserved only for application of product, 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 assure complete coverage. Cover completely while avoiding runs or pooling.

3.3 Application Techniques

PRODUCT 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 a Customer Service Representative who can be reached toll free at 1-800-303-5405.

3.3.1 Application from Exterior of the HVAC System or Air Duct

Product may be sprayed into existing access openings where these provide adequate access. Normally these consist of removable panels or access doors. Completely cover all nonelectrical 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 product 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 PRODUCT that runs off of cooling coils when they are treated. Spraying PRODUCT, onto the surfaces of the pan or pouring into the drain pan until the bottom of the pan is uniformly wetted, can provide additional protection. 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 Fans and Fan Housings

Fans create air turbulence, which can lead to condensation of water that supports odor-causing 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 PRODUCT. Complete cleaning must take place before attempting to treat these components.

3.4.1. 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 PRODUCT. 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.

3.4.2 Rate of Application

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

3.4.3 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.

3.4.4 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. PRODUCT 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 two 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 by product 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 Customer Service at 1-800-303-5405 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 PRODUCT. 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 PRODUCT 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. Do not attempt this.

The system can be returned to full operation as soon as treatment is completed or at any time following completion of treatment. PRODUCT will dry on surfaces within 15 minutes following application. Extended drying time does not have an impact on effectiveness of treatment. PRODUCT 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 product released to the spaces served by a system being treated. There is no need to have occupants leave the building during application.

Reapply weekly on hard, non-porous surfaces and monthly on fabrics, or whenever new growth appears. Allow product to dry completely.



FIBERLOCK Duct Defender HVAC Cleaning Biocide

ICP Construction Inc

Version No: 2.2

Safety Data Sheet according to OSHA HazCom Standard (2024) requirements

Initial Date: 05/20/2026

Revision Date: 05/20/2026

Print Date: 05/20/2026

S.GHS.USA.EN

SECTION 1 Identification

Product Identifier

Product name	FIBERLOCK Duct Defender HVAC Cleaning Biocide
Synonyms	82972-1-73884
Other means of identification	Not Available

Recommended use of the chemical and restrictions on use

Relevant identified uses	HVAC Biocide/Cleaner
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Name, address, and telephone number of the chemical manufacturer, importer, or other responsible party

Registered company name	ICP Construction Inc
Address	150 Dascomb Road Andover MA 01810 United States
Telephone	1-866-667-5119 1-978-623-9987
Fax	Not Available
Website	www.icpgroup.com
Email	sds@icpgroup.com

Emergency phone number

Association / Organisation	ChemTel
Emergency telephone number(s)	1-800-255-3924
Other emergency telephone number(s)	1-813-248-0585

SECTION 2 Hazard(s) identification

Classification of the substance or mixture

NFPA 704 diamond



Note: The hazard category numbers found in GHS classification in section 2 of this SDSs are NOT to be used to fill in the NFPA 704 diamond. Blue = Health, Red = Fire, Yellow = Reactivity and White = Special (Oxidizer or water reactive substances)

Classification	Hazardous to the Aquatic Environment Acute Hazard Category 3
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Label elements

Hazard pictogram(s)	Not Applicable
Signal word	Not Applicable

Hazard statement(s)

H402	Harmful to aquatic life.
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Hazard(s) not otherwise classified

Not Applicable

Precautionary statement(s) General

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.

P103	Read carefully and follow all instructions.
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Precautionary statement(s) Prevention

P273	Avoid release to the environment.
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Precautionary statement(s) Response

Not Applicable

Precautionary statement(s) Storage

Not Applicable

Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised hazardous or special waste collection point in accordance with any local regulation.
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No further product hazard information.

SECTION 3 Composition / information on ingredients

Substances

See section below for composition of Mixtures

Mixtures

CAS No	%[weight]	Name
Not Available	0.2	Oxychlorine Compounds
68391-01-5	0.125	benzyl-C12-18-alkyldimethylammonium chloride
85409-23-0	0.125	benzyl C12-14 alkyldimethylammonium chloride
Not Available	99.55	Inert Ingredients

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4 First-aid measures

Description of first aid measures

Eye Contact	If this product comes in contact with eyes: ▶ Wash out immediately with water. ▶ If irritation continues, seek medical attention. ▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin contact occurs: ▶ Immediately remove all contaminated clothing, including footwear. ▶ Flush skin and hair with running water (and soap if available). ▶ Seek medical attention in event of irritation.
Inhalation	▶ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▶ Other measures are usually unnecessary.
Ingestion	▶ Immediately give a glass of water. ▶ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

Most important symptoms and effects, both acute and delayed

See Section 11

Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5 Fire-fighting measures

Extinguishing media

- ▶ Water spray or fog.
- ▶ Foam.
- ▶ Dry chemical powder.

Special hazards arising from the substrate or mixture

Fire Incompatibility	None known.
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Special protective equipment and precautions for fire-fighters

Fire Fighting	▶ Alert Fire Brigade and tell them location and nature of hazard. ▶ Wear full body protective clothing with breathing apparatus. ▶ Prevent, by any means available, spillage from entering drains or water course.
Fire/Explosion Hazard	▶ Combustible. ▶ Slight fire hazard when exposed to heat or flame. ▶ Heating may cause expansion or decomposition leading to violent rupture of containers. May emit corrosive fumes.

SECTION 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

See section 8

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Environmental precautions
See section 12

Methods and material for containment and cleaning up

Minor Spills	- Remove all ignition sources. - Clean up all spills immediately. - Avoid breathing vapours and contact with skin and eyes.
Major Spills	Moderate hazard. - Clear area of personnel and move upwind. - Alert Fire Brigade and tell them location and nature of hazard.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 Handling and storage

Precautions for safe handling

Safe handling	- Avoid skin contact, including inhalation. - Wear protective clothing when risk of exposure occurs. - Use in a well-ventilated area. DO NOT allow clothing wet with material to stay in contact with skin
Other information	- Store in original containers. - Keep containers securely sealed. - No smoking, naked lights or ignition sources.

Conditions for safe storage, including any incompatibilities

Suitable container	- Metal can or drum - Packaging as recommended by manufacturer. - Check all containers are clearly labelled and free from leaks.
Storage incompatibility	None known



X — Must not be stored together
0 — May be stored together with specific preventions
+ — May be stored together

Note: Depending on other risk factors, compatibility assessment based on the table above may not be relevant to storage situations, particularly where large volumes of dangerous goods are stored and handled. Reference should be made to the Safety Data Sheets for each substance or article and risks assessed accordingly.

SECTION 8 Exposure controls / personal protection

Control parameters

Occupational Exposure Limits (OEL)

INGREDIENT DATA
Not Available

Emergency Limits

Ingredient	TEEL-1	TEEL-2	TEEL-3
benzyl-C12-18-alkyldimethylammonium chloride	0.61 mg/m3	6.8 mg/m3	60 mg/m3

Ingredient	Original IDLH	Revised IDLH
benzyl-C12-18-alkyldimethylammonium chloride	Not Available	Not Available
benzyl C12-14 alkyldimethylammonium chloride	Not Available	Not Available

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk.
Individual protection measures, such as personal protective equipment	
Eye and face protection	- Safety glasses with side shields. - Chemical goggles. [AS/NZS 1337.1, EN166 or national equivalent] - Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants.

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Skin protection	See Hand protection below
Hands/feet protection	▶ Wear chemical protective gloves, e.g. PVC. ▶ Wear safety footwear or safety gumboots, e.g. Rubber The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application. The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.
Body protection	See Other protection below
Other protection	▶ Overalls. ▶ P.V.C apron. ▶ Barrier cream.

SECTION 9 Physical and chemical properties

Information on basic physical and chemical properties

Appearance	Not Available		
Physical state	Liquid	Relative density (Water = 1)	1.003
Odour	Not Available	Partition coefficient n-octanol / water	Not Available
Odour threshold	Not Available	Auto-ignition temperature (°C)	Not Available
pH (as supplied)	8-9	Decomposition temperature (°C)	Not Available
Melting point / freezing point (°C)	0	Viscosity (cSt)	Not Available
Initial boiling point and boiling range (°C)	100	Molecular weight (g/mol)	Not Available
Flash point (°C)	>130	Taste	Not Available
Evaporation rate	Not Available	Explosive properties	Not Available
Flammability	Not Applicable	Oxidising properties	Not Available
Upper Explosive Limit (%)	Not Available	Surface Tension (dyn/cm or mN/m)	Not Available
Lower Explosive Limit (%)	Not Available	Volatile Component (%vol)	Not Available
Vapour pressure (kPa)	Not Available	Gas group	Not Available
Solubility in water	Miscible	pH as a solution (1%)	Not Available
Vapour density (Air = 1)	Not Available	VOC g/L	0
Heat of Combustion (kJ/g)	Not Available	Ignition Distance (cm)	Not Available
Flame Height (cm)	Not Available	Flame Duration (s)	Not Available
Enclosed Space Ignition Time Equivalent (s/m3)	Not Available	Enclosed Space Ignition Deflagration Density (g/m3)	Not Available
Nanoform Solubility	Not Available	Nanoform Particle Characteristics	Not Available
Particle Size	Not Available		

SECTION 10 Stability and reactivity

Reactivity	See section 7
Chemical stability	▶ Unstable in the presence of incompatible materials. ▶ Product is considered stable. ▶ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 Toxicological information

Information on toxicological effects

a) Acute Toxicity	Based on available data, the classification criteria are not met.
b) Skin Irritation/Corrosion	Based on available data, the classification criteria are not met.
c) Serious Eye Damage/Irritation	Based on available data, the classification criteria are not met.
d) Respiratory or Skin sensitisation	Based on available data, the classification criteria are not met.
e) Mutagenicity	Based on available data, the classification criteria are not met.
f) Carcinogenicity	Based on available data, the classification criteria are not met.
g) Reproductivity	Based on available data, the classification criteria are not met.
h) STOT - Single Exposure	Based on available data, the classification criteria are not met.

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i) STOT - Repeated Exposure	Based on available data, the classification criteria are not met.
j) Aspiration Hazard	Based on available data, the classification criteria are not met.
Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
Ingestion	The material has NOT been classified by EC Directives or other classification systems as 'harmful by ingestion'. This is because of the lack of corroborating animal or human evidence.
Skin Contact	Skin contact is not thought to have harmful health effects (as classified under EC Directives); the material may still produce health damage following entry through wounds, lesions or abrasions. There is some evidence to suggest that this material can cause inflammation of the skin on contact in some persons.
Eye	Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course.

FIBERLOCK Duct Defender HVAC Cleaning Biocide	TOXICITY	IRRITATION
	Not Available	Not Available
benzyl-C12-18- alkyldimethylammonium chloride	TOXICITY	IRRITATION
	Oral (Rat) LD50: 447 mg/kg ^[2]	Not Available
benzyl C12-14 alkyldimethylammonium chloride	TOXICITY	IRRITATION
	Dermal (rabbit) LD50: 2730 mg/kg ^[1]	Eye: adverse effect observed (irreversible damage) ^[1]
	Inhalation (Rat) LC50: 0.22 mg/l4h ^[1]	Skin: adverse effect observed (corrosive) ^[1]
	Oral (Rat) LD50: ~358 mg/kg ^[1]	
Legend:	1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2. Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances	

BENZYL C12-14 ALKYLDIMETHYLAMMONIUM CHLORIDE	For similar compound benzyl C12-18 alkyldimethyl ammonium chloride CAS RN 68391-01-5: For acid mists, aerosols, vapours Test results suggest that eukaryotic cells are susceptible to genetic damage when the pH falls to about 6.5. Cells from the respiratory tract have not been examined in this respect. Mucous secretion may protect the cells of the airway from direct exposure to inhaled acidic mists (which also protects the stomach lining from the hydrochloric acid secreted there).		
BENZYL-C12-18- ALKYLDIMETHYLAMMONIUM CHLORIDE & BENZYL C12-14 ALKYLDIMETHYLAMMONIUM CHLORIDE	The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin. Repeated exposures may produce severe ulceration. Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Alkyldimethylbenzylammonium chlorides are in the list of dangerous substances of council directive, classified as 'harmful in contact with skin and on ingestion', and 'corrosive and very toxic to aquatic organisms'. It can cause dose dependent skin and eye irritation with possible deterioration of vision, possible sensitisation in those with pre-existing eczema. It does not cause cancer, genetic defect, foetal or developmental abnormality.		
Acute Toxicity	✗	Carcinogenicity	✗
Skin Irritation/Corrosion	✗	Reproductivity	✗
Serious Eye Damage/Irritation	✗	STOT - Single Exposure	✗
Respiratory or Skin sensitisation	✗	STOT - Repeated Exposure	✗
Mutagenicity	✗	Aspiration Hazard	✗

Legend: ✗ – Data either not available or does not fill the criteria for classification
✔ – Data available to make classification

SECTION 12 Ecological information

Toxicity					
FIBERLOCK Duct Defender HVAC Cleaning Biocide	Endpoint	Test Duration (hr)	Species	Value	Source
	Not Available	Not Available	Not Available	Not Available	Not Available
benzyl-C12-18- alkyldimethylammonium chloride	Endpoint	Test Duration (hr)	Species	Value	Source
	LC50	96h	Fish	0.163mg/L	4

FIBERLOCK Duct Defender HVAC Cleaning Biocide

benzyl C12-14 alkyldimethylammonium chloride	Endpoint	Test Duration (hr)	Species	Value	Source
	EC50	72h	Algae or other aquatic plants	0.014mg/L	2
	EC50	48h	Crustacea	0.016mg/l	2
	EC50	96h	Algae or other aquatic plants	~0.02mg/l	2
	NOEC(ECx)	72h	Algae or other aquatic plants	<=0.001mg/L	2
	LC50	96h	Fish	0.28mg/l	2
Legend:	Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. US EPA, Ecotox database - Aquatic Toxicity Data 4. ECETOC Aquatic Hazard Assessment Data 5. NITE (Japan) - Bioconcentration Data 6. METI (Japan) - Bioconcentration Data 7. Vendor Data				

Harmful to aquatic organisms.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
	No Data available for all ingredients	No Data available for all ingredients

Bioaccumulative potential

Ingredient	Bioaccumulation
benzyl-C12-18-alkyldimethylammonium chloride	LOW (LogKOW = 11.28)
benzyl C12-14 alkyldimethylammonium chloride	LOW (LogKOW = 2.93)

Mobility in soil

Ingredient	Mobility
	No Data available for all ingredients

Other adverse effects

No evidence of ozone depleting properties were found in the current literature.

SECTION 13 Disposal considerations

Waste treatment methods

Product / Packaging disposal	Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked. ▶ DO NOT allow wash water from cleaning or process equipment to enter drains. ▶ It may be necessary to collect all wash water for treatment before disposal. ▶ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▶ Recycle wherever possible or consult manufacturer for recycling options. ▶ Consult State Land Waste Management Authority for disposal. ▶ Bury residue in an authorised landfill.
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SECTION 14 Transport information

Labels Required

Marine Pollutant	NO
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Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

14.7. Maritime transport in bulk according to IMO instruments

14.7.1. Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

14.7.2. Transport in bulk in accordance with MARPOL Annex V and the IMSBC Code

Product name	Group
benzyl-C12-18-alkyldimethylammonium chloride	Not Applicable
benzyl C12-14 alkyldimethylammonium chloride	Not Applicable

14.7.3. Transport in bulk in accordance with the IGC Code

FIBERLOCK Duct Defender HVAC Cleaning Biocide

Product name	Ship Type
benzyl-C12-18-alkyldimethylammonium chloride	Not Applicable
benzyl C12-14 alkyldimethylammonium chloride	Not Applicable

SECTION 15 Regulatory information

Safety, health and environmental regulations / legislation specific for the substance or mixture

benzyl-C12-18-alkyldimethylammonium chloride is found on the following regulatory lists

US - California - Biomonitoring - Priority Chemicals
US DOE Temporary Emergency Exposure Limits (TEELs)
US EPA Pesticide Chemical Search - Antimicrobial
US EPA Pesticide Chemical Search - Conventional Chemical
US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory

benzyl C12-14 alkyldimethylammonium chloride is found on the following regulatory lists

US - California - Biomonitoring - Priority Chemicals
US EPA Pesticide Chemical Search - Antimicrobial
US EPA Pesticide Chemical Search - Conventional Chemical

Additional Regulatory Information

Not Applicable

Federal Regulations

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 311/312 hazard categories

Flammable (Gases, Aerosols, Liquids, or Solids)	No
Gas under pressure	No
Explosive	No
Self-heating	No
Pyrophoric (Liquid or Solid)	No
Pyrophoric Gas	No
Corrosive to metal	No
Oxidizer (Liquid, Solid or Gas)	No
Organic Peroxide	No
Self-reactive	No
In contact with water emits flammable gas	No
Combustible Dust	No
Carcinogenicity	No
Acute toxicity (any route of exposure)	No
Reproductive toxicity	No
Skin Corrosion or Irritation	No
Respiratory or Skin Sensitization	No
Serious eye damage or eye irritation	No
Specific target organ toxicity (single or repeated exposure)	No
Aspiration Hazard	No
Germ cell mutagenicity	No
Simple Asphyxiant	No
Hazards Not Otherwise Classified	No

US. EPA CERCLA Hazardous Substances and Reportable Quantities (40 CFR 302.4)

None Reported

US. EPCRA Section 313 Toxic Release Inventory (TRI) (40 CFR 372)

None Reported

Additional Federal Regulatory Information

Not Applicable

State Regulations

US. California Proposition 65

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None Reported

Additional State Regulatory Information
Not Applicable

National Inventory Status

National Inventory	Status
Australia - AIC / Australia Non-Industrial Use	Yes
Canada - DSL	Yes
Canada - NDSL	No (benzyl-C12-18-alkyldimethylammonium chloride; benzyl C12-14 alkyldimethylammonium chloride)
China - IECSC	Yes
Europe - EINEC / ELINCS / NLP	Yes
Japan - ENCS	Yes
Korea - KECI	Yes
New Zealand - NZIoC	Yes
Philippines - PICCS	Yes
USA - TSCA	TSCA Inventory 'Active' substance(s) (benzyl-C12-18-alkyldimethylammonium chloride); No (benzyl C12-14 alkyldimethylammonium chloride)
Taiwan - TCSI	Yes
Mexico - INSQ	No (benzyl C12-14 alkyldimethylammonium chloride)
Vietnam - NCI	Yes
Russia - FBEPH	No (benzyl C12-14 alkyldimethylammonium chloride)
UAE - Control List (Banned/Restricted Substances)	No (benzyl-C12-18-alkyldimethylammonium chloride; benzyl C12-14 alkyldimethylammonium chloride)
Legend:	Yes = All CAS declared ingredients are on the inventory No = One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

SECTION 16 Other information

Revision Date	05/20/2026
Initial Date	05/20/2026

CONTACT POINT

PLEASE NOTE THAT TITANIUM DIOXIDE IS NOT PRESENT IN CLEAR OR NEUTRAL BASES

SDS Version Summary

Version	Date of Update	Sections Updated
1.2	05/20/2026	Composition / information on ingredients - Ingredients, Name

Other information

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios.

Definitions and abbreviations

- PC - TWA: Permissible Concentration-Time Weighted Average
- PC - STEL: Permissible Concentration-Short Term Exposure Limit
- IARC: International Agency for Research on Cancer
- ACGIH: American Conference of Governmental Industrial Hygienists
- STEL: Short Term Exposure Limit
- TEEL: Temporary Emergency Exposure Limit,
- IDLH: Immediately Dangerous to Life or Health Concentrations
- ES: Exposure Standard
- OSF: Odour Safety Factor
- NOAEL: No Observed Adverse Effect Level
- LOAEL: Lowest Observed Adverse Effect Level
- TLV: Threshold Limit Value
- LOD: Limit Of Detection
- OTV: Odour Threshold Value
- BCF: BioConcentration Factors
- BEI: Biological Exposure Index
- DNEL: Derived No-Effect Level
- PNEC: Predicted no-effect concentration
- MARPOL: International Convention for the Prevention of Pollution from Ships
- IMSBC: International Maritime Solid Bulk Cargoes Code
- IGC: International Gas Carrier Code
- IBC: International Bulk Chemical Code
- AIIC: Australian Inventory of Industrial Chemicals
- DSL: Domestic Substances List
- NDSL: Non-Domestic Substances List
- IECSC: Inventory of Existing Chemical Substance in China
- EINECS: European INventory of Existing Commercial chemical Substances
- ELINCS: European List of Notified Chemical Substances
- NLP: No-Longer Polymers
- ENCS: Existing and New Chemical Substances Inventory
- KECI: Korea Existing Chemicals Inventory
- NZIoC: New Zealand Inventory of Chemicals

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- ▶ PICCS: Philippine Inventory of Chemicals and Chemical Substances
- ▶ TSCA: Toxic Substances Control Act
- ▶ TCSI: Taiwan Chemical Substance Inventory
- ▶ INSQ: Inventario Nacional de Sustancias Químicas
- ▶ NCI: National Chemical Inventory
- ▶ FBEPH: Russian Register of Potentially Hazardous Chemical and Biological Substances

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