H.B. Fuller Construction Products Inc.

**APPLICATION OF 40-20 FUNGICDAL PROTECTIVE COATING IN HVAC SYSTEMS**
**EPA Registration No. 63836-1**

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Supplemental directions for use for application of Foster 40-20 Fungicidal Protective Coating in Heating, Ventilating and Air Conditioning (HVAC) duct systems.

**DIRECTIONS FOR USE**
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons.

The person applying this product is responsible for following these directions and the directions found on the product label under both State and Federal laws.

**1. 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 duct 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 must be used only in cases where existing microbial growth has been removed and identifying and correcting the conditions that led to that growth. If you need help understanding any part of these instructions or have additional questions after reading these instructions, DO NOT APPLY THIS PRODUCT until after you have received the answers for all of your questions.

**2.0 Inspection**
Prior to inspecting, cleaning, treating, repairing or otherwise working on a duct section, the HVAC system must be turned off or the section under repair physically isolated from section in active use. In cases where the HVAC system cannot be broken down, the entire system must be turned off and must remain off until the coating is dry and odors from the coating are dissipated.

Prior to application of Foster 40-20 Fungicidal Protective Coating the system must be inspected for cleanliness and mechanical condition. When initiating any measures to repair, clean or treat ducts and associated HVAC system components, industry standards from the National Air Duct Cleaners Association (NADCA) and other organizations must be followed.

Routinely inspect the HVAC systems for cleanliness by visual means. The NADCA standard, Assessment, Cleaning and Restoration of HVAC Systems (ACR 2002 or the latest revision), provides minimum 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 Foster Fungicidal Protective Coating.

### 2.1.1 Contamination

- HVAC systems must be operated in a clean condition. If significant accumulations of materials 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.

If you need help in understanding existing industry standards, consult a qualified professional or consult the information at www.epa.gov (search on “air ducts”). In addition, consult the following association and society Internet sites 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.

Foster 40-20 Fungicidal Protective Coating must be used only on ducts and other HVAC system components 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 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 ducts must be free from air leaks and other mechanical defects. Air leaks will promote condensation of water that causes microbial growth and may lead to failure of Foster 40-20 Fungicidal Protective Coating 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. Determine that the duct system you wish to coat conforms 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 the duct system or other component is badly damaged or in such poor operating condition that it cannot be corrected through cleaning and/or minor repair. In these situations, replace or rebuild the system in conformity to the applicable industry standards prior to using Foster 40-20 Fungicidal Protective Coating. Some (but not all) of the conditions that would indicate the need for major repairs or replacement of the system include:

- Improper size of ducts – Ducts must be sized to achieve correct airflow. When air-handling equipment is changed or new inlets or outlets added, recalculate and replace as needed the size of all components in the system.

- Physical damage – Crushed or deformed air ducts will restrict airflow and may leak (especially at joint areas). Replace damaged sections or if there is extensive damage, replace the entire system.
- 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. Check this insulation 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, place smaller items in plastic bags that must then be sealed before being removed. Larger items that cannot be safely packaged must 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 must be used according to their label directions.

**3.0 General Directions for Foster 40-20 Fungicidal Protective Coatings Usage.**
Foster 40-20 Fungicidal Protective Coating is formulated to effectively prevent the spread of molds and odor-causing bacteria on its surface. Foster 40-20 Fungicidal Protective Coating can be used on interior and exterior surfaces of HVAC duct systems, and wherever effective controls are essential. It dries to form an effective air erosion preventive surfacing material sealing and reinforcing the surface of new or aged duct liner insulation materials. It will lock down residual loose fibers and materials keeping them from becoming airborne. Foster Fungicidal Protective Coating guards against the re-growth and spread of odor-causing bacteria and molds on the surface of the coated HVAC system or its treated components only.

Foster 40-20 Fungicidal Protective Coating is formulated for application to the surface of all kinds of ducts and HVAC components including:
- Fiberglass and other fibrous and foam duct liner insulations
- Unlined sheet metal.
- Air supply and return ducts and plenums fabricated with plywood, OSB or other wood like material.
- Air supply and return ducts and plenums fabricated with masonry, brick, plaster, and cement based surfaces
- Air distribution components such as air handlers, mixing boxes, transfer boxes

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 this product.

**3.1 Application Instructions.**
Affected areas of the building are not to be occupied during the application process. Do not reenter these areas for 12 hours and until odors from the application have dissipated.

**3.1.1 Surface Preparation**
Apply only to surfaces free of all loose dirt, grease, mold or other materials that may interfere with the adhesion of the coating to the substrate. Always follow industry accepted cleaning procedures.

**3.1.1.1 Metal Surfaces.**
Remove any dust, grease, oil, or materials. Abrade all surfaces to remove all surface rust. Clean the intended surface of any materials that may interfere with the adhesion of the coating and allow to dry completely before proceeding. Follow manufacturer's directions for application. All metal surfaces must be primed with Foster Waterbase Primer before application of 40-20.

**3.1.1.2 Duct Liner Insulation**
Fiberglass, mineral wool and other porous lined air ducts must be lightly vacuumed to remove all mold, dust and loose particles, being careful not to tear or loosen the liner. Use a HEPA vacuum to clean surfaces. Do not use hard surface sanitizers or cleaners on porous duct liner surfaces. Do not wet out or saturate duct liner

insulations with cleaners or other chemicals. Ensure that insulation is dry before applying Foster 40-20 Fungicidal Protective Coating.

**3.1.1.3 Plywood, OSB or Other Wood Like Material.**
Remove all dirt, grease, oil, loose mold or mildew or other materials. Remove all loose substrate materials, unnatural protrusions, splintered materials, etc. to a sound surface. Ensure that wooden surfaces are dry before applying coatings. Foster 40-20 Fungicidal Protective Coating may be applied directly without the need for primer.

**3.1.1.4 Masonry, Brick, Plaster and Cement Based Surfaces.**
Aggressively scrape the surface, and then wire brush to produce a firm, sound substrate. Clean the intended surface of any materials that may interfere with the adhesion of the coating and allow to dry completely before proceeding. Prime all unpainted brick, plaster and cement based surfaces with a masonry sealer or primer if dusty.

**3.1.2 Material Preparation.**
DO NOT THIN. Keep container closed when not in use.

**3.1.3 Product Application**
Refer to the precautionary statements for Personal Protective Clothing and other special instructions that must be followed,

Apply between 50ºF (10ºC) and 100ºF (38ºC) with less than 70% RH air conditions maintained until dry.

Always ensure adequate ventilation. HVAC systems must be under negative air pressure during and after application to allow for exhausting of odors and rapid drying of the coating. Apply Foster Fungicidal Protective Coatings to all surfaces by brush or airless spray at a rate of 1.25 gal./100 sq. ft. (0.51 l/$m_2$). Unsealed, rough, or low-density surfaces may require more material to attain required surface sealing.

**NOTE:** Continue to circulate fresh dry air throughout the area during the application and for as long after the application as is possible. Exhaust circulated air outside the building or occupied space. If air must be exhausted inside the building circulate air through an air scrubbing filtration system with odor absorbing medium such as a charcoal medium. This circulation and filtration helps to reduce the dry time of the coating and reduce latex type odors that could possibly migrate from the application area. Be sure exhausted air is odorless before venting into occupied spaces.

**3.1.4 Application Techniques**
Foster 40-20 Fungicidal Protective Coating may be applied by brush, roller or airless spray as well as certain automated spray systems. Refer to sections below for more information on application equipment and devices. Brushing or rolling will require two coats applied at 90º to each other. Under normal circumstances a spray application can be completed in one coat, but for extremely porous or irregular surfaces, a second coat may be required. Overlap applications to assure complete coverage and the surface is smooth and well sealed. Cover surface completely while avoiding runs or pooling.

This product must be evenly applied to the coated surfaces. Even and uniform application is essential for satisfactory results. The procedures, equipment and techniques described below have been used to provide the desired result. Other procedures, equipment and techniques may also achieve satisfactory results, but must not be used without discussing the specific situation with a qualified professional for assistance.

The applicator must have access to the surfaces being coated. This will require entering the ducts. In such cases, application must start from the point most distant from the point of entry into the duct. The applicator will then work from that point back to the entry point covering a 4 foot length of duct at a time.

**3.1.4.1 Application from Exterior of the HVAC System.**
Foster Fungicidal Protective Coating may be sprayed into openings at intervals throughout the duct system or on components that are accessible through removable panels or access doors. Spray into openings every 8

feet at a minimum. 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 3.1.4.2 below).

Where penetrations must be cut in the ducts they must be done to SMACNA, NADCA and NAIMA established standards and guidelines for making and sealing openings in ducts. Operators must be trained on proper application techniques as well as correct duct penetration and sealing procedures using these standards and guidelines. Close duct penetrations, following application, in accordance with industry standards.

**3.1.4.2 Application from Within the HVAC System.**
When Foster Fugicidal Protective Coating cannot be sprayed into openings at intervals throughout the duct system, you must gain entry into the system and spray the product onto interior duct and other surfaces to a uniform coverage using hand or powered spray equipment. This is a 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 coated.

**3.1.5 Application Equipment and Devices.**
Refer to the precautionary statements for the Personal Protective Clothing and other special instructions that must be followed.

**3.1.5.1 Brush or Roller.**
Brushes and paint rollers suitable for application of water based paints are acceptable. Use a 3/8” nap roller for smooth surfaces. Clean brushes and equipment with warm water before product dries.

**3.1.5.2 AirlessSpray Application.**
For airless spray application use an electric 2800 psi minimum airless spray pump with a 0.021 – 0.025 fluid tip. Airless spray equipment must be suitable for application of water based paints and must be capable of applying the coating in a smooth fan pattern.

Extension pole guns, directional and conical spray tips and other airless spray accessories may also be used to assist applicators in reaching difficult to reach areas. When using this equipment applicators must visually ensure proper application of the applied coating.

Low pressure sprayers used for applying low solids stains and coatings and pump up garden sprayers are not suitable for application of this product.

Clean equipment with warm water before product dries.

**3.1.5.3 Automated Spray Systems**
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 Foster Fungicidal Protective Coating 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. Consult the automated spray systems manufacturer to ensure that the equipment is suitable for applicaiton of this product.

**3.2 Rate of Application.**
The required rate of application for Foster Fungicidal Protective Coating is 1.25 gal./100 sq. ft. (0.51 l/$m^2$). Users of this product must carefully follow the rate of application. Surfaces must be evenly coated to provide a complete surface film. Avoid over applicaiton resulting in pooling of the coating. Over application will extend dry times.

**3.3 Frequency of Application.**
This product is designed to provide long term protection of its surface against odor causing bacteria, mold and mildew. Infrequent application (every five to ten years or more) will normally provide adequate control. Inspect the coating surface regularly (every six months or more often as necessary) for evidence of microbial growth or build-up of dirt and debris. If the coating becomes soiled by non-microbial materials clean the coating surface using water and mild detergents. If visible microbial growth is detected on the coating surface remove that growth using water and mild detergent and identify and correct the conditions that led to that growth.

Re-application of this product is not required. If microbial growth does occur on the coating surface do not re-apply product. Instead investigate and make sure the reoccurrence of microbial growth is not caused by persistently high humidity, standing water or hidden leaks. Ensure the coating was applied at the required coverage rate and that the coating surface is clean and in good condition. Correct any problems that have been discovered and clean the ducts in accordance with accepted industry practice. After cleaning, touch up of the coating, if worn or damaged, may be completed using techniques provided above. Contact a qualified professional for assistance in investigating and correcting problems.

**3.4 Returning the System to Operation Following Application.**
Fans and blowers in the section of duct being coated must be turned off during application of Foster 40-20 Fungicidal Protective Coating. Negative air machines must be used to exhaust odors from the duct system. If the system cannot be shut down, the section of duct being coated must be isolated until coating application is complete and the coating is dry. This will prevent the spray of product and associated odors from being blown away from the surface that is being coated and into occupied spaces.

Do not attempt to use the system fan or other blowers to carry Fungicidal Protective Coating to the surfaces in the air duct system. Such a practice will not result in proper application of the product to the surfaces being treated and will lead to ineffective control.

The system can be returned to full operation once the product is dry and odors have dissipated to an acceptable level. Typically a minimum of 12 to 24 hours is required. Allowing for longer times will reduce potential for occupant complaints. Fresh, dry air flow must be maintained throughout the system to ensure the product dries and odors are dissipated. For best results air circulated through the system will be at 75$^{o}$F (or higher) and 50% RH (or lower) to ensure proper drying. Lower temperatures will extend dry times. Humidity of circulated air must be controlled below 70% RH at all points in the duct. Lower humidities will speed up drying of the coating. If make up air is above 50% RH dehumidifiers must be used to condition the air going through the duct to reach the lower humidity requirements. Never apply product and then stop ventilation and close off the system trapping moisture from the coating in the ducts. This will cause an increase in humidity in the duct system resulting in extended dry times and build up of odors.

**3.5 Maintenance.**
Normal cleaning procedures must be maintained in HVAC systems to remove accumulated airborne particles. Where accessible the coating may be washed down periodically to remove any accumulation of materials with water and a mild detergent. If coating becomes damaged clean surface and re-apply coating.

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

**CAUTION:** Harmful if swallowed, absorbed through skin or inhaled. Causes moderate eye irritation. Prolonged skin contact may cause irritation. Acute overexposure to vapors may cause dizziness, headache, nausea, and unconsciousness. Since emptied containers may contain product residue, follow label warning even after container is empty. Consult material safety data sheet for more information.

### USER SAFETY INSTRUCTIONS

Users must wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Users must wear long-sleeved shirts, long pants, shoes, socks, chemical resistant gloves and apron when handling this product. User must remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Users must remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible wash thoroughly, When applying with a sprayer, applicator must wear a respirator with either an organic-vapor-removing cartridge with a prefilter

approved for pesticides (MSHA/NIOSH approval number prefix TC-23C), or a canister approved for pesticides (MSHA/NIOSH approval number prefix TC-14G).

## ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollution Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA.

**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 give anything to an unconscious person. Do not induce vomiting unless told by a Poison Control Center or doctor. In case of emergency call 1-888-853-1758. Have the product container or label with you when calling a Poison Control Center or doctor. **IF ON SKIN:** 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 INHALED:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration preferable mouth-to-mouth if possible. Call a Poison Control Center or doctor for further 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. Call a Poison Control Center or doctor for treatment advice.