

71227-1

5-28-2003

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

11/36

MAY 28 2003

Amy Roberts
Agent for AgION Technologies (Sinanen)
c/o Technology Sciences Group, Inc.
1101 17th Street, N.W. Suite 500
Washington, D.C. 20036

**Subject: Zeomic Type AJ10D Silver Zeolite A
EPA Reg. No. 71227-1
Your Re-Submission Dated 3/18/03, (Original Amendment Dated 6/5/01), and
Label Re-submissions Dated 3/25/03, 4/7/03, 5/8/03, 5/27/03**

The re-submission containing the label revision (31a), dated 5/27/02, submitted in connection with registration under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as amended, which adds new uses for application of the product to in-use (post-manufacture) HVAC and certain in-use (post-manufacture) non-HVAC articles/surfaces which might have indirect food/drinking water contact, is acceptable on a time-limited basis under the following conditions:

- 1. Approval for these new in-use (post-manufacture) uses expires on 4/1/04.
- 2. This time-limited approval is conditionally granted providing:
 - A. The data recently submitted or cited to satisfy the following required data for this product, must be found fully acceptable:

- Sub-chronic rodent feeding study
- Sub-chronic non-rodent feeding study
- Developmental toxicity study
- Mammalian cells in culture forward gene mutation assay
- In-vivo cytogenetics via metaphase analysis, or micronucleus assay
- Two-generation reproductive study

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B. An aggregate risk assessment under FIFRA Section 2 (bb), using all data submitted/cited, must result in a determination by the Agency that all indirect food, drinking water, HVAC, and all other non-food/water uses listed on the label will not result in un-reasonable adverse effects to humans or the environment. If the Agency is unable to make this determination for each label use, then label uses which are found to pose an unreasonable risk will expire on 4/1/04 and must be deleted at that time.

3. The official "label" for this product is now considered the main 8 page label; Technical Bulletins #1, 2, 3; and six product Information Bulletins Z-001 through Z-006 inclusive. All labeling and related marketing/sales and website information about this product must be in harmony with this revised label and must be presented so as not to mislead, conflict with or contradict the information, restrictions, limitations and other information listed on this comprehensive label.

Your release for shipment of the product constitutes acceptance of these conditions.

A stamped copy of the accepted label is attached for your records.

If you have any questions about the comments in this letter, please feel free to contact Tony Kish at 703-308-9443, or myself at 703-308-6341.

Sincerely,

Marshall Swindell,
Product Manager Team 33,
Regulatory Management Branch I
Antimicrobials Division (7510C)

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Zeomic® Type AJ Silver Zeolite A

A preservative and bacteriostatic agent for use in the manufacture of polymer, plastic and latex products. For commercial and industrial use only.

Active Ingredient:

Silver	2.5 %
Other Ingredients	97.5 %
Total	100.0 %

KEEP OUT OF REACH OF CHILDREN

CAUTION

SEE INSERT LABEL FOR PRECAUTIONARY STATEMENTS

Manufactured by:
Sinanen Company, Ltd.
4-22, Kaigan 1-Chome, Minato-ku
Tokyo 105, Japan

EPA Registration No. 71227-1
EPA Establishment No. 71227-JP-001

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with COMMENTS
in EPA Letter Dated:

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Fungicide, and Rodenticide Act as
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Lot No. XXXXXXXXXX

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Directions for Use

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

For all uses listed*:

- * Do not incorporate this product into any food contact polymer unless the subject food contact polymer is approved and listed in 21 CFR, Parts 174 through 186 (inclusive), or in the United States Food and Drug Administration's "Food Contact Substance Notification System." Any incorporation of this product into an approved and listed food contact polymer must comply with the specific use conditions listed in 21 CFR, Parts 174 through 186 (inclusive), or in the United States Food and Drug Administration's "Food Contact Substance Notification System," for such food contact polymer. Any incorporation of this product into any food contact substance (including but not limited to non-polymer substances) other than an approved and listed food contact polymer is prohibited.
- * For applications involving direct or indirect food or human drinking water contact, Zeomic® Type AJ must be used with an FDA approved polymer or coating. Non-food and non-drinking water contact applications can use either FDA or non-FDA approved coatings.
- * This product may be used for the following human drinking water contact uses:
 - water filter components and housing units
 - water bottle dispensers and components
 - water dispensers
 - ice machine trays
 - ice machine bins
 - ice machine water hoses
 - ice dispensers and other ice machine components
 - water bottles
 - cups
 - water storage vessels
- * This product may be incorporated into food and water bowls, dishes and other containers used by domestic animals. Do not use for any food or drinking water applications involving non-domestic animals.

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Zeomic® Type AJ Silver Zeolite A is an antimicrobial additive to be used by compounding into many polymeric materials. It is designed to be incorporated during and after the manufacturing process to impart antimicrobial activity to the manufactured products. Approved post manufactured product upgrade applications are detailed in the label section titled "Coatings for Upgrade Applications." **Zeomic® Type AJ Silver Zeolite A** suppresses the growth of algae, mold, mildew, fungi and bacteria which cause unpleasant odors, discoloration, staining, deterioration or corrosion only. No finished product incorporating **Zeomic® Type AJ Silver Zeolite A** may make any public health claims relating to antimicrobial activity without first obtaining an EPA registration for the finished product which permits such claims, and without a tolerance or exemption from the requirement of a tolerance. When incorporated into treated articles, this product does not protect users of any such treated article or others against food borne or disease causing bacteria, viruses, germs or other disease causing organisms.

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Types of Finished Products

Plastics - including films, sheets, slabs, and molded plastic parts

The additive may be incorporated into the finished product at up to 5.0% by weight or at least 0.3% for bulk plastics. Contact Sinanen Company Ltd. to determine the appropriate amount of Zeomic® Type AJ Silver Zeolite A for individual finished products.

Food contact* and non-food contact uses (in all food contact cases, when the article itself is a FDA-approved polymer):

- packaging
- gaskets
- general purpose containers
- food and drink containers
- food trays and covers
- sponges
- plastic film
- food wrap (including coated deli paper, coated meat interleavers and plastic wrap)
- tubing
- brush bristles (including personal care grooming items, toothbrushes (Claims allowed: *odor, discoloration, staining*), and cosmetic brushes (Claims allowed: *odor, discoloration, staining*))
- liners
- non-woven fabrics
- appliances and equipment
- kitchen and food processing utensils and supplies
- cutting boards
- countertops
- sinks
- tiles
- dishes
- cups
- bottles
- conveyor belts
- food processing equipment (including slicers, formers, juicers, washers, canners, freezers, refrigerators, shelving, cookers, grinders, choppers, peelers and countertops)
- beverage processing equipment (including mixers, transfer equipment, pumps, bottlers, canners, dispensers and fermenters)
- garbage bags and garbage cans

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Non-food contact uses only:

- automobile parts
- shower curtains
- mats
- protective covers
- tape
- waste containers
- brush handles
- mops
- vacuum cleaner bags
- plumbing supplies and fixtures (including toilet bowl seats)
- drain pan liners¹
- office equipment
- personal care items (including grooming items, toothbrushes (Claims allowed: *odor, discoloration, staining*), sports and dental mouthguards (Claims allowed: *odor, discoloration, staining*))
- siding for housing
- kitchen and bathroom hardware
- flooring
- floor coverings
- footwear (including boots, sports equipment and tools)
- insulation for wire and cable
- insulators
- indoor and outdoor furniture
- toys (Claims allowed: *odor, discoloration, staining, deterioration*)
- spas, bathtubs, showers and filters and components thereof

¹ For HVAC and related uses, refer to Zeomic® AJ Technical Bulletin No. 1 - Technical Bulletin for Zeomic® Type AJ Silver Zeolite A Polymeric Coating for Heating, Ventilation and Air Conditioning Applications.

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Fibers

The additive may be incorporated into the finished product at up to 5.0% by weight or at least 0.5% for fibers. Contact Sinanen Company Ltd. to determine the appropriate amount of Zeomic® Type AJ Silver Zeolite A for individual finished products.

Food contact* and non-food contact uses (in all food contact cases, when the article itself is a FDA-approved polymer, or as a FDA-approved polymer coating on an article):

- napkins, tablecloths and wiping cloths
- bags
- brush bristles (including personal care grooming items, toothbrushes (Claims allowed: *odor, discoloration, staining*), and cosmetic brushes (Claims allowed: *odor, discoloration, staining*))
- filters
- clothing apparel (including uniforms, outerwear, gloves, aprons, coats and shoes)
- sponges
- packaging (including bags, sacks, wraps, cushion and absorbent materials, and containers)
- conveyor belts
- kitchen, commercial and industrial wipes and fabrics

Non-food contact uses only:

Interior furnishings -

- mattress cover pads and filling
- pillow covers
- sheets
- blankets
- fiberfill for quilts and pillows
- curtains
- draperies
- carpet and carpet underlay
- rugs
- upholstery
- mops
- towels
- wall covering fabrics
- cushion pads
- sleeping bags

Apparel -

- umbrellas
- outerwear
- sportswear
- sleepwear
- stockings
- socks and hosiery
- caps
- undergarments
- inner liners for jackets
- trim for outerwear and garments

Transportation -

- automotive and truck upholstery
- carpeting
- rear decks
- trunk liners
- convertible tops
- interior liners

Industrial and Other Household Items -

- artificial leather
- filters
- book covers
- mops
- cloth for sails
- ropes
- tents and other outdoor equipment
- tarps
- awnings
- drain pan liners¹

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Coatings, Films and Laminates

The additive may be incorporated into the coating, film or laminate applied to the finished product at up to 5.0% by weight, or at least 0.05% for paper or 0.3% for bulk plastics. Contact Sinanen Company Ltd. to determine the appropriate amount of Zeomic® Type AJ Silver Zeolite A for individual finished products. Types of coatings include water-borne, solvent-borne, 100% solids, radiation cure, liquid and powder.

Food contact* and non-food contact uses (in all food contact cases, when the article itself is a FDA-approved polymer, or as a FDA-approved polymer coating, film or laminate on an article):

- packaging
- paper products (including wipes and tissues)
- food wrap (including coated deli paper, coated meat interleavers and plastic wrap)
- natural and synthetic fibers and fabrics
- sinks
- countertops
- cutting boards
- dishes
- cookware
- general purpose containers
- kitchen, commercial and industrial utensils and supplies
- collection and storage equipment (including conveyor belts, piping systems, silos, tanks and process vessels)
- appliances and food processing equipment (including slicers, formers, juicers, washers, canners, freezers, refrigerators, shelving, cookers, grinders, choppers, peelers and countertops)
- beverage processing equipment (including mixers, transfer equipment, pumps, bottlers, canners and fermenters and dispensers)
- building materials and components (including walls, hardware, floors, ceilings and components thereof for kitchen, commercial and industrial applications)

Non-food contact uses only:

- walls
- wallboard
- floors
- concrete
- siding
- roofing
- shingles
- industrial equipment
- furniture
- automotive and vehicular parts
- packaging
- paper products (including wall coverings, towels, book covers)
- barrier fabrics
- glazing for cement tile
- glazing for vitreous china used in plumbing fixtures (including toilets, sinks, countertops)
- Heating, Ventilation and Air Conditioning equipment and related materials (including insulation, ducts, heat exchangers, drain pans, air filters, air purifiers, diffusers, and parts and components thereof)¹
- spas, bathtubs, showers, and filters and components thereof

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¹ For HVAC and related uses, refer to Zeomic® AJ Technical Bulletin No. 1 – Technical Bulletin for Zeomic® Type AJ Silver Zeolite A Polymeric Coating for Heating, Ventilation and Air Conditioning Applications.

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Coatings for Upgrade Applications

Upgrade Applications are defined as the incorporation of Zeomic into polymeric coatings that are applied to articles onsite (after the article has been manufactured and is in the place of use). Coatings may be used on articles that have not previously incorporated the antimicrobial compound. Zeomic may be incorporated into the finished coating at up to 5.0% by weight, or at least 0.5% of the coating. Types of coatings include waterborne coatings/adhesives, solvent borne coatings and two part reactive coatings consisting of a resin and curing agent. Upgrade Applications are for onsite application at Commercial, Industrial or Institutional Establishments. Unless otherwise specified in the technical bulletin, the coating is applied to the entire article. Contact Sinanen Company Ltd. or refer to Zeomic AJ Technical Bulletin No. 2 and No. 3 to determine the appropriate application technique and amount of Zeomic for individual products.

Food contact* and non-food contact articles (In all food contact cases, when the article itself is a FDA-approved polymer, or as a FDA-approved polymer coating on an article)²:

- food collection, conveyance and storage equipment (including conveyor belts, silos, tanks and processing equipment)
- appliances and food processing equipment (including slicers, formers, juicers, washers, canners, freezers, refrigerators, shelving, cookers, grinders, choppers, peelers, and countertops)
- beverage processing and ice machine equipment (including mixers, transfer equipment, pumps, bottlers, canners, fermenters and dispensers and other components)
- food and chemical transportation equipment including railcars, tankers, trailers and components thereof
- building materials and components (including walls, ceilings and floors consisting of concrete, gypsum board, and cellulose ceiling tile)

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Incorporate this product into coatings that are intended for application to the surface of articles. The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate. This product is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms. Refer to Zeomic® AJ Technical Bulletin No. 2 for complete application directions.

HVAC articles³:

Heating, ventilation and air conditioning systems and related materials including air handlers, drain pans, heat exchangers, distribution lines, flexible ductwork, diffusers, and insulation lined porous ductwork.

Incorporate this product into coatings that are intended for application to HVAC systems. The purpose of the coating is to seal the HVAC system from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate. This product is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms. Refer to Zeomic® AJ Technical Bulletin No. 3 for complete application directions.

² For these listed applications, refer to Zeomic® AJ Technical Bulletin No. 2 – Technical Bulletin for Zeomic® Type AJ Silver Zeolite A Polymeric Coating for Non-Residential, Non-HVAC Upgrade Applications.
³ For these listed HVAC Applications, refer to Zeomic® AJ Technical Bulletin No. 3 – Technical Bulletin for Zeomic® Type AJ Silver Zeolite A Polymeric Coating for Non-Residential, HVAC Upgrade Applications.

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Adhesives and Sealants

The additive may be incorporated into the finished product at up to 5.0% by weight, or at least 0.05% for paper or 0.3% for bulk plastics. Contact Sinanen Company Ltd. to determine the appropriate amount of Zeomic® Type AJ Silver Zeolite A for individual finished products.

Food contact* and non-food contact uses (in all food contact cases, when the article itself is a FDA-approved polymer incorporated into FDA-approved adhesives or sealants):

- plumbing adhesives
- pipe sealants and insulating materials
- grout and joint compound for; countertops, building materials and components, and food and beverage related equipment

Non-food contact uses only:

- adhesives used in the manufacture of wood and plastic composites
- adhesives for ceramic tile, wood, paper, cardboard, rubber and plastic
- glazing for windows
- grout
- sealants for pipes
- adhesives, sealants and insulating materials for; appliances, bathrooms, showers, kitchens and construction

Miscellaneous Applications

The additive may be incorporated into the finished product at up to 5.0% by weight. Contact Sinanen Company Ltd. to determine the appropriate amount of Zeomic® Type AJ Silver Zeolite A for individual finished products.

Non-food contact uses only:

- toilets
- sinks
- tile
- flooring
- stucco
- plaster
- cat litter
- drainage and sewerage pipe
- interior paints and coatings

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PRECAUTIONARY STATEMENTS

Hazards to Humans: Harmful if inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing dust. Avoid contact with skin, eyes or clothing. Wear goggles or face shield and rubber gloves when handling the dry powder. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.
If inhaled	<ul style="list-style-type: none"> • 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 swallowed	<ul style="list-style-type: none"> • Call 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

Storage and Disposal

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Do not store in areas accessible to children. Keep product dry and containers covered during storage; store below 130°F.

Container Disposal: Inner Plastic Bag: Completely empty plastic bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. **Outer Steel Can:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

Pesticide Disposal: Wastes from the use of this product may be disposed of on site or at an approved waste disposal facility.

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Zeomic® AJ Technical Bulletin No. 1

TECHNICAL BULLETIN FOR ZEOMIC TYPE AJ SILVER ZEOLITE POLYMERIC COATING FOR HEATING, VENTILATION AND AIR CONDITIONING APPLICATIONS

Read the product label first. Refer to the product label and MSDS for complete directions on safety precautions, storage and handling.

Zeomic® Type AJ Silver Zeolite (Zeomic) contains 2.5% by weight silver in a natural zeolite carrier. Zeomic is registered by the U.S. Environmental Protection Agency for use in plastics, fibers, coatings, films, laminates, adhesives and sealants. In coatings applied to Heating, Ventilation and Air Conditioning (HVAC) systems and components thereof, the antimicrobial additive is incorporated into a coating to preserve, keep odor-free and operational the components of the HVAC system. These applications apply only during the original manufacture of HVAC systems and components, and are not for use on existing or in place HVAC systems and components. This product is compatible with the substrates and products listed under "Approved Uses."

Incorporate this product into coatings that are intended for application to the surface of articles. The purpose of the coating is to preserve, keep odor-free and operational the components of the HVAC system. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate. This product is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

Product Description:

Zeomic® Type AJ Silver Zeolite (Zeomic) contains 2.5% by weight silver in a natural zeolite carrier.

Claims:

When incorporated into a coating, the Zeomic will inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate.

Important for HVAC Articles: Zeomic does not protect building occupants from disease-causing bacteria, viruses, mold or mildew or airborne allergens. Always clean and maintain the heating, ventilation and air conditioning system in accordance with the manufacturer's directions.

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Technical Data:

Active Ingredient: 2.5% Silver
Color: White
Physical State: Dry Powder
Flammability: Not Flammable

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Specific Gravity: 2.15 ± 0.1 g/cm³
pH: 7-9 (1g Zeomic/100 ml water)
Thermal Stability: 800 °C

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Approved Uses:

For use in polymeric coatings and adhesives, including aqueous, aqueous/solvent solutions, protectorant wax or silicone technology to treat –

- Heating, Ventilation and Air Conditioning systems and related materials (including insulation, air handlers, ducts, heat exchangers, drain pans and liners thereof, air filters, air purifiers, diffusers, humidifiers and parts and components thereof),
- Automobile air conditioning systems.

How to Use Zeomic:

Surface Preparation:

Metal Surfaces: Apply only to clean dry surfaces free of all dirt, grease or impurities. Abrade all surfaces to remove all surface rust and corrosion products, and wash the intended surface with the appropriate cleaner, rinse and allow to dry thoroughly. Use surface pretreatments or primer coatings as required.

Painted Surfaces: Apply only to clean dry surfaces free of all dirt, grease or impurities. Wire brush painted surfaces removing all flaking, loose or chalking material. Sand all glossy surfaces to roughen the entire area. Use surface pretreatments or primer coatings as required.

Mixing:

Incorporate Zeomic directly into formulations developed for the coating of heating, ventilation and air conditioning system applications. Maintain constant agitation of the coating during the application process.

Application:

Following the surface preparation steps, various coating technologies may be used to apply the Zeomic compound, including automated dip, flow, roll or electro-deposition coating and manual brush, roller or spray coating.

Automated Processes:

Circulate Zeomic and coating via a closed system maintaining agitation. Ensure excess coating applied via dip, flow or roll coating technologies is collected and returned to the system. Maintain constant solids concentration by the addition of fresh, properly mixed coating to make up for usage. Minimize evaporation of the coating by maintaining covers on storage vessels. Utilize appropriate drying conditions, including infrared or conventional ovens to properly cure coating incorporating the Zeomic compound. These processes must be conducted in accordance with federal, state and local air pollution laws and regulations.

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Apply coating to all surfaces at a rate to achieve a dry film thickness of approximately five (5) to twenty five (25) microns.

See handling instructions below for operator exposure requirements.

Manual Processes:

Zeomic may be incorporated into polymer adhesives and coatings and applied manually by brush, roller, spray or other coating technology. These products may be easily applied by high volume low-pressure (HVLP) spray equipment commonly used throughout the industry. These processes must be conducted within a downdraft spray booth permitted and operating in accordance with federal, state and local air pollution laws and regulations.

Apply coating to all surfaces at a rate to achieve a dry film thickness of approximately five (5) to twenty five (25) microns.

See handling instructions below for operator exposure requirements.

Contact Sinanen Zeomic Co., LTD to confirm optimum application technology and drying conditions, such as time and temperature, for each application before use in a commercial process.

Clean up:

Use fresh water or solvent to clean brushes and equipment before product dries.

Handling Instructions:

Wear goggles or face shield and rubber gloves when handling the dry powder.

Airborne Exposure Limits pursuant to OSHA 1910.1000 Table Z-3 for Mineral Dust:

<u>Permissible Exposure Limit (PEL)</u>	
Respirable fraction:	5 mg/m ³
Total dust:	15 mg/m ³

As with any fine powder, avoid generating dust.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is preferred to help control the emissions of the contaminant at the source, preventing its dispersion through the work area.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a half-face respirator with filter appropriate for 1-micron dust may be worn per appropriate guidelines.

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Storage and Disposal:

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Do not store in areas accessible to children. Keep containers covered during storage; store below 130°F.

Container Disposal: Inner Plastic Bag: Completely empty plastic bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. **Outer Steel Can:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

Pesticide Disposal: Wastes from the use of this product may be disposed of on site or at an approved waste disposal facility.

PRECAUTIONARY STATEMENTS

Hazards to Humans: Harmful if inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing dust. Avoid contact with skin, eyes or clothing. Wear goggles or face shield and rubber gloves when handling the dry powder. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

First Aid:

If on skin: Wash with plenty of soap and water.

If inhaled: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention.

If in eyes: Flush with plenty of water. Call a physician if irritation persists.

MSDS Information:

Refer to the Material Safety Data Sheet for this product for complete handling and safety information.

Transportation Information:

Zeomic is not regulated as a hazardous material under DOT.

Regulatory Information:

Zeomic is registered by the U.S. Environmental Protection Agency as EPA Reg. No. 71227-1.

For technical assistance or questions contact:

Sinanen Zeomic Co., LTD.
4-22, Kaigan 1-Chome, Minato-ku
Tokyo 105-8525, Japan

Questions? 011-81-3-5470-7125

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Important: Warranty and Disclaimer Information

Sinanen Zeomic Co., LTD warrants that each of its products will be manufactured in accordance with Sinanen's specifications in effect on the date of manufacture. **SINANEN MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If a product fails to meet this limited warranty purchaser's sole and exclusive remedy is replacement of the product or, at Sinanen's option, refund of the purchase price. **SINANEN'S ACCEPTANCE OF ANY ORDERS FOR THIS PRODUCT IS EXPRESSLY CONDITIONAL UPON PURCHASERS' ASSENT TO THE TERMS ON THE APPLICABLE INVOICE.**

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Zeomic® AJ Technical Bulletin No. 2

TECHNICAL BULLETIN FOR ZEOMIC TYPE AJ SILVER ZEOLITE POLYMERIC COATINGS FOR NON RESIDENTIAL NON-HVAC UPGRADE APPLICATIONS

Read the product label first. Refer to the main product label and MSDS for complete directions on safety precautions, storage and handling.

This technical bulletin describes the requirements for using polymeric coatings containing Zeomic® to upgrade articles onsite in commercial, industrial and institutional establishments. Upgrade Applications are defined as the incorporation of Zeomic into polymeric coatings that are applied to articles onsite (after the article has been manufactured and is in the place of use). Coatings may be used on articles that do not originally incorporate the antimicrobial compound. Upgrade Applications are for onsite application at Commercial, Industrial or Institutional Establishments only. The upgrade services are not for residential use or for treatment of articles, which are sold into the residential market. Coatings may be custom formulated in addition to the coatings specified herein - contact Sinanen Zeomic Co., Ltd for additional recommendations.

Incorporate this product into coatings that are intended for application to the surface of articles. The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate. This product is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

For applications involving direct or indirect food or human drinking water contact, Zeomic Type AJ must be used with an FDA approved polymer or coating. Non-food and non-drinking water contact applications can use either FDA or non-FDA approved coatings.

For all food and human drinking water contact uses listed, do not incorporate this product into any food contact polymer unless the subject food contact polymer and specific conditions of use are approved and listed in 21 CFR, Parts 174 through 186 (inclusive), or in the United States Food and Drug Administration's "Food Contact Substance Notification System."

Product Description:

Zeomic® Type AJ Silver Zeolite (Zeomic) contains 2.5% by weight silver in a natural zeolite carrier. For upgrade applications, Zeomic is added to a polymeric coating and applied to the article via spray, brush or roller technology using the formulations specified herein.

Claims:

Zeomic is an EPA registered antimicrobial agent that will effectively prevent the growth and spread of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion.

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When incorporated into an upgrade coating, the Zeomic will inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate.

Approved Uses:

For use in polymeric coatings to treat the following articles on site (see specific use directions below) –

FOOD AND NONFOOD CONTACT ARTICLES –

- Food collection, conveyance and storage equipment (including conveyor belts, silos, tanks and process vessels).
- Appliances and food processing equipment (including slicers, formers, juicers, washers, canners, freezers, refrigerators, shelving, cookers, grinders, choppers, peelers and countertops).
- Beverage processing and ice machine equipment (including mixers, transfer equipment, pumps, bottlers, canners, fermenters and dispensers and other components).
- Food and chemical transportation equipment (including railcars, tankers, trailers and components thereof).
- Building materials and components (including walls, ceilings, floors consisting of concrete, gypsum board, and cellulose ceiling tile).

Important for Food Contact Articles: Zeomic does not protect users or others against food-borne bacteria, viruses, germs or other disease organisms. Always clean the product thoroughly after each use.

Specific Use Directions:

Surface Preparation:

Unpainted solid and metal surfaces: Apply only to clean, dry surfaces free of all dirt, grease or impurities. Abrade all surfaces to remove surface rust and corrosion products, and wash the intended surface with the appropriate cleaner, rinse and allow to dry thoroughly. Use surface pretreatments or primer coatings as required.

Painted hard surfaces: Apply only to clean, dry surfaces free of all dirt, grease or impurities. Wire brush painted surfaces removing all flaking, loose or chalking material. Sand all glossy surfaces to roughen the entire area. Use surface pretreatments or primer coatings as required.

Soft surfaces: Lightly vacuum clean to remove all mold, dust and loose particles, be careful not to tear or loosen substrate.

Mixing:

Maintain constant agitation of the coating during the application process. Mix component parts according to the specific mixing

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instructions on the Product Information Bulletin (PIB specified below).

Wear goggles or face shield and rubber gloves when handling the dry powder.

Airborne Exposure Limits pursuant to OSHA 1910.1000 Table Z-3 for Mineral Dust:

Permissible Exposure Limit (PEL)

Respirable fraction: 5 mg/m³

Total dust: 15 mg/m³

As with any fine powder, avoid generating dust.

Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits when mixing the compound into the coating. Local exhaust ventilation is preferred to help control the emissions of the contaminant at the source, preventing its dispersion through the work area.

Personal Respirators (NIOSH Approved): Wear a half-face respirator with filter appropriate for 1-micron dust if OSHA limits may possibly be exceeded.

Application:

Spray, Brush or Roll

These products may be easily applied by brush, roll or spray equipment commonly used throughout the industry. Under normal circumstances a spray application can be completed in one coat, but for irregular surfaces, a second coat may be required. Insure that the finished surface is smooth and homogeneous.

The coating must be applied such that it creates a smooth, homogeneous and continuous surface.

Standard dry film thickness:

Epoxy coating thin film applications:	4 - 6 mils
Epoxy coating high build surfaces:	6 - 20 mils
Latex coating:	0.5 - 3 mils

Always ensure adequate ventilation. Use plastic sheeting to capture over spray. Segregate building occupants from the areas where coatings are applied and use an active means of ventilation to remove all coating vapors from the room.

Note: Do not use treated article or enter treated spaces until the coating is dry.

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Clean Up: Use fresh water or solvent to clean brushes and equipment before product dries.

Application of Coating containing Zeomic:

Use Site	Treated Area	Surface Type	Dosing Rate	Formulations/ Product Information Bulletin (PIB)
Conveyor belts	All exposed metal surfaces of the article.	Hard Non-porous	0.43 lbs. Zeomic/gallon	Spray Epoxy Coating (PIB Z-001)
Food and chemical collection, conveyance, transportation and storage equipment including silos, tanks, process vessels, rail cars, tankers, trailers	Interior surfaces.	Hard Non-porous	0.43 lbs. Zeomic/gallon	Spray Epoxy Coating (PIB Z-001)
Appliances, food processing, beverage processing and ice machine equipment including slicers, formers, juicers, washers, canners, shelving, cookers, grinders, choppers, peelers, countertops, mixers, transfer equipment, pumps, bottlers, canners, fermenters, dispensers	All exterior surfaces.	Hard Non-porous	0.43 lbs. Zeomic/gallon	Spray Epoxy Coating (PIB Z-001)
Freezers, refrigerators	All interior/exterior surfaces.	Hard Non-porous	0.43 lbs. Zeomic/gallon	Spray Epoxy Coating (PIB Z-001)
Building materials and components including walls, ceilings, floors (concrete)	Exposed Surfaces	Hard Porous	0.43 lbs. Zeomic/gallon	Spray Epoxy Coating (PIB Z-001)
Gypsum board, cellulose ceiling tile	Exposed Surfaces	Soft Porous	0.43 lbs. Zeomic/gallon	Spray Latex Coating (PIB Z-002)

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SAFETY
READ THIS NOTICE

For tank lining work or enclosed spaces, it is recommended that the operator provide himself with safety equipment as described by the Material Safety Data Sheet for the coating and for Zeomic.

Some coatings may contain flammable solvents which must be kept away from heat, sparks and open flame and require the use of necessary safety equipment, such as air masks, explosion-proof electrical equipment, non sparking tools and ladders, etc.

Segregate building occupants from the areas where coatings are applied and the use of an active means of ventilation to remove all coating vapors from the area.

CAUTION - Read and follow all caution statements on the Product Information Bulletin (PIB), Material Safety Data Sheets and the container, in addition to the Precautionary Statements For Zeomic.

PRECAUTIONARY STATEMENTS FOR ZEOMIC

Hazards to Humans: Harmful if inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing dust. Avoid contact with skin, eyes or clothing. Wear goggles or face shield and rubber gloves when handling the dry powder. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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.
If inhaled	<ul style="list-style-type: none"> • 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 swallowed	<ul style="list-style-type: none"> • Call 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

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Storage and Disposal:

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Do not store in areas accessible to children. Keep containers covered during storage; store below 130°F.

Container Disposal: Inner Plastic Bag: Completely empty plastic bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. Outer Steel Can: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

Pesticide Disposal: Wastes from the use of this product may be disposed of on site or at an approved waste disposal facility.

MSDS Information:

Refer to the Material Safety Data Sheet and Product Information Bulletin for this product for complete handling and safety information.

Transportation Information:

Zeomic is not regulated as a hazardous material under DOT.

Regulatory Information:

Zeomic is registered by the U.S. Environmental Protection Agency as EPA Reg. No. 71227-1.

For technical assistance or questions contact:

Sinanen Zeomic Co., LTD.
4-22, Kaigan 1-Chome, Minato-ku
Tokyo 105-8525, Japan

Questions? 011-81-3-5470-7125

Important: Warranty and Disclaimer Information

Sinanen Zeomic Co., LTD warrants that each of its products will be manufactured in accordance with Sinanen's specifications in effect on the date of manufacture. **SINANEN MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If a product fails to meet this limited warranty purchaser's sole and exclusive remedy is replacement of the product or, at Sinanen's option, refund of the purchase price. **SINANEN'S ACCEPTANCE OF ANY ORDERS FOR THIS PRODUCT IS EXPRESSLY CONDITIONAL UPON PURCHASERS' ASSENT TO THE TERMS ON THE APPLICABLE INVOICE.**

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Zeomic® AJ Technical Bulletin No. 3

TECHNICAL BULLETIN FOR ZEOMIC TYPE AJ SILVER ZEOLITE POLYMERIC COATINGS FOR NON RESIDENTIAL HVAC UPGRADE APPLICATIONS

Read the product label first. Refer to the main product label and MSDS for complete directions on safety precautions, storage and handling.

This technical bulletin describes the requirements for using polymeric coatings containing Zeomic® to upgrade HVAC systems in commercial, industrial and institutional establishments. Upgrade Applications are defined as the incorporation of Zeomic into polymeric coatings that are applied to articles onsite (after the article has been manufactured and is in the place of use). Coatings may be used on articles that do not originally incorporate the antimicrobial compound. Upgrade Applications are for onsite application at Commercial, Industrial or Institutional Establishments only. The upgrade services are not for residential use or for treatment of articles, which are sold into the residential market. Coatings may be custom formulated in addition to the coatings specified herein - contact Sinanen Zeomic Co., Ltd for additional recommendations.

Incorporate this product into coatings that are intended for application to HVAC systems. The purpose of the coating is to seal the HVAC system from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate. This product is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

Product Description:

Zeomic® Type AJ Silver Zeolite (Zeomic) contains 2.5% by weight silver in a natural zeolite carrier.

Claims:

When incorporated into an upgrade coating, the Zeomic will inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. The product protects the applied coating itself from microorganism attack, not the underlying substrate.

Approved Uses:

For use in polymeric coatings to treat the following articles on site (see specific use directions below) -

HVAC ARTICLES -

- Heating, ventilation and air conditioning systems and related materials including air handlers, drain pans, heat exchangers, distribution lines, flexible duct work, diffusers and insulation lined porous duct work.

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Important for HVAC Articles: Zeomic does not protect building occupants from disease-causing bacteria, viruses, mold or mildew or airborne allergens. Always clean and maintain the heating, ventilation and air conditioning system in accordance with the manufacturer's directions.

Specific Use Directions:

1.0 General Information

A building's heating, ventilation, and air conditioning (HVAC) system provides conditioned air to occupied spaces within the facility. Typically, air from within an occupied space, along with fresh air drawn from outdoors, is drawn in to an HVAC air handling unit, where it is conditioned by passing over a heat exchanging coil, channeled through the air handler and then distributed to the facility through ductwork. Before the air gets to the air handler, it usually passes through a filter designed to protect the mechanical equipment from becoming contaminated by large particles of dust and debris. Many filters commonly used today will not prevent the introduction of small particles of dust and debris from the air stream into the system. Over time, these deposits may form measurable accumulations on the coils and in the distribution lines. In the course of normal building operations, the humidity level within the HVAC system can vary greatly. High humidity can combine with dust and debris in the system and result in the growth of odor causing bacteria, mold and mildew. The buildup of growth on the coils and fins will lead to reduced operating efficiencies.

For a building's HVAC system to be treated with Zeomic, the system must first be inspected and determined to be free of contamination and particulates. Some well-maintained or newer systems may be ready for application of Zeomic without significant preparation. Other systems may require cleaning to eliminate contamination and particulates. Most systems will require filters to be changed or cleaned according to the manufacturer's instructions. Procedures and methods to prepare the HVAC system for treatment and to attain acceptable levels of cleanliness should conform to requirements of applicable building, fire, and industry recognized codes including but not limited to National Fire Protection Association (NFPA), American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), and Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) standards. Since each project is unique, engineers and project managers will select from generally available equipment and methods to best meet the requirements of the specific project.

2.0 HVAC Inspections

(A) HVAC Evaluation: prior to the commencement of any cleaning or coating work, the HVAC system shall have a visual inspection to determine appropriate cleaning requirements, methods, tools, and equipment to complete this project.

(B) Follow all safety rules, including confined space entry requirements and lock out/tag out procedures for electrical systems for the physical inspection.

(C) Damaged system components found during the inspection shall be documented and brought to the attention of the owner, for repair or replacement as required

2.1 HVAC Repairs

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(A) Industry organizations have established guidelines and standards for the design and installation of HVAC and ductwork systems. If the inspection documents damaged or inappropriately designed system components, the system should be repaired prior to the treatment of the system with Zeomic.

(B) Repairs may include correcting improperly sized ductwork and distribution lines, repair of physical damage and badly corroded parts or replacement of loose, damaged or missing insulation.

2.2 HVAC Cleaning

(A) Containment: debris removed during cleaning shall be collected and precautions must be taken to ensure that debris is not otherwise dispersed outside the HVAC system during the cleaning process.

(B) Particulate Collection: mechanical cleaning operations shall be undertaken with appropriate Particulate Collection Equipment in place, including adequate filtration to contain debris removed from the HVAC system. Where the Particulate Collection Equipment is exhausting inside the building, HEPA filtration with 99.9% collection efficiency for 0.3 micron (or larger) particles shall be used. When the Particulate Collection Equipment is exhausting outside the building, precautions shall be taken to locate the equipment down wind and away from all air intakes and other points of entry into the building.

(C) Controlling Odors: all reasonable measures shall be taken to control offensive odors and vapors during the cleaning process.

(D) Air-Volume Control Devices: dampers and any air-directional mechanical devices inside the HVAC air handler must have their position marked prior to cleaning and, upon completion, must be restored to their marked position.

(E) Component Cleaning: cleaning methods shall be employed such that all HVAC system components must be visibly clean. Upon completion, all components must be returned to those settings recorded just prior to cleaning operations.

Air Handler Coils: Clean and/or degrease the coils as necessary prior to treatment. Use pressurized water or compressed air to assist in removing foreign material from the metal surfaces. Wash the surface with the appropriate cleaner, rinse and allow to dry thoroughly.

The air handler is to be sealed off from the building ductwork prior to any solvent cleaning of the coils. This is accomplished by installing a physical barrier between the air handler and the distribution lines. Plastic film (6 mil typical) may be applied over the separation and attached with duct tape. An isolated air handler is an enclosed area.

READ THE SAFETY NOTICE AT THE BACK OF THIS TECHNICAL BULLETIN BEFORE WORKING IN ENCLOSED AREAS

Drain Pans: Clean the interior of the drain pan to remove any foreign material built up on the metal surface. Prepare metal surfaces to remove rust and corrosion products by brushing or abrasion and wash the surface with the appropriate cleaner, rinse and allow to dry thoroughly.

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Air Handler Housing: The surfaces of the air handler housing must be cleaned of all dirt and grease prior to treatment. Prepare metal surfaces to remove rust, corrosion products and all flaking, loose or chalking material by brushing or abrading the surface. Wash the surface with the appropriate cleaner, rinse and allow to dry thoroughly. Use surface pretreatments or primer coatings as required.

Distribution Lines, flexible duct work, diffusers, and insulation lined porous duct work: Equipment necessary to prepare contaminated distribution lines includes truck mounted and portable vacuum collection devices that apply a negative pressure on the system through the use of a specialized powerful vacuum. While the vacuum draws air through the system, devices such as brushes, air whips, and "skipper nozzles", which blow air into the system from a compressed air source, are inserted into the ducts to dislodge any debris that might be present on interior surfaces. The dislodged debris travels down the ducts to the vacuum, which removes it from the system.

Service openings shall be utilized for physical and mechanical entry at various points in the distribution lines for proper inspection and cleaning.

1. The existing service openings already installed shall be utilized in the HVAC system where possible.
2. Other openings shall be created where needed in accessible ductwork and they must be created so they can be sealed in accordance with industry codes and standards.
3. Closures must not significantly hinder, restrict, or alter the air-flow within the system.
4. Closures must be properly insulated to prevent heat loss/gain or condensation on surfaces within the system.
5. Openings must not compromise the structural integrity of the system.
6. Construction techniques used in the creation of openings should conform to requirements of applicable building and fire codes, and applicable NFPA, ASHRAE, SMACNA and NADCA Standards.
7. Cutting service openings into flexible duct is not permitted. Flexible duct shall be disconnected at the ends as needed for proper cleaning and inspection.
8. All service openings capable of being re-opened for future access shall be clearly marked and shall have their location documented.
9. Ceiling sections (tiles) may be removed to gain access to HVAC systems during the cleaning.

(F) Cleanliness Inspection:

1. General: verification of HVAC system cleanliness will be determined after any required mechanical cleaning and before the application of a coating containing Zeomic to the HVAC system.
2. Visual Inspection: the HVAC system shall be inspected to insure that no visible contaminants are present.
3. If no contaminants are evident through visual inspection, the units shall be considered clean.
4. If contaminants are evident through visual inspection, those areas where contaminants are visible shall be re-cleaned and subjected to re-inspection for cleanliness.

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2.3 Application of Coating containing Zeomic

(A) Treated Area: condensate drain pans, coils with heat exchanger fins, housings, and all steel and rigid ductwork, flexible duct work, diffusers and insulation lined porous duct work.

(B) Surface Preparation: prepare according to the cleaning specifications described in sections 2.2.

(C) Mixing: Maintain constant agitation of the coating as necessary during the application process so that no settling occurs. Mix component parts according to the specific mixing instructions on the Product Information Bulletin (PIB specified below).

1. Wear goggles or face shield and rubber gloves when handling the dry powder.
2. Airborne Exposure Limits pursuant to OSHA 1910.1000 Table Z-3 for Mineral Dust:

Permissible Exposure Limit (PEL)

Respirable fraction: 5 mg/m³

Total dust: 15 mg/m³

3. As with any fine powder, avoid generating dust.
4. Ventilation System: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits when mixing the compound into the coating. Local exhaust ventilation is preferred to help control the emissions of the contaminant at the source, preventing its dispersion through the work area.
5. Personal Respirators (NIOSH Approved): Wear a half-face respirator with filter appropriate for 1-micron dust if OSHA limits may possibly be exceeded.

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Application of Coating containing Zeomic:

Use Site	Treated Area	Surface Type	Dosing Rate	Formulation/Product Information Bulletin (PIB)
Condensate Drain Pans	Interior Surface	Hard non-porous	0.43 lbs. Zeomic/gallon	Acrylic HVAC Coating (PIB Z-003)
Coils/Fins	The Surface of the Fins.	Hard non-porous	0.36 lbs. Zeomic/gallon	HVAC Coil Coating (PIB Z-004)
Air Handler Housing	All Exposed Surfaces	Hard non-porous	0.43 lbs. Zeomic/gallon	Acrylic HVAC Coating (PIB Z-003)
Duct Work – Smooth Surface (including flexible ductwork and diffusers)	Interior Surface	Hard non-porous	0.17 lbs. Zeomic/gallon	Water Based Duct Work Coating (PIB Z-005)
Duct Work – Rough or Irregular Surface	Interior Surface	Hard non-porous	0.44 lbs. Zeomic/gallon	HVAC Ductwork Encapsulating Coating (PIB Z-006)
Duct Work – Insulation Lined Porous	Interior Surface	Hard porous	0.17 lbs. Zeomic/gallon	Water Based Duct Work Coating (PIB Z-005)

(D) Application: the Zeomic treated coating should be applied through the use of compressor driven, extendable spray wands or equivalent methods.

1. The coating must be applied such that it creates a smooth, homogeneous and continuous surface.
2. Standard dry film thickness:

Coils/Fins	0.1 – 3.0 mils
Drain Pans	4 - 20 mils
Housing	4 - 8 mils
Ductwork	5-10 mils
Flexible Ductwork	5-10 mils
Diffusers	5-10 mils
Insulation lined porous	5-10 mils
3. For duct work application will occur through existing service openings or through those created during the cleaning or coating phase of the project as needed, based on the reach of the application tool.
 - i. Service openings into the ductwork should be at intervals of approximately 10 to 40 feet, depending upon configuration and routing of ductwork, to allow reasonable access to interior surfaces. Service openings will typically range in size from 8"x10" to 2'x3'.
 - ii. Vertical and horizontal ducts will be subject to the same procedures.

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iii. See section 2.3.F, G, and H for additional details.

- (E) Typical Application Equipment: BINKS® SprayVantage™ Model 98-1261 HVLP portable spraying system or equivalent system.
 1. 2 hp portable compressor
 2. h 1 HVLP spray gun

- (F) Typical Application Equipment: BINKS® SprayVantage™ Model 98-1261 HVLP portable spraying system or equivalent system.
 1. 2 hp portable compressor
 2. 1 HVLP spray gun
 3. BINKS 8 gal pressure tank
 4. Air hose assembly
 5. Fluid hose assembly
 6. Portable cart
 7. Gun extension
 8. 90° angle head

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- (G) Clean up: Use fresh water or solvent to clean equipment before product dries.

2.6 Frequency of Application

Normally, infrequent application (6 months to every two years) will provide effective control. Some critical applications such as 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.

Note: Do not use treated article or enter treated spaces until the coating is dry.

<p>SAFETY READ THIS NOTICE</p> <p>For tank lining work or enclosed spaces, it is recommended that the operator provide himself with safety equipment as described by the Material Safety Data Sheet for the coating and for Zeomic.</p> <p>Some coatings may contain flammable solvents which must be kept away from heat, sparks and open flame and require the use of necessary safety equipment, such as air masks, explosion-proof electrical equipment, non sparking tools and ladders, etc.</p> <p>Segregate building occupants from the areas where coatings are applied and the use of an active means of ventilation to remove all coating vapors from the area.</p> <p>CAUTION - Read and follow all caution statements on the Product Information Bulletin (PIB), Material Safety Data Sheets and the container, in addition to the Precautionary Statements For Zeomic.</p>
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PRECAUTIONARY STATEMENTS FOR ZEOMIC

Hazards to Humans: Harmful if inhaled or absorbed through skin. Causes moderate eye irritation. Avoid breathing dust. Avoid contact with skin, eyes or clothing. Wear goggles or face shield and rubber gloves when handling the dry powder. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water of 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.
If in eyes	<ul style="list-style-type: none"> • 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.
If inhaled	<ul style="list-style-type: none"> • 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 swallowed	<ul style="list-style-type: none"> • Call 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.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	

Storage and Disposal:

Do not contaminate water, food or feed by storage and disposal.

Pesticide Storage: Do not store in areas accessible to children. Keep containers covered during storage; store below 130°F.

Container Disposal: Inner Plastic Bag: Completely empty plastic bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. Outer Steel Can: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by State and local authorities.

Pesticide Disposal: Wastes from the use of this product may be disposed of on site or at an approved waste disposal facility.

MSDS Information:

Refer to the Material Safety Data Sheet and Product Information Bulletin for this product for complete handling and safety information.

Transportation Information:

Zeomic is not regulated as a hazardous material under DOT.

Regulatory Information:

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in EPA Letter Dated:
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Zeomic is registered by the U.S. Environmental Protection Agency as EPA Reg. No. 71227-1.

For technical assistance or questions contact:

Sinanen Zeomic Co., LTD.
4-22, Kaigan 1-Chome, Minato-ku
Tokyo 105-8525, Japan

Questions? 011-81-3-5470-7125

Important: Warranty and Disclaimer Information

Sinanen Zeomic Co., LTD warrants that each of its products will be manufactured in accordance with Sinanen's specifications in effect on the date of manufacture. **SINANEN MAKES NO OTHER WARRANTIES AND EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.** If a product fails to meet this limited warranty purchaser's sole and exclusive remedy is replacement of the product or, at Sinanen's option, refund of the purchase price. **SINANEN'S ACCEPTANCE OF ANY ORDERS FOR THIS PRODUCT IS EXPRESSLY CONDITIONAL UPON PURCHASERS' ASSENT TO THE TERMS ON THE APPLICABLE INVOICE.**

ACCEPTED
with COMMENTS
in EPA Letter Dated:

MAY 28 2003

Under the Federal Insecticide,
Fungicide, and Rodenticide Act as
amended, for the pesticide,
registered under EPA Reg. No.

71227-1



Spray Epoxy Coating with **Zeomic** Antimicrobial

DESCRIPTION

Sinanen's Spray Epoxy Coating is a three-part kit consisting of an Epoxy Resin, Curing Agent and Zeomic. Mixing is required. The coating is a high-solids, semi-gloss, high build, self-priming epoxy for hard, non-porous surfaces. The cured film provides a tough, cleanable and aesthetically pleasing surface.

USES

Recommended uses for the Spray Epoxy Coating with Zeomic include:

- Conveyor belts.
- Food and chemical collection, conveyance, transportation and storage equipment including silos, tanks, process vessels, rail cars, tankers, trailers.
- Appliances, food processing, beverage processing and ice machine equipment and liners thereof including slicers, formers, juicers, washers, canners, shelving, cookers, grinders, choppers, peelers, countertops, mixers, transfer equipment, pumps, bottlers, canners, fermenters dispensers.
- Freezers, refrigerators.
- Building materials and components including walls, ceilings, floors (concrete).

Spray Epoxy Coating with Zeomic can be applied to aluminum, steel, galvanized steel, masonry, concrete, zinc rich primer, and wood (with primer).

FEATURES

- Compatible over tightly adhered rust and old coatings in mild environments
- Very good abrasion resistance
- Meets FDA 21 CFR 175.300 criteria for direct food contact
- Acceptable for incidental food contact surfaces in federally inspected meat and poultry facilities.
- The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. Zeomic® protects the applied coating itself from microorganism attack, not the underlying substrate. This coating is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

APPLICATION

Spray Epoxy Coating with Zeomic may be applied by High Volume Low Pressure (HVLP) spray equipment, airless sprayer, brush or roller. See Zeomic AJ Technical Bulletin No. 2 for specific application instructions

MIXING

Use the pre-measured containers or for smaller projects mix the Epoxy Resin (Part A) with the Curing Agent (Part B) at a 2:1 ratio (Part A/Part B). Zeomic is added to the combined A & B mixture at a rate of 0.43 pounds per gallon of coating. Thinning of up to 6% is acceptable for spraying using a mixed thinner with 75-80% toluene, balance methyl ethyl ketone (MEK). Use the mixed coating within one hour of mixing.

CLEAN-UP

Clean up with toluene/MEK thinner described above for thinning.

CURING SCHEDULE

2.5 hours to touch
6.5 hours to handle
12 hours to final cure

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COVERAGE

200 sq. ft./U.S. gal

Under the Federal Insecticide, Fungicide, and Rodenticide Act as amended, for the pesticide registered under EPA Reg. No. 71227-1

DRY FILM THICKNESS

Epoxy coating thin film applications: 4-6 mils (100-150 microns)
Epoxy coating high build surfaces: 6-20 mils (150 - 600 microns)

WET WEIGHT

9.06 lbs./U.S. gal

STORAGE CONDITIONS

Store at ambient conditions above freezing.

SAFETY

Use a NIOSH approved half-face respirator with filter appropriate for 1-micron dust if OSHA limits may possibly be exceeded, safety glasses, and latex gloves. This product contains flammable solvents. Keep away from sparks and open flames.

VOC/SOLIDS CONTENT

Weight Solids: 75%
VOC Content: 0.2 g/ml

DRY TEMPERATURE RESISTANCE

Continuous: 200F (93C)
Non-continuous: 250F (121C)

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SINANEN ZEOMIC CO.,LTD.

32/36

Spray Latex Coating with **Zeomic** Antimicrobial

DESCRIPTION

Sinanen's Spray Latex Coating is a two-part kit consisting of latex coating and Zeomic. Mixing is required. The mixed coating is for hard and soft porous surfaces.

USES

Recommended uses for Spray Latex Coating with Zeomic include:

- Gypsum board
- Cellulose ceiling tiles

FEATURES

- Water based
- Mild alkali/acid resistant
- Acceptable for incidental food contact surfaces in federally inspected meat and poultry facilities.
- The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. Zeomic® protects the applied coating itself from microorganism attack, not the underlying substrate. This coating is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

APPLICATION

Spray Latex Coating with Zeomic may be applied by High Volume Low Pressure (HVLP) spray equipment, airless spray, brush or roller. See Zeomic Technical Bulletin No. 2 for specific application instructions.

MIXING

Use the premeasured containers or for smaller projects add Zeomic to the Water Based Spray Latex Coating at a rate of 0.43 pounds per gallon of coating. Reduction with water up to 12% by volume recommended only for spraying. Use the coating within 12 hours of mixing; remix immediately before use.

CLEAN-UP

Clean up with water.

CURING SCHEDULE

@ 4 mils wet, 50% RH and 77F:

To touch: 30 min

To handle: 60 min

To recoat: 4 hours

COVERAGE

260 sq. ft./U.S. gal @ 3 mils

DRY FILM THICKNESS

0.5 - 3 mils (12.5 - 75 microns)

COLOR

White

WET WEIGHT

8.98 lbs./U.S. gal

STORAGE CONDITIONS

Store at ambient conditions above freezing.

SAFETY

Use a NIOSH approved half-face respirator with filter appropriate for 1-micron dust if OSHA limits may possibly be exceeded, safety glasses, and latex gloves.

VOC/SOLIDS CONTENT

Weight Solids: 48%

VOC Content: 0.125 g/ml

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SINANEN ZEOMIC CO.,LTD.

33/36

Acrylic HVAC Coating with **Zeomic** Antimicrobial

DESCRIPTION

Sinanen's Acrylic HVAC Coating is a two-part kit consisting of acrylic coating and Zeomic. Mixing is required. The hydrophilic, water-based coating is formulated for hard, non-porous surfaces.

USES

Acrylic HVAC Coating with Zeomic is used as a coating for airside surfaces of HVAC condensate drain pans and air handler housing. This product is designed for application after installation of an HVAC system. Acrylic HVAC Coating with Zeomic can be applied to galvanized steel, aluminum and previously coated surfaces (with primer).

FEATURES

- This water based coating presents no fire hazard during application.
- The coating system is air cure, requiring no heating.
- The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. Zeomic® protects the applied coating itself from microorganism attack, not the underlying substrate. This coating is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

APPLICATION

Acrylic HVAC Coating with Zeomic may be applied by High Volume Low Pressure (HVLV) spray equipment, airless sprayer, brush or roller. See Zeomic AJ Technical Bulletin No. 3 for specific application instructions.

MIXING

Use the premeasured containers or for smaller projects add Zeomic at a rate of 0.43 pounds per gallon of Acrylic HVAC coating. The acrylic coating consists of acrylic polymer in a 10% alcohol / 60% water based dispersion. Use the mixed coating within four hours of mixing.

CLEAN-UP

Clean up with water.

CURING SCHEDULE

24 to 36 hours for hard cure

COVERAGE

150 sq. ft./U.S. gal at 4 mil (102 microns) dry thickness.

DRY FILM THICKNESS

May be applied at 4 - 8 mils thick for air handler housings and 4 - 20 mils thick for drain pans.

COLOR

Acrylic HVAC Coating with Zeomic is a milky white liquid and dries to a translucent white.

WET WEIGHT

8.6 lbs./U.S. gal

STORAGE CONDITIONS

Store at ambient conditions above freezing.

SAFETY

Use a NIOSH approved half-face respirator with filter appropriate for 1-micron dust if OSHA limits may possibly be exceeded, safety glasses, and latex gloves.

VOC/SOLIDS CONTENT

Weight Solids: 35%
VOC: 10.6% (calculated)

HEADSPACE

Acrylic HVAC Coating with Zeomic passes the test protocol for Headspace volatiles.

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Sinanen Zeomic Co., LTD.
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HVAC Coil Coating with **Zeomic** Antimicrobial

DESCRIPTION

Sinanen's HVAC Coil Coating is a three-part kit consisting of a coating, catalyst and Zeomic. Mixing is required. The coating is formulated for hard non-porous surfaces.

USES

HVAC Coil Coating with Zeomic is recommended for HVAC coils that are 4 rows thick or with a density of 10 fins per inch or less. The coating is designed to chemically bond with the aluminum, steel, and copper commonly associated with air conditioning coil applications. This product is designed for application after installation of an HVAC system.

FEATURES

- The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. Zeomic® protects the applied coating itself from microorganism attack, not the underlying substrate. This coating is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

APPLICATION

HVAC Coil Coating with Zeomic may be applied by High Volume Low Pressure (HVLP) spray equipment. See Zeomic AJ Technical Bulletin No. 3 for specific application instructions.

MIXING

Use the premeasured containers, or for smaller projects mix Part A (silane/alcohol solution) with Part B (dilute acetic acid/isopropyl alcohol solution) at a 1:2 ratio. Add Zeomic to the combined A&B mixture at a rate of 0.36 pounds per gallon of mixture. This mixture should be allowed to sit for four hours out of direct sunlight. This allows the coating to catalyze. Once catalyzed the mixture should be shaken once more for 1-2 minutes and then applied to the part. Use the coating within 6-8 hours after it has catalyzed. Be sure to always handshake or provide tank agitation to the coating for 1-2 minutes directly before application.

CLEAN-UP

Isopropyl alcohol should be used to clean up any over-spray or spills.

CURING SCHEDULE

HVAC Coil Coating with Zeomic will be tacky to the touch in 2-4 hours after application. Treated surfaces can be put into use after 8-12 hours. The coating is completely cured after 10-14 days. To accelerate the cure cycle, heated air may be circulated over the part.

COVERAGE

1500 sq. ft./U.S. gal (37 sq. m/L)

DRY FILM THICKNESS

May be applied at 0.1 – 3.0 mils.

COLOR

Clear with green tint and gloss sheen. The green tint is a UV indicator that will glow once exposed to a black light. This will help confirm the presence of HVAC Coil Coating with Zeomic.

WET WEIGHT

7.5 lbs./U.S. gallon

STORAGE CONDITIONS

Store at ambient conditions above freezing.

SAFETY

Use a NIOSH approved half-face respirator with filter appropriate for 1-micron dust if OSHA limits may possibly be exceeded, safety glasses, and latex gloves.

FLASH POINT

106.8°F

VOC/SOLIDS CONTENT

(ASTM D2369; D3960)

Weight Solids: 16.8%

VOC Content: 0.7 g/ml

HEADSPACE

HVAC Coil Coating with Zeomic passes the test protocol for Headspace volatiles.

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SINANEN ZEOMIC CO., LTD.

35/36

Water Based Ductwork Coating with **Zeomic** Antimicrobial

DESCRIPTION

Sinanen's Water Based Ductwork Coating is a two part kit consisting of a water based emulsion and Zeomic. Mixing is required. The coating is fast tacking and formulated for hard, non-porous surfaces.

USES

Water Based Ductwork Coating with Zeomic is used as a coating for smooth airside surfaces of galvanized steel ductwork and HVAC system components (including flexible ductwork, diffusers and insulation lined porous ductwork). This product is designed for application after installation of an HVAC system.

FEATURES

- This water based coating presents no fire hazard during application.
- This water based coating exhibits fast tack.
- The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. Zeomic® protects the applied coating itself from microorganism attack, not the underlying substrate. This coating is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

APPLICATION

Water Based Ductwork Coating with Zeomic may be applied by High Volume Low Pressure (HVLP) spray equipment. See Zeomic AJ Technical Bulletin No. 3 for specific application instructions.

MIXING

Use the premeasured containers or for smaller projects add 0.17 pounds Zeomic per gallon of coating. The Water Based Ductwork Coating consists of 44% synthetic polymer emulsion and 56% water. No thinning or other solution preparation is required or should be done before application. Use the mixed coating within four hours of mixing.

CLEAN-UP

Clean up with water.

CURING SCHEDULE

0 to 10 minutes for tack
36 to 72 hours for hard cure

COVERAGE

400 sq. ft./U.S. gal
(9.7 sq. m/l)

DRY FILM THICKNESS

May be applied at 5 - 10 mils.

COLOR

Water Based Ductwork Coating with Zeomic contains a yellow pigment to assist in gauging coverage and coating thickness while spraying.

WET WEIGHT

9.1 lbs./U.S. gal

STORAGE CONDITIONS

Store at ambient conditions above freezing.

SAFETY

A NIOSH approved respirator, safety glasses, and latex gloves should be worn.

VOC/SOLIDS CONTENT

(ASTM D2369; D3960)
Weight Solids: 40%
VOC Content: 0.4 g/ml

HEADSPACE

Water Based Ductwork Coating with Zeomic passes the test protocol for Headspace volatiles.

CORROSION

(ASTM D1654)
100% Relative Humidity: No Creep, No Removal

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SINANEN ZEOMIC CO.,LTD.

36/36

HVAC Ductwork Encapsulating Coating with **Zeomic** Antimicrobial

DESCRIPTION

Sinanen's HVAC Ductwork Encapsulating Coating is a two-part kit consisting of encapsulating coating and Zeomic. Mixing is required. The water-based coating is formulated for hard, non-porous surfaces.

USES

HVAC Ductwork Encapsulating Coating with Zeomic is used as a coating for rough or irregular airside surfaces of galvanized steel ductwork, HVAC system components and other building materials. This product is designed for application after installation of an HVAC system. It can also be used to encapsulate smoke particles to prevent distribution of particulate material after smoke damage and growth of microorganisms on the surface of the coating which can be promoted by humid conditions after water or fire-fighting damage.

FEATURES

- This water based coating presents no fire hazard during application.
- The purpose of the coating is to seal the article from moisture and corrosion. The purpose of Zeomic® in the coating is to inhibit the growth of mold, mildew, fungus and bacteria that cause odor, discoloration, staining, deterioration or corrosion on the surface of the coating film. Zeomic® protects the applied coating itself from microorganism attack, not the underlying substrate. This coating is not intended for remediation, prevention or control of existing or anticipated public health related microorganisms.

APPLICATION

HVAC Ductwork Encapsulating Coating with Zeomic may be applied by High Volume Low Pressure (HVLP) spray equipment. See Zeomic Technical Bulletin No. 3 for specific application instructions.

MIXING

Use the premeasured containers of for smaller projects add Zeomic at a rate of 0.44 pounds per gallon of HVAC Ductwork Encapsulating Coating. HVAC Ductwork Encapsulating Coating consists of a water based synthetic polymer emulsion. Use the coating within four hours of mixing.

CLEAN-UP

Clean up with detergent and water.

CURING SCHEDULE

3 to 5 hours to dry, depending on application thickness and humidity.

COVERAGE

500 sq. ft./U.S. gal when applied with an airless paint sprayer

DRY FILM THICKNESS

May be applied at 5 – 10 mils.

COLOR

HVAC Ductwork Encapsulating Coating with Zeomic is a milky white odorless liquid.

WET WEIGHT

8.8 lbs./U.S. gal

STORAGE CONDITIONS

Store at ambient conditions above freezing.

SAFETY

A NIOSH approved respirator, safety glasses, and latex gloves should be worn.

VOC/SOLIDS CONTENT

(ASTM D2369; D3960)

Weight Solids: 20%

VOC: TBD

HEADSPACE

HVAC Ductwork Encapsulating Coating with Zeomic passes the test protocol for Headspace volatiles.

CORROSION

(ASTM D1654)

100% Relative Humidity: No Creep, No Removal

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