



# **Indoor Air Quality & HVAC Systems**

A Presentation by Fiberlock Technologies

For: FL AIHA Fall Conference

October 14-15, 2021

Bilmar Beach Resort- Treasure Island, FL

# Objectives

- **About Fiberlock**
- **Problems in Internally Insulated HVAC**
- **What Resurfacing Materials Do Not Do**
- **Solutions Resurfacing Materials Can Provide**
- **Ensuring the Right Solution for the Problem**



# Acronyms Used In Presentation

**HVAC= Heating, Ventilation & Air Conditioning**

**NADCA= National Association of Duct Cleaners of America**

**ASHRAE= American Society of Heating, Refrigeration &  
Air Conditioning Engineers**

**IICRC= Institute of Inspection, Cleaning and Restoration  
Certification**

**RIA= Restoration Industry Association**

**ASTM= American Society for Testing and Materials**

**NFPA= National Fire Protection Association**

# About Fiberlock

The leading manufacturer of environmental abatement and restoration coatings, cleaners and disinfectants, as well as mobile containment systems.

- Over 30 years of environmental industry leadership
- Active industry participation at all levels
- Top tier sales and support staff
- A broad and extensive product line
- Premium quality products



# Abatement Project Reference List

Central Power Authority- San Juan, PR  
Charleston Historical Foundation- Charleston, SC  
Cincinnati City Hall- Cincinnati, OH  
Daytona Historic Post Office- Daytona Beach, FL  
Detroit Aquarium- Detroit, MI  
Federal Correctional Facility- Danbury, CT  
Franklin Delano Roosevelt Home- Hyde Park, NY  
Grand Canyon National Park- AZ  
Holland Tunnel- New York, NY  
NASA Kennedy Space Center- FL  
National Gallery of Art- Washington, DC  
New York City Transit Authority- New York, NY  
Panama Canal- US Canal Zone, Panama  
Philadelphia Navy Yard- PA  
Smithsonian Museum- Washington, DC  
Con Edison- New York, NY  
Detroit Lions Stadium- MI

# Abatement Project Reference List

General Electric Company- Schenectady, NY

Miami Herald- Miami, FL

Pepsi Building- Brooklyn, NY

Planet Hollywood Resort & Casino- Las Vegas, NV

Austin School District- TX

Boulder Valley School District- CO

Columbia University- New York, NY

Harvard University- Cambridge, MA

Lee County Public Schools- Fort Myers, FL

Mass. Institute of Technology- Cambridge, MA

Orange County Public Schools- Orlando, FL

Syracuse University- Syracuse, New York

University of Alabama- Tuscaloosa, AL

University of Virginia- Charlottesville, VA

US Air Force- Elmendorf AFB, AK

US Air Force- Hickham AFB, HI

US Air Force- MacDill AFB- Tampa, FL



# Mold Remediation Project Ref. List

Bentley College- Waltham, MA  
Boston College- Chestnut Hill, MA  
Chalmette Public Schools- Chalmette, LA  
Clark County Public Schools- Las Vegas, NV  
College of William & Mary- Williamsburg, VA  
Ensworth High School- Nashville, TN  
Georgetown University- Washington, DC  
Hernando County School District- Brooksville, FL  
James Madison University- Harrisonburg, VA  
Los Angeles Unified School District- CA  
Michigan State University- East Lansing, MI  
Princeton University- Princeton, NJ  
Purdue University- West Lafayette, IN  
University of Kentucky- Lexington, KY  
University of Puerto Rico- San Juan, PR  
University of the Sacred Heart- San Juan, PR  
Abbott Laboratories- Barceloneta, PR

# Mold Remediation Project Ref. List

Alaska Pipeline Services- Anchorage, AK

Anheuser-Busch- St. Louis, MO

Chase Manhattan Financial Center- New Orleans, LA

Columbus Zoo & Aquarium- Powell, OH

ConAgra Foods- Garner, NC

Corning, Inc- Elmira, NY

Culinary Institute of America- Hyde Park, NY

,Deutsche Bank Building- New York, NY

Embassy Suites Hotel- Orlando, FL

Federal Express Ground Terminal, Wheeling, IL

Flamingo Casion- Las Vegas, NV

General Motors Technical Center- Warren, MI

Guggenheim Museum- New York, NY

Hallmark Corporate Headquarters- Kansas City,MO

Harrah's Casino- Las Vegas, NV

Kentucky Derby Museum- Louisville, KY

Norwegian Cruise Lines- Miami, FL





**IF YOU ARE  
A LITTLE  
UNLUCKY...**



BECAUSE IT CAN LOOK LIKE THIS...



# Efficient HVAC System

- **Defined as a system which produces cooled air at a minimum relative humidity of 60% or less**
- **Anything above this threshold or higher can produce condensation in the system which produces moisture in the form of water dripping on to the ceiling below the ductwork**
- **Photos in following slide show the results of this condensation being produced by an inefficient HVAC system**
- **Discolored ceiling tiles or drywall are not always the result of a leaking roof**



# Water Damaged Ceilings Caused by Inefficient HVAC System



- Internally Insulated HVAC Systems...have **PROBLEMS**

## Deterioration

- Fiber
- Binder
- Corrosion
- Condensation

## Contaminants

- Dust
- Mold
- Soot
- Microbes
- Birds
- Animals



HVAC Systems are super-efficient delivery/spread mechanisms for particulates, including microbials



**Fiberglass is a physical irritant to the skin, eyes and upper respiratory tract.**







**Badly deteriorated  
and/or very dirty  
fiberglass can  
impede air flow:**

- **Impact HVAC  
Coils**
- **Loss of efficiency**
- **Increased  
energy costs**



**BUT IF NOT FATALLY  
COMPROMISED,  
CHEMICALS AND  
COATINGS ARE  
USEFUL AND  
COMPLIMENTARY  
TOOLS**

# NADCA 2012 Position Paper

## Using Chemical Products in HVAC Systems:

**NADCA PROVIDES  
GUIDANCE**





# NADCA 2012 Position Paper

## ■ Resurfacing Materials

### Product definition

Resurfacing materials (also known as repair coatings) are coatings that are applied to surfaces that show signs of damage or degradation.

### Typical use

Resurfacing materials may be used to coat internally-lined or fiberglass ductwork to provide a smoother surface and control odors in the system. This reduces resistance of airflow in the system. Coatings secure loose fibers to reduce the potential that they will become airborne and enter the conditioned space. Resurfacing materials may also be used to protect duct surfaces from moisture and conditions that may lead to rust and corrosion. Some coatings have antimicrobial ingredients solely to preserve the coating and help retard the growth of mold and fungi on the coating film.

In no case should a coating be used in lieu of source-removal cleaning of an HVAC system. Refer to the NADCA Standard, Assessment, Cleaning & Restoration of HVAC Systems

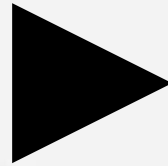
When HVAC Insulation is  
Water-damaged  
Mold-infested  
Scorched  
Severely Deteriorated

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It **MUST** be removed/replaced!  
Chemicals and Coatings are only  
***“useful and complimentary tools”***

THERE ARE NO MAGIC BULLETS OR  
SILVER POTIONSI

# HVAC Resurfacing Materials (Repair Coatings)





# What Resurfacing Materials (Repair Coatings) CAN Do

- Restore integrity to HVAC systems
- Provide smooth surfaces (improved airflow)
- Isolate non-removable contaminants
- Some have antimicrobial ingredients to prevent or retard the growth of mold on the coating film



Save costly replacement of duct board or lining in lines and air handlers

# Ensuring the Right Resurfacing Solution

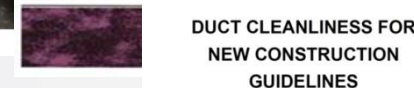
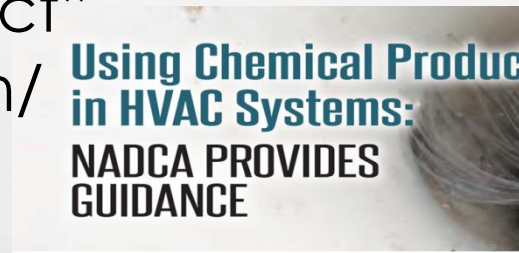
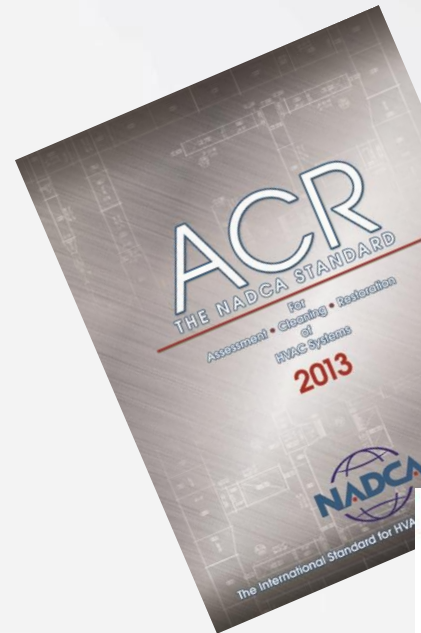
## International Building Code

Surpass ASTM E 84 and ASTM C 411, as required by the performance protocols of the NFPA **90A/90B**.

## Industry Standards

- **ASHRAE 180:** “correct” microbial discoloration/disfigurement
- **IICRC S520**
- **NADCA**
- **RIA/ASHRAE FS#2**

} Again all have 90A/90B as standard of care



# Right Resurfacing Solutions

## Test Data

Per IBC: satisfy NFPA 90A/90B

- ASTM E 84 and
- ASTM C 411

## Product Criteria

- Water-based
- Low VOC
- Fast drying

**Fiberlock**  
TECHNOLOGIES



## Then Customize:

- Mold Resistance: ASTM G 21 &/or D 3273
- Viscosity: Low=Repair; High=Resurface
- Fire Residues: Block smoke odor and stains



# IAQ Advanced Peroxide Cleaner for HVAC Contamination Removal

Hydrogen Peroxide (H<sub>2</sub>O<sub>2</sub>)- 8% by volume

Used/promoted as an active ingredient in antimicrobial and cleaning products

What makes H<sub>2</sub>O<sub>2</sub> attractive? 90% Water

Environmental profile- biodegrades to Oxygen & Water (pH neutral)

Familiarity- domestic infection control

Labor Savings

Effervescence – Liking heavy lifting

Oxidation – Whitening, brightening





# IAQ 7000

## Penetrating HVAC Repair Coating

- Bind and Reinforce HVAC Insulation
- Low Viscosity
- Resurfacing Material
- Contains EPA Registered Active Ingredient to inhibit mold
- Meets NFPA 90A/90B
- White or Clear



# IAQ 8000

## HVAC Resurfacing Material/Coating

- Seals HVAC Insulation
- High Viscosity – Tough, Durable
- Smooth surface improves cleaning
- Contains EPA Registered Active Ingredient to inhibit mold
- Meets NFPA 90A/90B
- White or Black





# IAQ 8000



BEFORE



AFTER

# Case Study- Opry Mills Mall Nashville, TN





# Case Study- Opry Mills Mall Nashville, TN



# Opry Mills Mall HVAC Project

## Belfor/DUCTZ NST

- Massive flooding in early May 2010 caused up to 4 feet of standing water in 1.3 M ft<sup>2</sup> outlet mall next to Opryland
- Belfor performed water restoration work in common areas of mall and for many individual retail tenants
- Belfor recommended Simon Malls management confer with DUCTZ re: cleaning & coating of HVAC system
- DUCTZ NST successful in obtaining contract for both
- Result= 13 linear miles of HVAC coated with IAQ 8000 totaling 2900 gallons of material
- Mall closed for extended period of time- litigation with insurer, who denied \$150 M in coverages
- When mall reopened, no signs of any mold growth in HVAC system

# Opry Mills Mall Project





IAQ 8000- Coating Still Drying  
Semi-Gloss Finish  
Promotes Improved Airflow (Avg 23%)

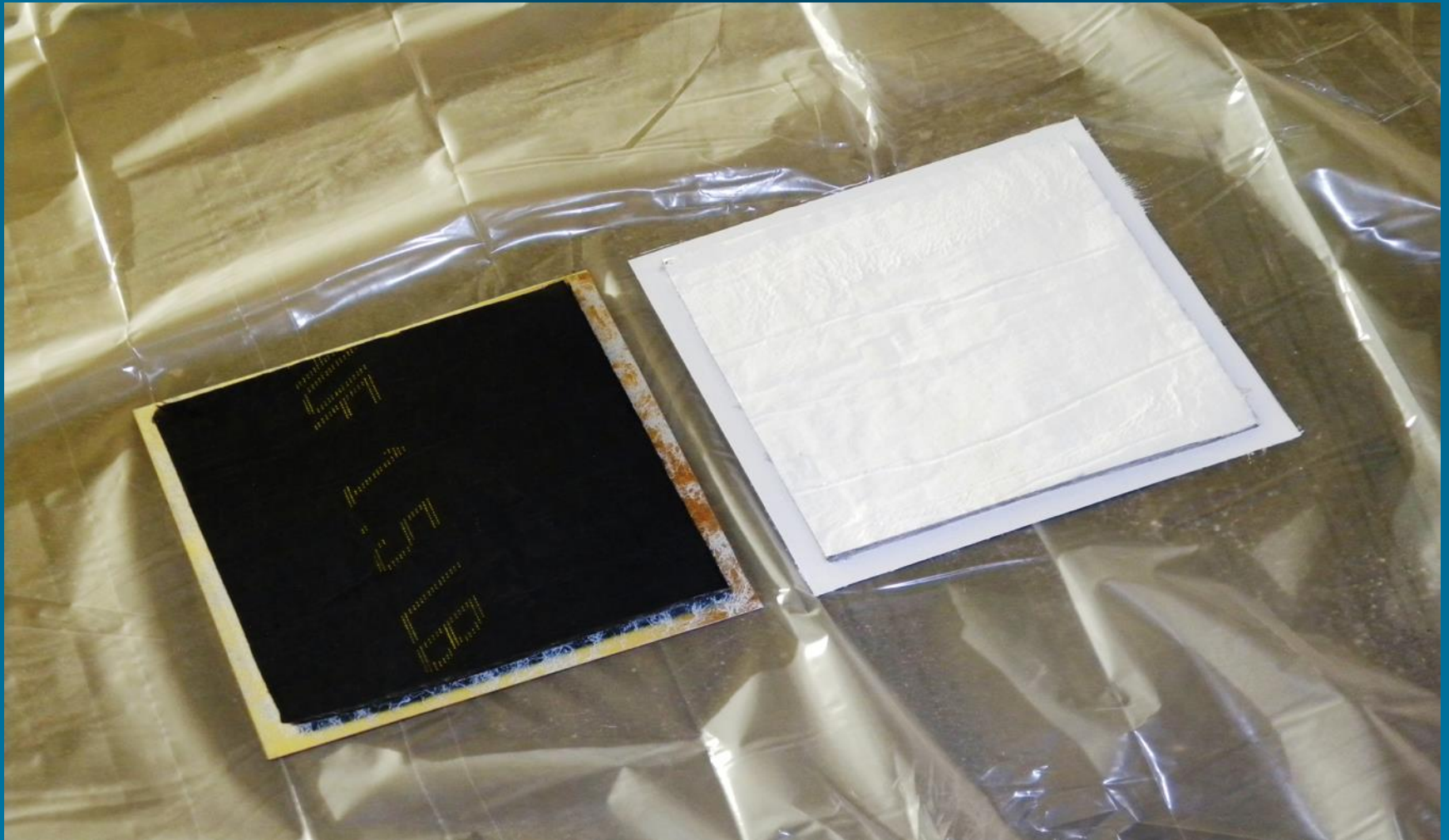




Opry Mills Mall- Nashville, TN  
Belfor/DUCTZ- IAQ 8000  
View from rooftop (smoke detector)



Opry Mills Mall- Nashville, TN  
Belfor/DUCTZ- IAQ 8000  
Access patch before & after coating





ODOR BLOCKER & STAIN BLOCKER

# RECON



- Permanently encapsulates smoke odors
- Low Viscosity enables penetration of HVAC Liner
- Blocks Stains
- Meets NFPA 90A/90B
- Water-based
- Solvent Free, Non-Flammable
- Vapor Permeable
- Fast Dry, Low VOC

# **Thank You!**

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