

Foam & Function

How Foam has Changed Architecture



By: James Medina



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Noble and FedPro

Founded in 1915, FPC International, Inc. is a family-owned and professionally managed company with a highly successful track record of acquiring and growing niche industrial businesses.



Founded in 1946, the Noble Company has established a reputation of providing quality, innovative products for the plumbing and tile industries.

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Session Description

This course describes the uses of foam in the construction field. It examines product attributes that lead to successful installations and characteristics of foam density that can contribute to failure. This course also compares installation methods and ways to specify successful installations.

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Learning Objectives

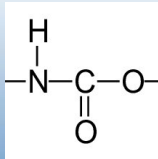
We will review:

- The **history** of foam.
- The **applications** in our everyday life and how this unique product has improved construction.
- The **changes** in the installation of different applications of foam and how injuries are avoided because of its use.
- The **differences** in the speed and ease of installation because of foams lightweight and performance qualities

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History

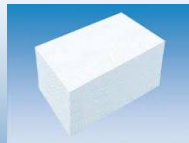
- Urethane dates to 1849
 - Wurtz and Hofmann first reported the reaction between an isocyanate and a hydroxy compound.
 - It had a chemical reaction that started to foam!



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Types

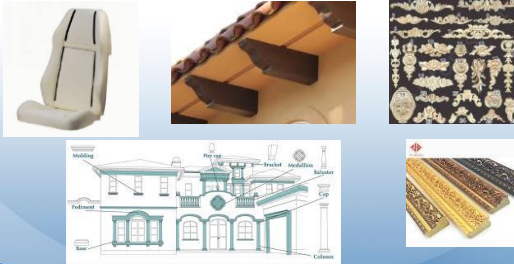
- Not all foam is equal
 - Density
 - Use and functionality
 - Replacement for heavier elements



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History

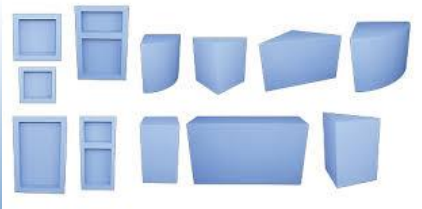
This chemical reaction started the revolution



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Applications

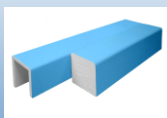
- Automotive industry to residential construction
- Large commercial and hospitality applications



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Applications

- Why do we use foam?
 - Foam is used everywhere!
 - Exterior EIFS
 - Interior decorative arches and moldings
 - Shower benches and curbs
 - Where weight is an issue



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Applications



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Applications-Niches



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Applications-Niches

Foam Niches Vs. "Field Construction"

- Factory foam is more consistent then "hand wrought".
- Average installed price of a foam niche is less than half that of field construction.
- Total cost of field construction niches is \$650.
- Probability of leakage is high with field construction.

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Changes

- Technological advancements in setting materials and installation materials
 - Ushered in a leap in the speed and ease of installation
 - TCNA made improvements
 - In details
 - Defined the performance criteria

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Then and Now

Mudding is an artisan trade.
Skill is required in floating floors
and walls.
This takes Days.



Shower benches used to be framed and
sheeted prior to being waterproofed.



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Then & Now



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Then & Now



Field construction shower benches can be wrought from steel framing as well. Labor intensive application of cement backerboard... then the waterproofing often results in leaky benches.

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Then & Now



The use of pre-fabricated foam benches reduces the number of different trades involved, reduces labor costs, and can reduce the total cost of bench installation by more than 30%.

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Then



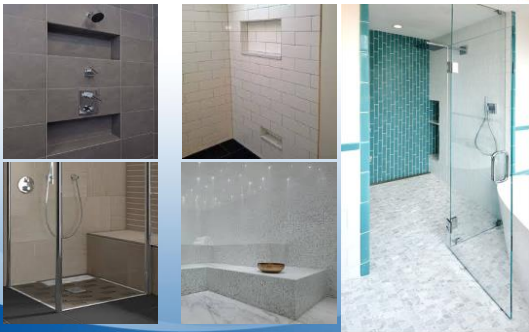
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Now



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Elements that make a difference



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Practical Uses

ADA requirements

Spice niche in kitchen

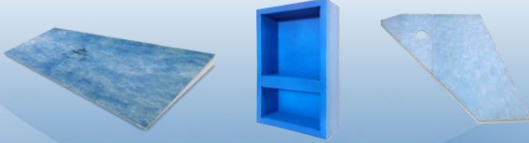


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Elements



Parts and pieces that make a successful installation.



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PreFab Pans

PreFab Trays and Pans:

- EPS foam



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PreFab Pans

PreFab Trays and Pans:

- Molded EPS foam



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PreFab Pans

PreFab Trays and Pans:

- XPS foam



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PreFab Pans

PreFab Trays and Pans:

- EPS foam reinforced hybrid



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Performance is Key

ASTM C365



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Performance

- EPS Foam 25psi
 - Cons:
 - Small dimensional tile is not recommended.
 - Not waterproof.
- XPS Foam around 35psi
 - Cons:
 - Small dimensional tile is not recommended.
 - Dents when kneeled on.
- Hybrid Preformed Pan with Honeycomb **235psi !**
 - Pros:
 - You can use small format tile.
 - Flood testing can be performed the same day.

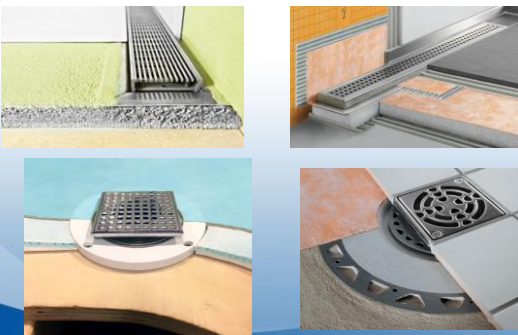
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Compression Should Not Be Ignored

- https://www.youtube.com/watch?v=fyjMI6XQw_c

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Make a Connection

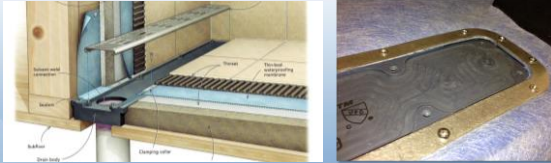


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Make the Connection

Waterproofing Considerations:

- Clamping-ring Method
 - Provides a secure interface of CPE sheet to drain body



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Make the Connection

- Why would you want material to meet "High Performance" Standards?
- ANSI 118.12
 - Standard performance is 1/16"
 - High Performance is **over 1/8"**
 - The opposing materials will move at different rates which makes the area and the connection the most critical in the installation.

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Expand the Foam Design Palette



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Expand the Foam Design Palate



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Expand the Foam Design Palate



The potential for foam to take the place of elaborate and cost prohibitive finished design elements is almost unlimited.

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Food for Thought

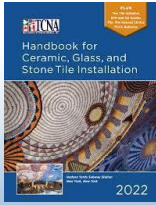
- Why would you risk the most at the most critical area of the installation?
- The drain material will experience dynamic movement from the pan.
- If the liquid or membrane has inadequate abilities to move or guarantee secure connection.
- IT WILL FAIL!

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Why leave it to just anyone?

"Because tile is a permanent finish, the lowest bid should not be the driving factor, but rather who is the most qualified to perform the scope of the work specified."

- TCNA Handbook



The Tile Council of North America urges design professionals to include language in specifications to secure qualified contractors and installers. The following nonprofit programs are well-established and recognized by the Handbook Committee:

- Advanced Certifications for Tile Installers (ACT)
- Ceramic Tile Education Foundation (CTEF) Certified Tile Installer Program
- International Masonry Institute (IMI) Contractor College
- Journeyman Tile Layer Apprenticeship Programs
- Natural Stone Institute (NSI) Accreditation for Natural Stone Tile Installation
- National Tile Contractors Association (NTCA) Five Star Contractor Program
- Tile Contractors Association of America (TCAA) Trowel of Excellence Program



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MasterSpec®

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Installer is [a Five-Star member of the National Tile Contractors Association] [or] [a Trowel of Excellence member of the Tile Contractors' Association of America].
2. Installer's supervisor for Project holds the International Masonry Institute's Foreman Certification.
3. Installer employs only [Ceramic Tile Education Foundation Certified Installers] [or] [installers recognized by the U.S. Department of Labor as Journeyman Tile Layers] for Project.
4. Installer employs at least one installer for Project that has completed the Advanced Certification for Tile Installers (ACT) certification for installation of [mud floors] [mud walls] [membranes] [shower receptors] [gauged porcelain tile] [gauged porcelain tile panels and slabs] [and] [large format tile].



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BSD SpecLink

QUALITY ASSURANCE

Minimum one copy of any **ANSI A108.01/02** and **TCNA C101** in the Manufacturer's Qualifications. Company specializing in manufacturing the types of products specified in this section, with minimum five years of documented experience.

Installer Qualifications

Company specializing in performing the installation, with minimum five years of documented experience.

Accredited Five-Star member of the National Tile Contractors Association (NTCA) or Trowel of Excellence member of the Tile Contractors' Association of America (TCAA).

Installer Certification

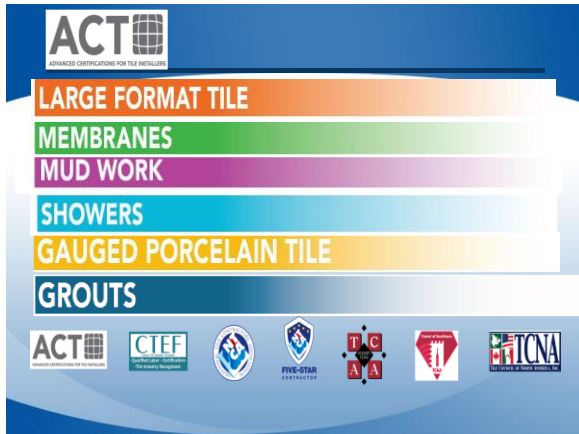
Ceramic Tile Education Foundation (CTEF) Certified Tile Installer (CTI). Apprenticeship Program. Installer has achieved Journeyman status through an apprenticeship from the International Union of Bricklayers and Allied Craftworkers (IUBAC) or a U.S. Department of Labor (DOL) recognized program.

Advanced Certifications for Tile Installers (ACT). Certification in the installation of membranes, mortar bed (mud floors, mortar (mud walls, shower receptors, large format tile, gauged porcelain tile) panels and slabs.

International Masonry Training and Education Foundation (IMTEF) Supervisor Certification Program (SCP).



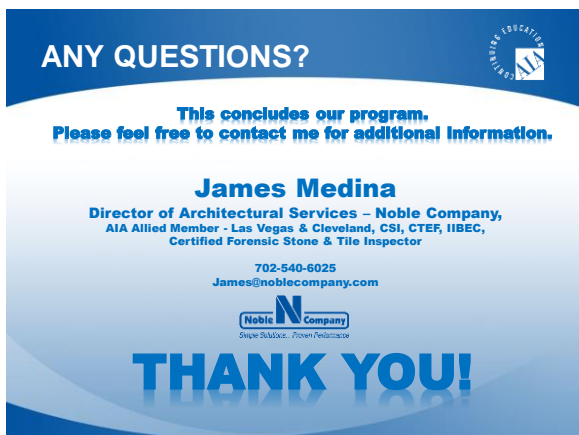
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