



# CONSTRUCTION SPECIFICATION WRITING STUDY SESSION



Presented by:

**Conspectus, Inc.**



# POLL

## Introduction Questions

Menti.com Code: 6656 6754





Loading...

# WHO IS CONSPECTUS?

Conspectus, Inc. is a national specification consultancy, employing 16 specifiers, providing high quality, [industry-leading specifications](#) and related consulting services on thousands of projects for some of the most prestigious design and engineering firms, government agencies, and private entities domestically and internationally.



# INSTRUCTORS



**Marty Thornton, CCS®**  
Senior Specifier  
Pittsburg, PA



**Chris Ricke, CCS®**  
Senior Specifier  
Topeka, KS



**Chad Hanley, CDT**  
Senior Specifier  
Chicago, IL



**David Stutzman, CCS®**  
Senior Specifier, President  
Tuckahoe, NJ

# SUPPORT



**Jim Robbins, CCS®**  
Senior Specifier  
Bridgewater, NJ

# KNOWLEDGE AREAS

## Domains:

|          |             |                                                     |
|----------|-------------|-----------------------------------------------------|
| <b>1</b> | 9/03        | <del>Planning, Development &amp; Organization</del> |
| <b>4</b> | <b>9/10</b> | <b>Research</b>                                     |
| <b>3</b> | 09/17       | Procurement                                         |
| <b>6</b> | 09/24       | Production, Part 1                                  |
| <b>6</b> | 10/01       | Production, Part 2                                  |
| <b>2</b> | 10/08       | Coordination                                        |
| <b>5</b> | 10/15       | Analysis and Evaluation                             |

# ITEMS TO NOTE



## GENERAL FYI

- No CDT<sup>®</sup> certification - highly advisable to **also read Project Delivery Practice Guide (PDPG)**.
- Yes CDT<sup>®</sup> certification - brush up on the PDPG.
- Exam is based on CSI<sup>®</sup> **Construction Specifications Practice Guide (CSPG)** content, and may not always reflect the real world; we will note items which may not align.
- Those who wrote the CSPG are not the same as the exam writers; study guides have divided the source material - **read the entire book**.
- We encourage interaction in the chat and will also provide time for Q&A at the end of each session.

# AIA Continuing Education

Conspectus, Inc. is a registered provider of AIA-approved continuing education under Provider Number 40103229. All registered AIA CES Providers must comply with the AIA Standards for Continuing Education Programs. Any questions or concerns about this provider or this learning program may be sent to AIA CES ([cessupport@aia.org](mailto:cessupport@aia.org) or (800) AIA 3837, Option 3).

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AIA continuing education Learning Units earned upon completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

# Construction Specification Writing Session 2:

## Research



Discover the imperative questions to ask while conducting research on materials and systems for product selection.



Research applicable code requirements, sustainability requirements, and product standards for building materials.



Evaluate product suitability for project conditions and the direct impact these choices can have on creating and maintaining health, safety, and welfare for building occupants.



Review key product selections with product representatives and see how this communication can increase opportunities to help the project reach full potential.

# DOMAIN 4:

## RESEARCH



### COMPETENCIES

- 4A Conduct research on materials and systems for product selection.
- 4B Research applicable code requirements.
- 4C Evaluate product suitability for project conditions.
- 4D Review key product selections with product representatives.
- 4E Research applicable product standards.

# DOMAIN 4:

## RESEARCH



4A Materials & Products.

4B Codes & Regulations.

4C Project.

4E Reference Standards.

4D Product Representatives.

(What is Possible?)

(What is Required?)

(What is Needed?)

(What is Standard?)

# POLL

## Introduction Questions

Menti.com Code: 6656 6754



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Exit slideshow mode, then select the Menti slide you want to add. After selecting your slide, start the slideshow again.

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# RESEARCH INTRODUCTION

LEARNING  
OBJECTIVES

## WHERE DO WE START?

**Analysis  
Paralysis**



**Down the  
Rabbit Hole**



# Research - General Steps During Programming

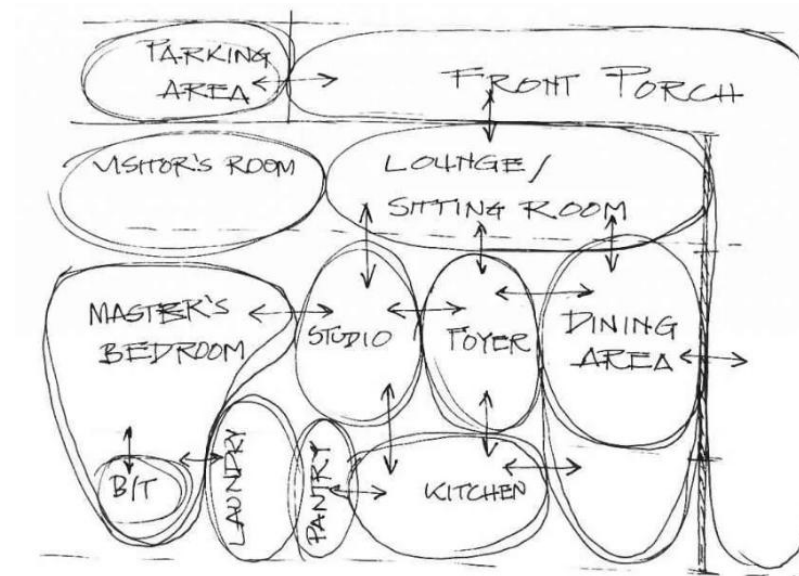
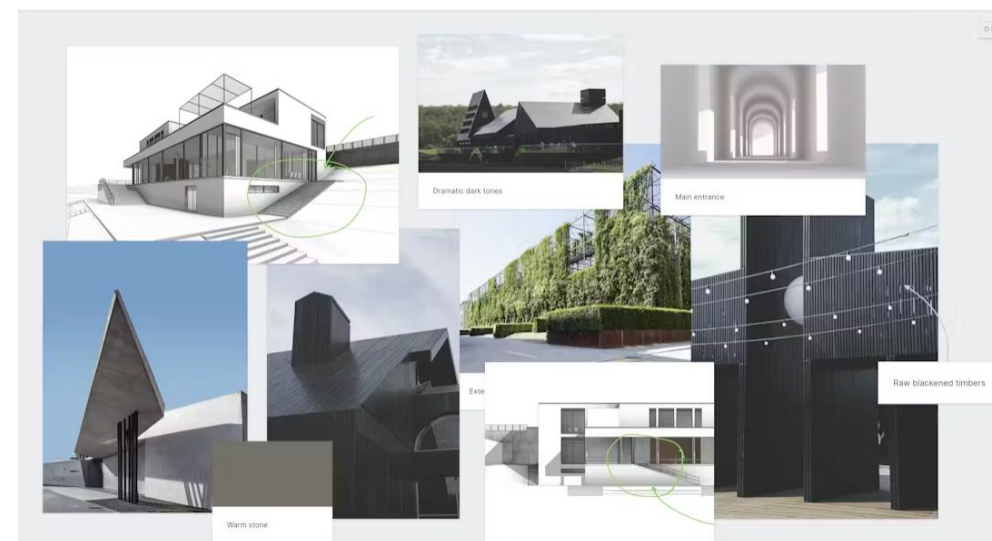
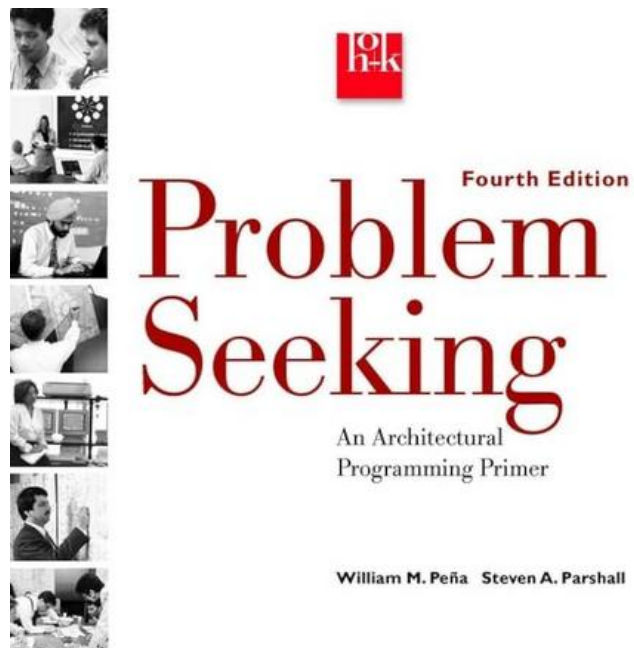
## Types of Research:

- Programming Research →
- Design Research →
- Product Research →

# Research - General Steps During Programming

## → Programming Research:

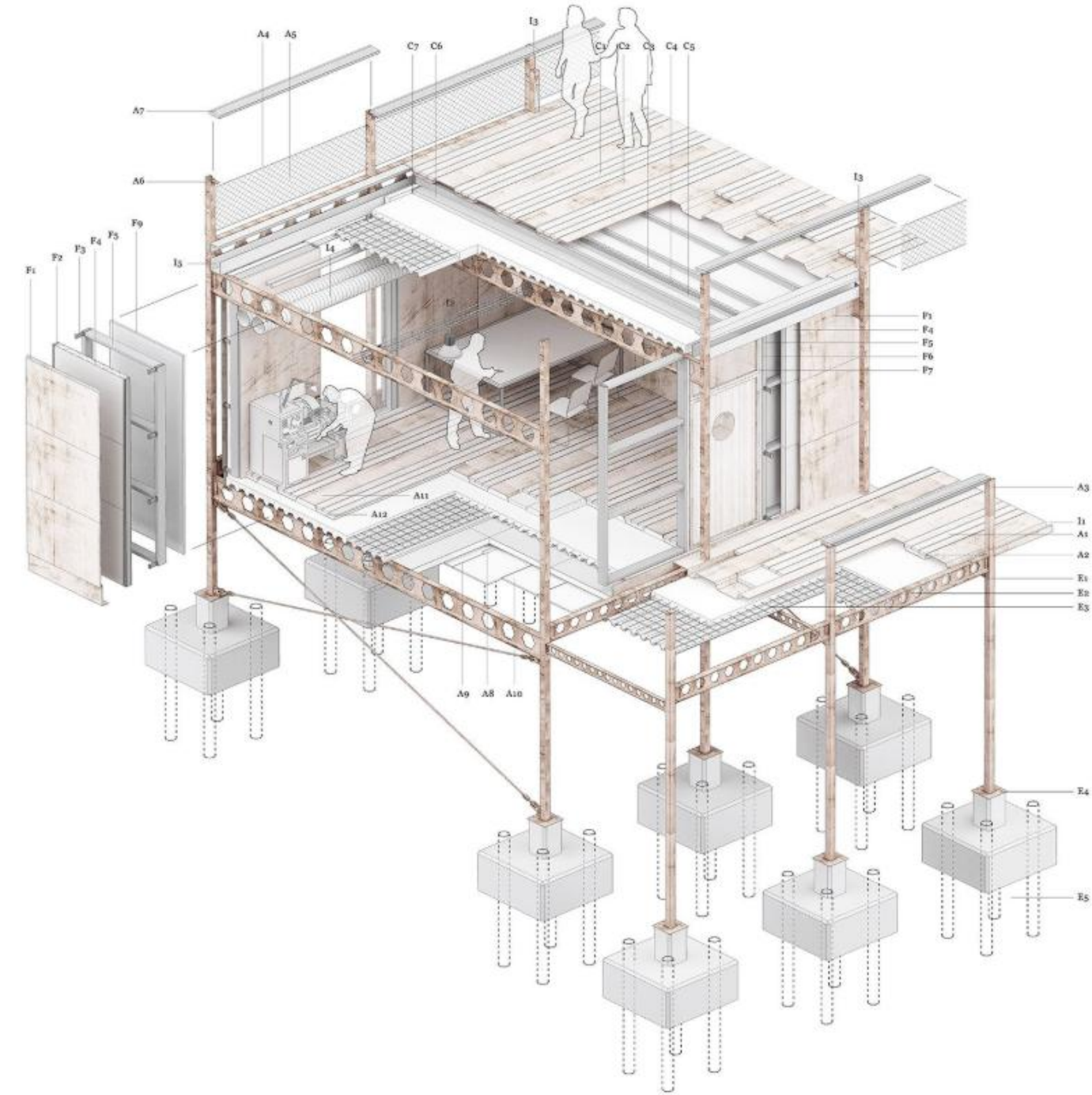
- Establish Goals. (What does the Owner want to achieve?)
- Collect and Analyze Facts. (What is known?)
- Uncover and Test Concepts. (How are the goals achieved?)
- Determine Needs. (What is needed? How much Will it Cost?)
- State the Problem. (What is the direction the design should take?)



# Research - General Steps During Design

## → Design Research (summarized):

- Review Owner's Project Requirements.
- Review AHJ Requirements and Code.
- Propose products.
- Collect Product Information.
- Incorporate Product Information into the Design.
- Document Product Information Technical Aspects.
- Summarize Product Cost and Estimate Project Cost.
- Evaluate Product Sustainability.



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More about  
OPR and AHJ  
(Stay Tuned!)

UNIVERSITY OF MICHIGAN  
ARCHITECTURE, ENGINEERING AND CONSTRUCTION  
**DESIGN GUIDELINE 2.1**  
**OWNER'S PROJECT REQUIREMENTS AND BASIS OF DESIGN DOCUMENTS**

### Scope

All projects shall provide an Owner's Project Requirements (OPR) document and a Basis of Design (BOD) document. Beginning in the Schematic Design phase and continuing until the project has been completed and as-built documentation submitted, the Architect/Engineer with input from the project team shall develop and update an Owner's Project Requirements (OPR) document and a Basis of Design (BOD) document. These two documents together shall provide a complete description of the project's design intent.

The Design Professional is responsible for developing and maintaining the OPR and BOD documents throughout the project.

### Related Sections

**U-M Design Guideline Sections:**

[2.3 U of M Owner's Review](#)

[3.1 Sustainable Design and LEED® Requirements](#)

[3.2 Energy and Water Conservation](#)

[4.3 Building Commissioning](#)

### Reference Documents:

[U-M OPR/BOD Report Format](#)

[U-M Room Data Sheet Format](#)

ASHRAE Guideline 0-2005, "The Commissioning Process"

USGBC, "LEED® Reference Guide for Green Building Design and Construction"

### Execution

#### OPR and BOD

The OPR is an inclusive, detailed description of the Owner's goals and requirements for the project, and the Owner's expectations on how the project will be used and operated.

The BOD is an inclusive, detailed description of the Design Team's concepts, assumptions, calculations, decisions, product selections and operating conditions to meet the Owner's project requirements and to satisfy applicable codes, standards and guidelines. It shall be formatted to coordinate with and respond to the OPR.

These two documents will be benchmarks by which the completeness, adequacy and acceptability of the project will be judged. They will be the standards by which the project will be commissioned. They will answer Owner questions after occupancy, and they will be the foundation for maintenance programs and future renovation projects.

Projects shall use the U-M OPR/BOD Report Format. For small projects where the U-M report format is not appropriate, an alternate OPR/BOD format may be permitted by approval with the U-M Design Manager.

NOVEMBER 2022

UNIVERSITY OF MICHIGAN PROJECT PROCEDURE  
DG 2.1 OPR and BOD  
PAGE 1 OF 4

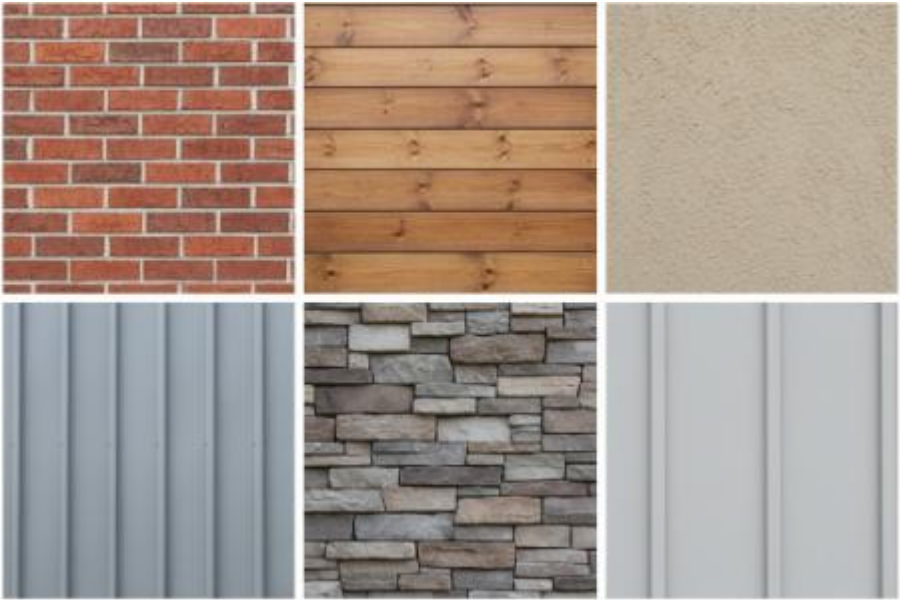


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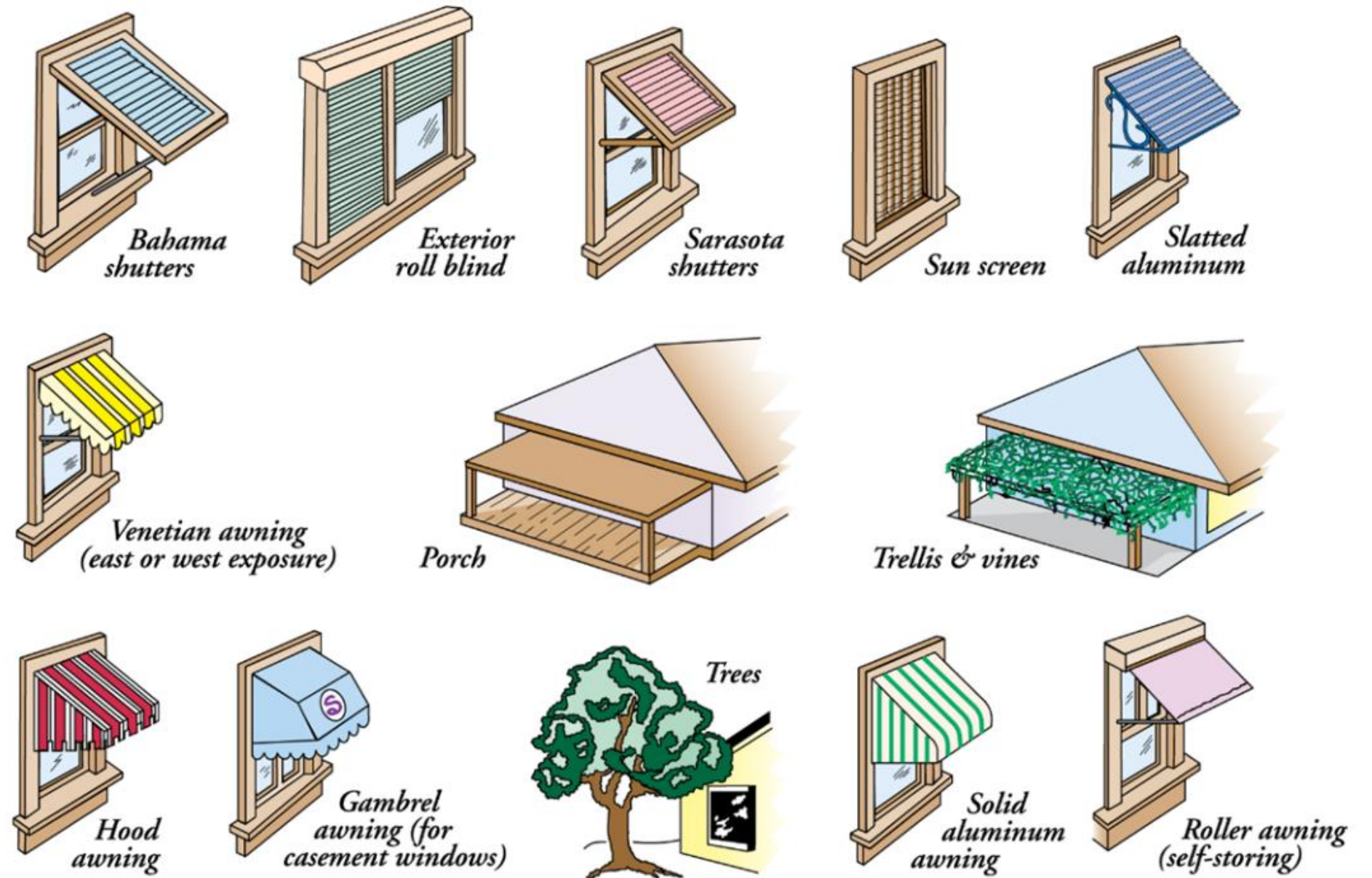
| MATERIAL LEGEND |                                                             |
|-----------------|-------------------------------------------------------------|
| TAG ID          | MATERIAL                                                    |
| ACT-1           | ACOUSTICAL CEILING TILE                                     |
| ACT-2           | SUSPENDED ACOUSTICAL PANEL / LIGHT FIXTURE                  |
| BR-1            | COMMON BRICK, RUNNING BOND                                  |
| BR-2            | COMMON BRICK, SOLDIER COURSE                                |
| CB-1            | COVER BOARD, FIBERGLASS MAT GYPSUM                          |
| CMU-1           | GLAZED MASONRY UNIT                                         |
| CONC-1          | EXPOSED CONCRETE CURB, SEE STRUCTURAL                       |
| CONC-2          | PRECAST CONCRETE SILL                                       |
| CONC-3          | CONCRETE SLAB ON GRADE, PER STRUCTURAL. SEE FINISH SCHEDULE |
| FND-1           | FOUNDATION DRAIN, PER CIVIL                                 |
| GR-1            | GROUT                                                       |
| GWB-1           | 5/8" GYPSUM WALL BOARD, PAINTED                             |
| HM-1            | HOLLOW METAL DOOR, PAINT, MATCH METAL PANEL COLOR           |
| INSUL-1         | INSULATED METAL PANEL SHEATHING                             |
| INSUL-2         | RIGID INSULATION                                            |
| INSUL-3         | BATT INSULATION                                             |
| MP-1            | FLUSH METAL PANEL, VERTICAL ORIENTATION                     |
| MP-2            | CORRUGATED METAL PANEL, HORIZONTAL, FIELD                   |
| MP-2            | CORRUGATED METAL PANEL, HORIZONTAL, STARTER COURSE          |
| MP-3            | CORRUGATED METAL PANEL, HORIZONTAL, FIELD                   |
| MS-1            | 6" METAL STUD, PER STRUCTURAL                               |
| PC-1            | PRECAST CONCRETE BASE                                       |
| PC-2            | PRECAST CONCRETE SILL                                       |
| ROOF-1          | LIQUID APPLIED MEMBRANE ROOF                                |
| SM-1            | SHEET METAL PARAPET CAP, PAINT, MATCH METAL PANEL           |
| SM-2            | SHEET METAL MULLION CAP, MATCH STOREFRONT                   |
| STL-1           | EXPOSED STEEL FRAMING, PER STRUCTURAL, PAINTED              |
| STL-2           | EXPOSED STEEL DECKING, PER STRUCTURAL, PAINTED              |
| WD-1            | COMPOSITE SIDING, WOOD TEXTURE                              |



# Research - General Steps During Design

## Design Research (summarized):

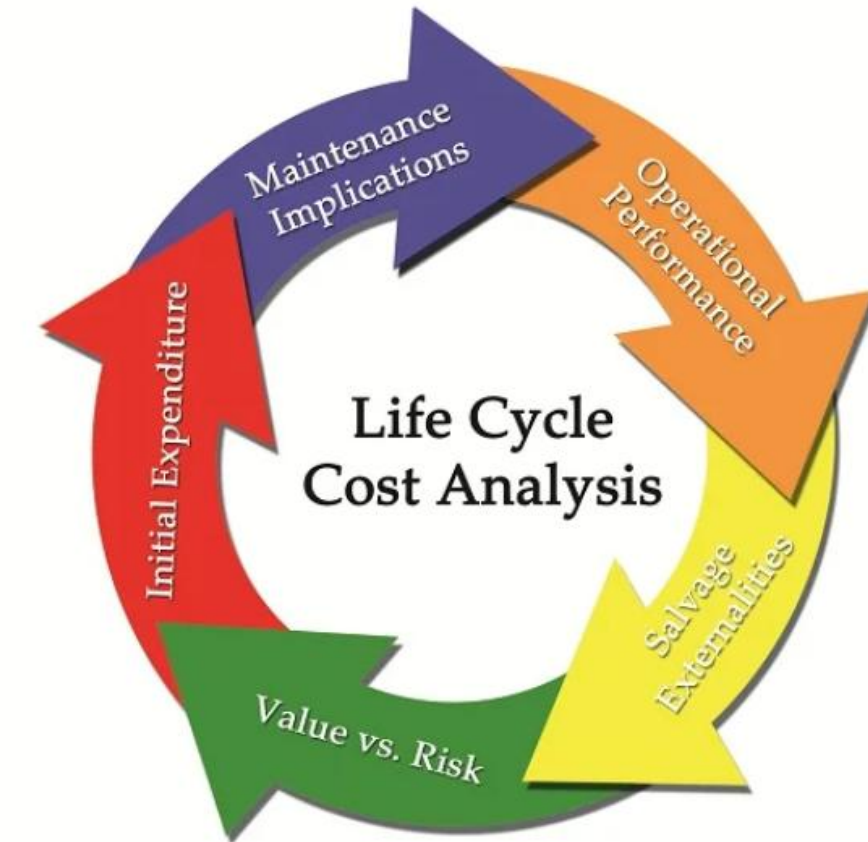
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# Research - General Steps During Product Selection

## → Product Research (Summarized):

- Identify the type of product required.
- Establish product requirements and performance.
- Research product.
- Identify appropriate products.

4A Materials & Products.

(What is Possible?)

4B Codes & Regulations.

(What is Required?)

4C Project.

(What is Needed?)

4E Reference Standards.

(What is Standard?)

4D Product Representatives.

# RESEARCH MATERIALS & PRODUCTS (COMPETENCY 4A)



## LEARNING OBJECTIVES

- LO1 List the factors that must be considered when researching materials, products, and systems.
- LO2 Identify common sources and methods of obtaining product information.

**Conduct research on materials and systems for product selection.**

**(WHAT IS POSSIBLE?)**

# Type of Products

**Materials.**

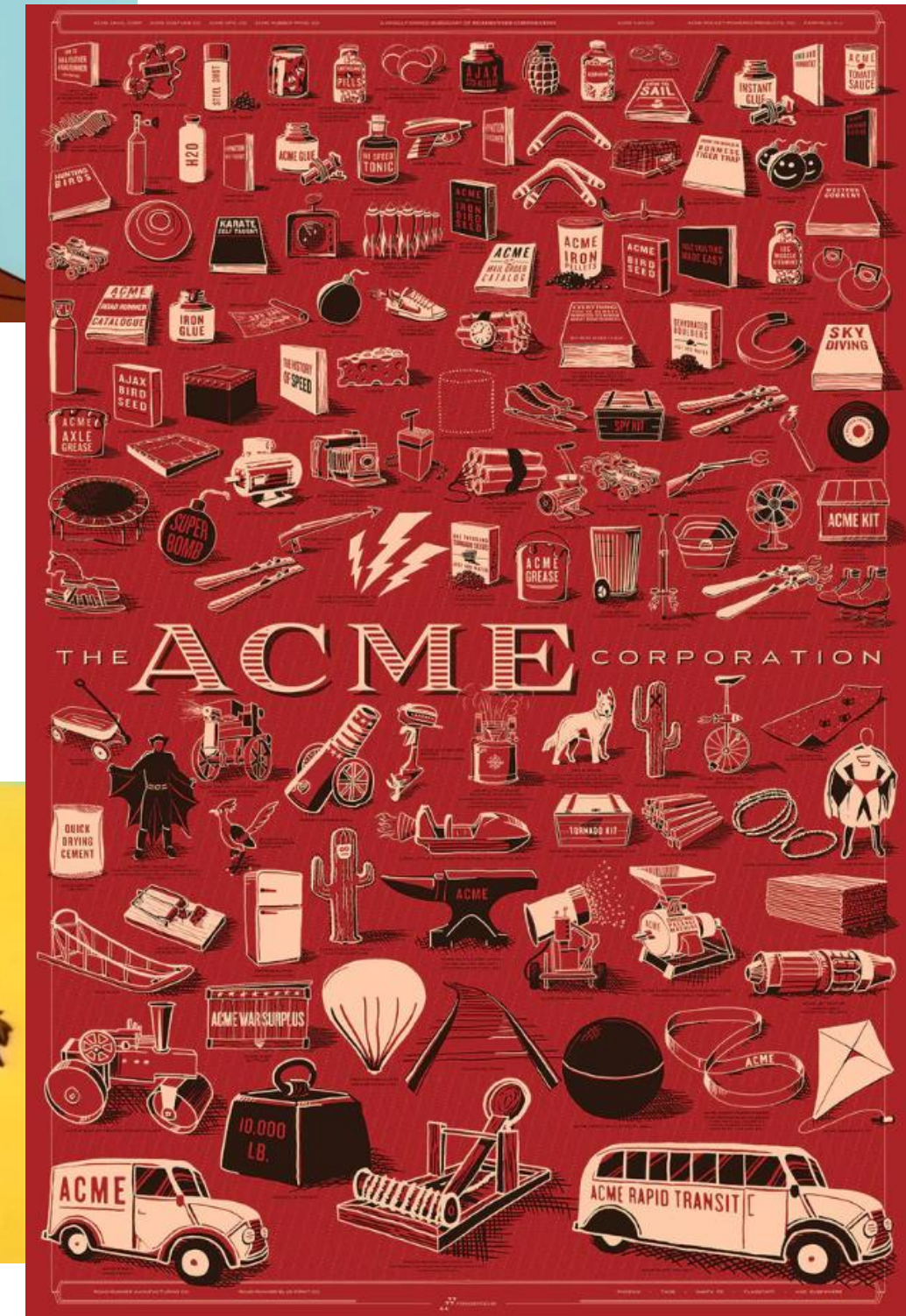
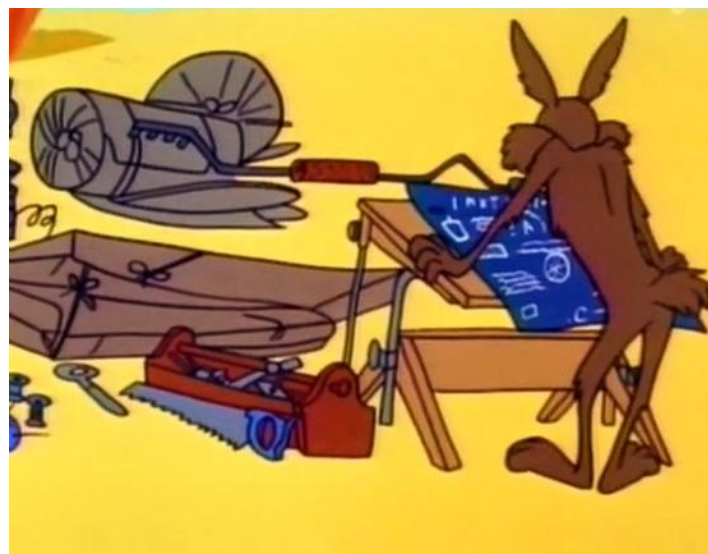
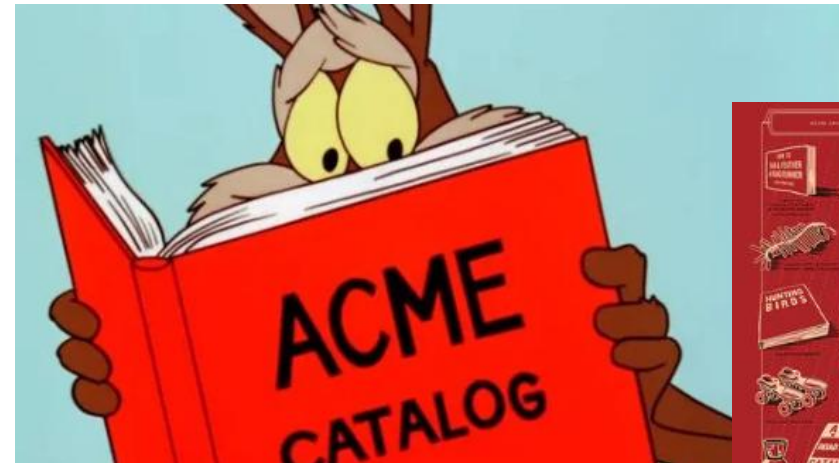
**Commodities.**

**Products.**

- Standard Products.
- Custom Products.
  - Prepayment.
  - Submittals.
  - Custom Colors.
  - Lead Time.
  - Testing & Certification.
- Proprietary Products.

**Assemblies / Fabrications.**

**Equipment.**



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**Assemblies / Fabrications.**

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## Evaluating Products – Consideration Factors

**Selection is based on evaluating products against specific criteria derived from the project's requirements, applicable codes, and industry standards.**

- Product performance criteria. →
- Product quality. →
- Manufacturer. →
- Installation and code requirements. →
- Product availability and project schedule. →
- Cost. →
- Project conditions. →

# Evaluating Products – Consideration Factors Cont.

## → Product Performance Criteria:

- Performance testing.
- Field testing.
- Frequency of testing available.
- Conditions and circumstances of other installations.
- Optimal conditions of use.
- Compatibility with adjacent products.



# Evaluating Products – Consideration Factors Cont.

## → Product Quality:

- Durability.
- Uniformity.
- Field or Shop Fabricated.
- Product history and development.
- Length of time on the market.
- Reference Standards.... More to come.

Reference Standards  
(Stay Tuned)



# Evaluating Products – Consideration Factors Cont.

## → Manufacturers:

- History / Record of production?
- Certification of Installers.
- Responsiveness before, after, and during construction.
- Location.
- Distribution network to suppliers.
- Product Representatives.... More to come!

Product  
Representatives  
(Stay Tuned!)



# Evaluating Products – Consideration Factors Cont.

## → Installation and Code Requirements:

- Authority Having Jurisdiction (AHJ).
- OSHA Requirements.
- ADA Requirements.
- ... more to come.

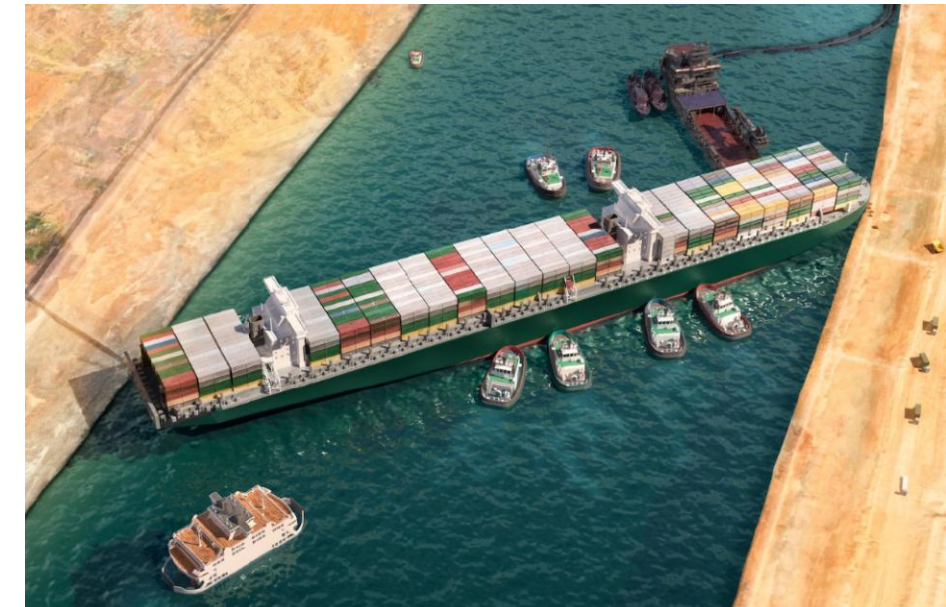
AHJ and Codes  
(Stay Tuned)



# Evaluating Products – Consideration Factors Cont.

## → Product Availability and Project Schedule:

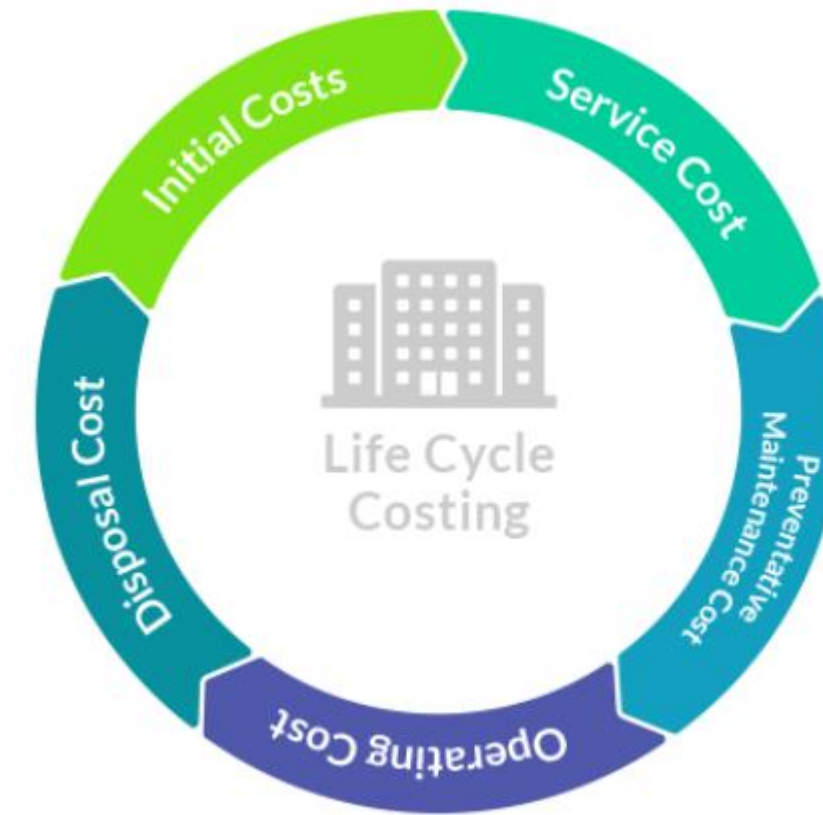
- Number of Manufacturers available.
- Supply Chain issues.
- Fabrications times.



# Evaluating Products – Consideration Factors Cont.

## → Cost:

- Initial Cost.
- Maintenance Costs.
- Replacement Costs.
- Operating Costs.



# Evaluating Products – Consideration Factors Cont.

## → Project Conditions:

- Owner's Project Requirements.
- Renovation or New Building?
- Public or Private project?
  - Open Bid or Negotiated Bid?



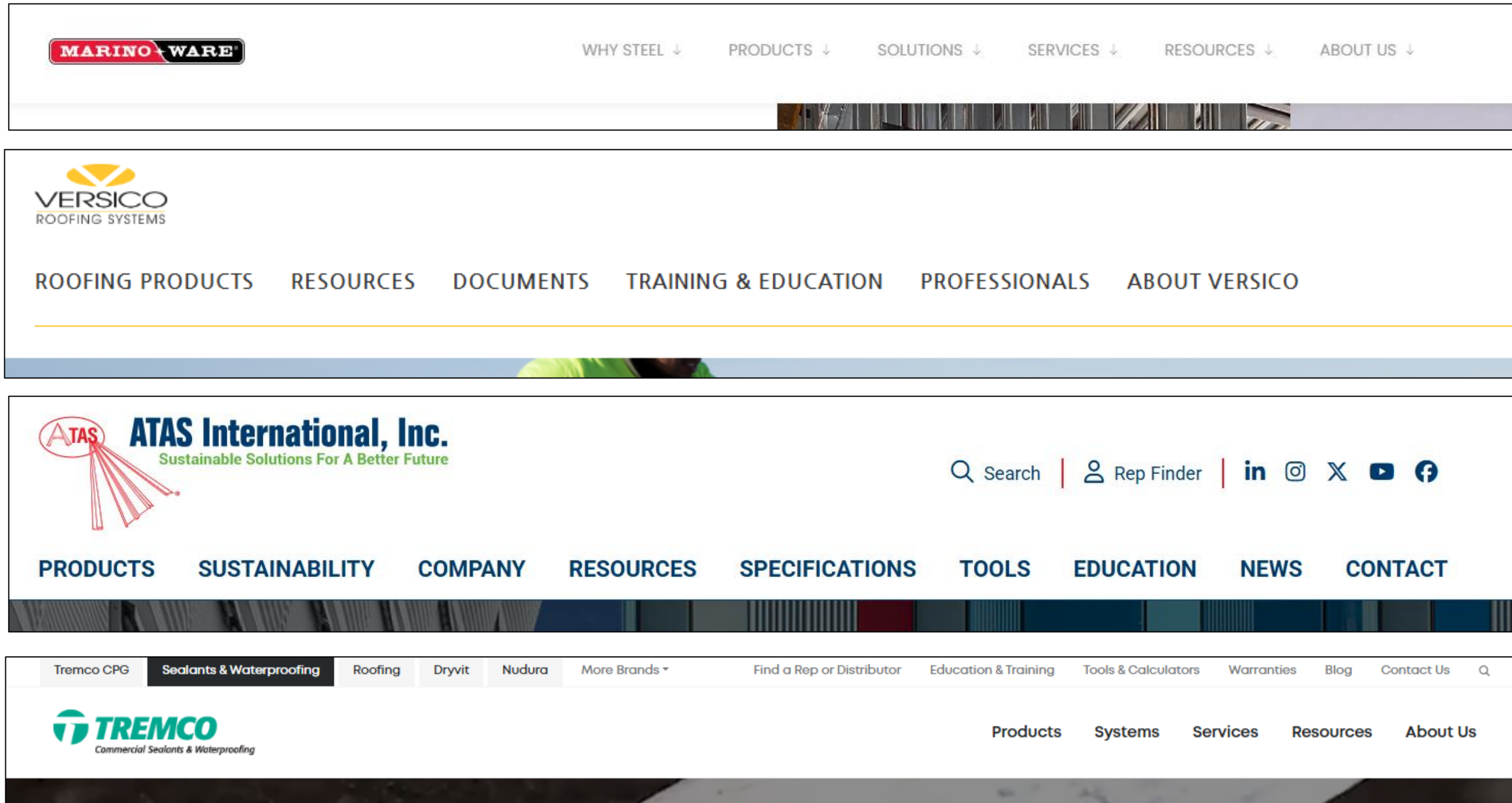
# Sources of Product Information

**Today, most product information is readily available online from:**

- Manufacturer's Websites. ➡
- Authorities having jurisdiction (AHJ). ➡
  - Jurisdiction website, UpCodes, Code Development Agency Website.
- Product standards websites. ➡
  - ANSI, ASTM, ASME, ASHRAE, and more; MADCAD.
- Printed catalogs. ➡
- Product datasheets. ➡
  - Contains Testing, Performance, Reference Standard and product options.
- Trade shows. ➡
  - CSI, AIA, DBIA, and more; World of Concrete.
- Product Representatives. ➡

# Sources of Product Information

## → Manufacturer Websites:



# Sources of Product Information

## → Authorities Having Jurisdiction (AHJ):

- Local City or County:



**City Planning & Development Department**



**Neighborhood Resource Center**

- State



**Virginia Department of General Services**  
Serving Government. Serving Virginians.

- Federal



**U.S. General Services Administration**  
**Public Buildings Service**



# Sources of Product Information

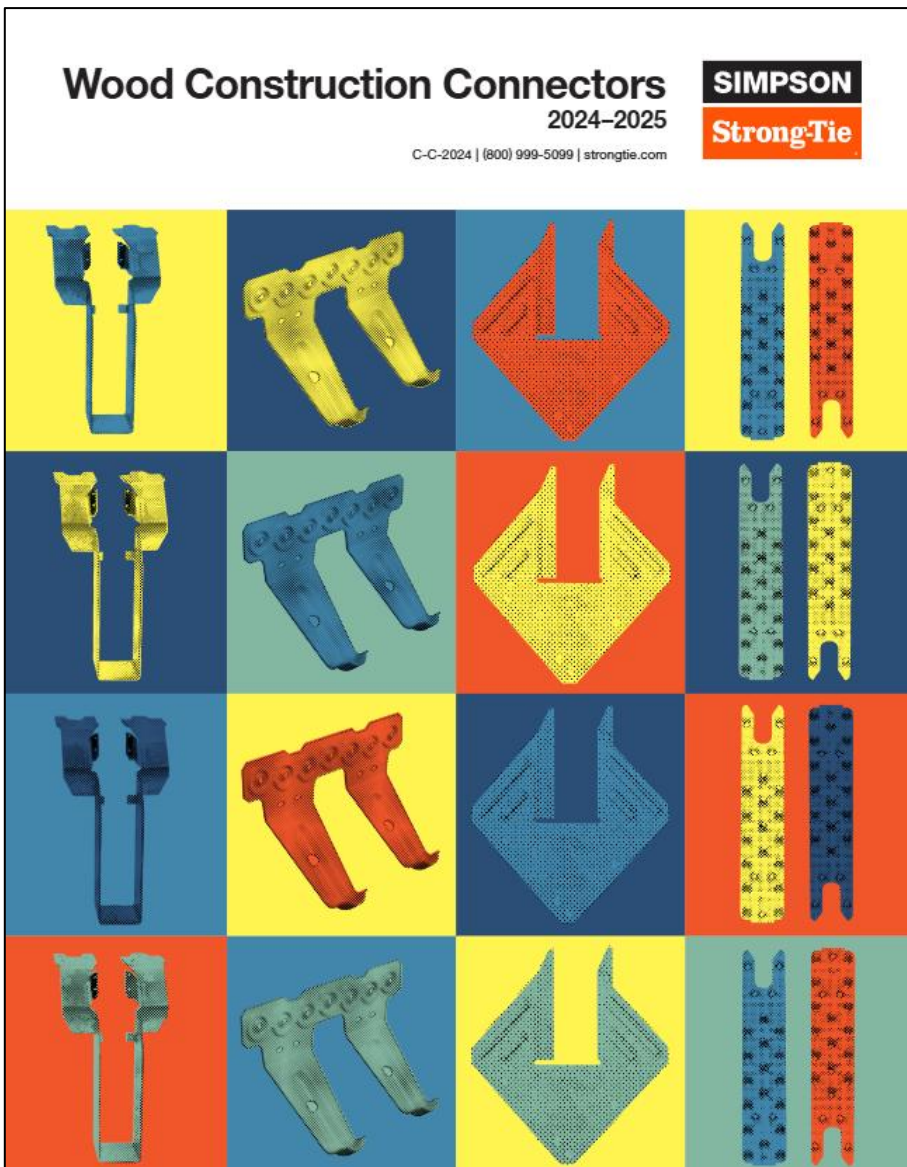
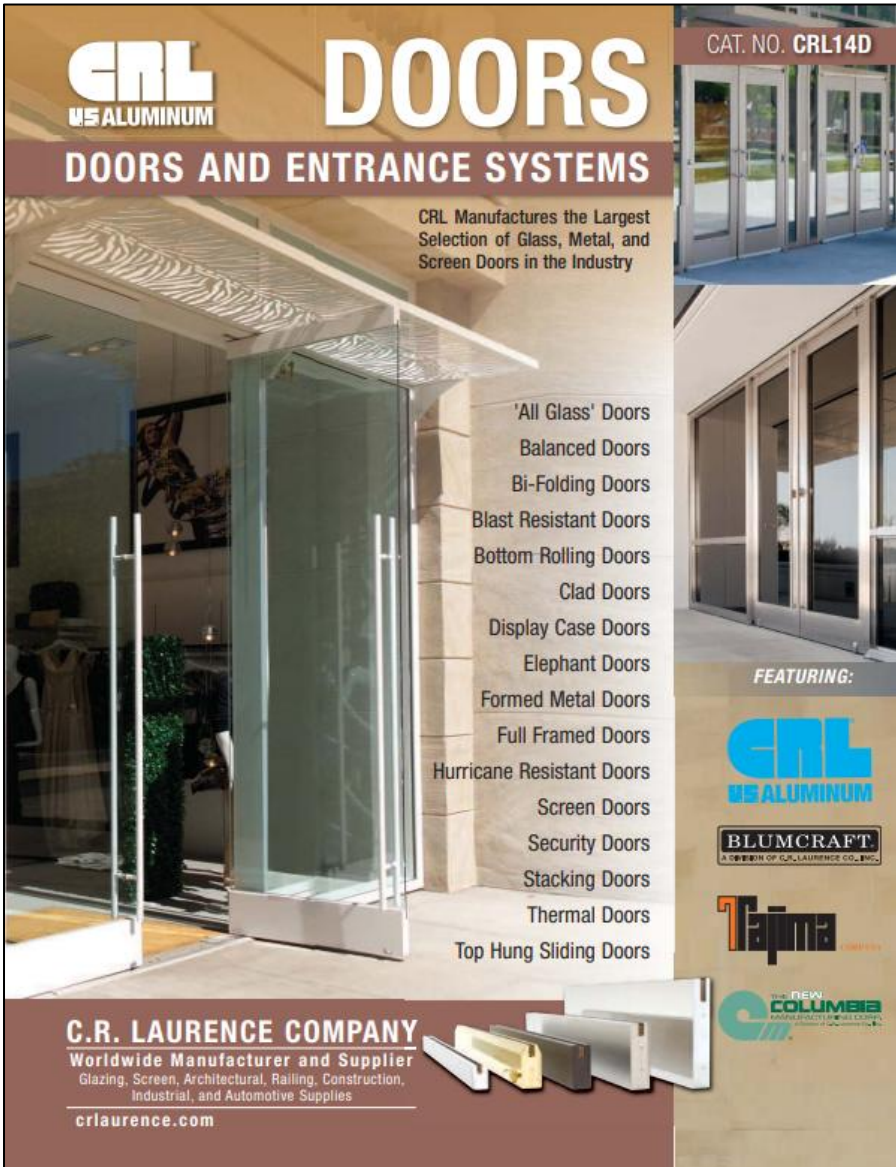
## Product Standards Websites:

The image displays three screenshots of product standards websites, arranged vertically. A large, diagonal watermark reading "Reference Standards (Stay Tuned)" is overlaid across the middle of the images.

- ANSI (American National Standards Institute):** The top screenshot shows the ANSI homepage. It features a dark blue header with the ANSI logo and a navigation bar with links: AMERICAN NATIONAL STANDARDS, STANDARDS COORDINATION, ISO, USNC / IEC, INTERNATIONAL TRADE & DEVELOPMENT, OUTREACH, and EDUCATION. Below this is a secondary navigation bar with links: ABOUT, NEWS, EVENTS, IMPACT OF STANDARDS, ANSI PRODUCTS, MEMBERSHIP, RESOURCE CENTER, FAQ, and HELP, followed by a search icon.
- ABAA (air barrier association of america):** The middle screenshot shows the ABAA homepage. It has a dark blue header with social media icons (LinkedIn, Facebook, Twitter, YouTube, Instagram) and links: Join Now, Event Calendar, Member Organization Search, Member Login, Conference, and Contact Us, followed by a search bar. The main content area includes the ABAA logo and a navigation menu with links: About ABAA, Professional Programs, Evaluated Materials and Assemblies, Training and Certification, Continuing Education, and Resource Library.
- ASTM International:** The bottom screenshot shows the ASTM International homepage. It features the ASTM logo and the tagline "ADVANCING STANDARDS TRANSFORMING MARKETS". A search bar is present with the placeholder text "Search topic, title, author, A53". To the right of the search bar are links for "Cart" and "Sign In". The footer navigation bar includes links: Home, About ASTM, Membership & Participation, Standards & Solutions, News, Help, and FAQ.

# Sources of Product Information

## Printed Catalogs:



# Sources of Product Information

## Product Datasheets:

NO. 714-A

DATA SHEET



MasterFormat: 07 14 16

APRIL 2025  
(Supersedes February 2025)

MEL-ROL® LM

Single-Component, Water-Based, Polymer-Modified, Cold-Applied, Waterproofing Membrane

**DESCRIPTION**

MEL-ROL LM is a single-component, polymer-modified, cold-applied, water-based, liquid waterproofing membrane ideal for below-grade vertical seamless waterproofing applications. We have taken the same high quality rubber polymers found in W. R. MEADOWS' successful MEL-ROL "peel and stick" membrane and converted them into a heavy-bodied, high solids, quick drying liquid membrane.

With MEL-ROL LM, installation time is reduced, utilizing either a spray or roller application. A variety of different protection courses, insulation boards, or drainage boards can be embedded into the membrane to create a superior waterproofing system. With the application of PERMINATOR® vapor barrier over the membrane, a composite system can be created that has the combined advantages of both "peel and stick" and liquid-applied membranes.

**USES**

MEL-ROL LM can be used on new and remedial waterproofing applications on concrete or masonry block substrates. Since the formula is water-based, MEL-ROL LM can also be used on both ICFs and "green concrete" applications.

**FEATURES/BENEFITS**

- Waterproof – very low vapor permeability (perm rating).
- Superior elongation – bridges minor cracks; will not become brittle with age.
- Fully bonded – water will not run beneath the membrane.
- High solids, single-component, fast drying formulation – easy to apply; low-cost application equipment; eliminates two-component mixing problems.
- Cold-applied/water-based – will not adversely affect insulated forms (ICFs) or various protection board options. Allows for application to damp or "green concrete."
- VOC content is 0.0 g/L. Produces no harmful odors.

Easy application – no heating necessary. Eliminates fire hazards associated with heating kettles. Apply with roller or airless sprayer.

**PACKAGING**

5 Gallon (18.93 Liter) Pails  
55 Gallon (208.20 Liter) Drums\*  
\*Special order only

**COVERAGE**

20 - 25 ft.<sup>2</sup>/gal. (0.49 – 0.61 m<sup>2</sup>/L) @ 60 mils. Coverage dependent on substrate type, weather, and application conditions.

**SPECIFICATIONS/STANDARDS**

- Complies with all current federal, state, and local maximum allowable VOC requirements, including National EPA VOC Emission Standard for Architectural Coatings, CARB, Colorado AIM, LADCO, OTC Phase I and II, and SCAQMD.

**SHELF LIFE**

When stored indoors in original, unopened containers at temperatures between 40° - 90° F (4° - 32° C), optimum performance and best use is obtained within one year of date of manufacture.

**APPLICATION**

**Surface Preparation** ... Concrete shall be cured in place for at least three days at 75° F (23.9° C). All surfaces must be clean (free of all coatings and curing compounds), free of frost, relatively smooth, and structurally sound. Patch any bug holes, tie holes, large gaps, or cracks with MEADOW-PATCH® 5 or MEADOW-PATCH 20 from W. R. MEADOWS. All loose laitance on the substrates, such as dirt, dust, loose stones, and debris, should be either swept or blown clean. All inside corners should be addressed with a cove of BEM from W. R. MEADOWS prior to application of MEL-ROL LM.

**Detailing** ... After surface preparations are complete, detailing should be addressed. The desired thickness of membrane coverage is 120 mils for inside/outside corners and non-moving and hairline cracks, as well as around drains and penetrations.

W. R. MEADOWS, INC.  
P.O. Box 338 • Hampshire, IL 60140-0338  
Phone: 847/214-2100 • Fax: 847/683-4544  
1-800-342-5976  
www.wrmeadows.com • info@wrmeadows.com

HAMPSHIRE, IL / CARTERSVILLE, GA / YORK, PA  
FORT WORTH, TX / BENICIA, CA / POMONA, CA  
GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB

CONTINUED ON REVERSE SIDE ...

PAGE 2 ... MEL-ROL LM #714-A ... APRIL 2025

All shrinkage cracks less than 1/16" (1.6 mm) should be pretreated with a 60-mil coat of MEL-ROL LM 6" (152.4 mm) wide. All cracks greater than 1/16" (1.6 mm) should be taped with DETAIL STRIP from W. R. MEADOWS prior to application of the membrane. For specific project recommendations, please contact W. R. MEADOWS technical services.

**Priming** ... To reduce blistering on concrete surfaces, a thin coat of MEL-ROL LM diluted with water may be required. (Approximate dilution ratio of MEL-ROL LM to water is between 4:1 and 5:1.)

Thoroughly mix primer with a mechanical mixer. Prime the entire concrete surface to be waterproofed by spraying or rolling on a single coat at a coverage rate of 100 - 150 ft.<sup>2</sup>/gal. (2.45 - 3.68 m<sup>2</sup>/L). Allow primer to dry (approximately one hour, depending on temperature and conditions).

**Mixing** ... Mix thoroughly with a low-speed mechanical mixer prior to application. Ensure that the material is uniform in appearance with no water on the surface or settlement.

TECHNICAL DATA

| Membrane                                      |                                              |                   |
|-----------------------------------------------|----------------------------------------------|-------------------|
| Property                                      | Typical Value                                | Test Method       |
| Color                                         | Black                                        |                   |
| Solids                                        | 70%                                          |                   |
| VOC Content                                   | 0 g/L                                        |                   |
| Total Cure Time                               | 16 - 24 hours                                |                   |
| Service Temperature                           | -20° - 140° F<br>(-29° - 60° C)              |                   |
| Application Temperature                       | 40° F (4.4° C) minimum                       |                   |
| Shore "00" Hardness                           | Passes                                       | ASTM C836         |
| Stability                                     | Exceeds                                      | ASTM C836         |
| Elongation                                    | 1500%                                        | ASTM D412         |
| Water Absorption                              | 0.7%                                         | ASTM D1970        |
| WVT                                           | 0.03 Perms                                   | ASTM E96, B       |
| Composite (55 Mil Membrane/10 Mil PERMINATOR) |                                              |                   |
| Peel Adhesion                                 | 7 lb./in.<br>(125 g/mm)                      | ASTM C794         |
| Tensile Strength (Film)                       | 5000 psi<br>(36 MPa)                         | ASTM D412 (Die C) |
| Elongation                                    | 900%                                         | ASTM D412 (Die C) |
| Water Vapor Permeability                      | 0.02 Perms<br>(0.013 g/m <sup>2</sup> /24 h) | ASTM E96, B       |
| Water Absorption                              | 0.1%                                         | ASTM D1970        |
| Resistance to Hydrostatic Head                | 48 psi (0.3 MPa)                             | ASTM D751         |
| Puncture Resistance                           | 22 lbf. (98 N)                               | ASTM D4833        |

PAGE 3 ... MEL-ROL LM #714-A ... APRIL 2025

**Footing Details** ... Use DETAIL STRIP from W. R. MEADOWS for impaction sheet coverage. First, fold strips lengthwise and then cut at the fold. Material is then ready to install as 4 1/2" (114.3 mm) strips on either side of the rebar. Any excess can be turned down on the face of the footing. Next, fill the voids around rebars in the keyway with BEM. Pour the walls. Install DETAIL STRIP horizontally along the wall where it meets the footing, placing half the material up the wall and the other half onto the footing. Extend the material 4 1/2" (114.3 mm) beyond outside corners. Slit extended portion of DETAIL STRIP lengthwise. Place the horizontal flap out onto the footing and bend the vertical flap around the wall. Repeat this procedure in the opposite direction. In high water table applications, install WATERSTOP EC from W. R. MEADOWS directly to the cold joint before application of DETAIL STRIP.

**Roller Application** ... MEL-ROL LM can be applied directly from the container using a 3/4" (19.1 mm) nap roller. Apply in two coats, each 30 mils thick, allowing first coat to reach initial set prior to application of second coat.

**Spray Application** ... MEL-ROL LM may be sprayed on at a minimum coverage thickness of 60 mils wet (45 mils dry). To obtain 60 mils wet thickness, and to prevent slumping, apply MEL-ROL LM in two coats of 30 wet mils. Apply the second coat after the first coat has dried (approximately one to two hours).

**Spraying Equipment** ... MEL-ROL LM is most effectively applied by using the Graco HydraMax 350 or the Graco GH833 Big Rig. The Graco heavy-duty texture gun is recommended for use with the following tips: For best results, use the 0.051" (Graco GHD551) heavy-duty switch tip. For spraying of primer coat, a smaller orifice tip such as the 0.035" (Graco GHD35) can be used. Tips should be reversible types for easy clean out. For more complete spraying equipment information, please view INSTALLATION INSTRUCTIONS: SPRAYER EQUIPMENT GUIDELINES FOR W. R. MEADOWS FLUID-APPLIED MEMBRANES available at [www.wrmeadows.com](http://www.wrmeadows.com).

**Horizontal Application** ... For horizontal applications, use HYDRALASTIC 836 from W. R. MEADOWS.

**Thickness Control** ... Frequently inspect surface area with a wet mil gauge to ensure desired consistent thickness is achieved. Porous substrates or masonry block walls may require additional coats to obtain desired thickness.

**Cleanup** ... Material should not be left in the pump, lines, or gun when finished spraying. CAUTION: Solvents must not come in contact with MEL-ROL LM in the sprayer, as they will break the emulsion and plug up the entire sprayer system. After spraying, promptly flush water only (no soap) through the system until pump and hose are clear [approx. five gallons (18.9 L)]. Aromatic solvents, such as xylene or toluene [approx. two gallons (7.6 L)], should be used for final flushing after water is flushed through the pump and lines.

Mineral spirits, paint thinner, gasoline, etc., must not be used to flush system. NOTE: Water must be flushed through the machine to remove any solvents prior to spraying of MEL-ROL LM.

**Protection** ... Cover vertical applications with PROTECTION COURSE, MEL-DRAIN®, or PERMINATOR from W. R. MEADOWS. MEL-DRAIN (type B with polymeric backing film) should be used. View MEL-DRAIN INSTALLATION GUIDELINES at <https://www.wrmeadows.com/mel-drain-installation-guidelines> for detailed information. Surfaces must be covered within 45 days.

**Backfilling** ... Allow 24 hours for complete cure of membrane prior to backfilling.

**PRECAUTIONS**

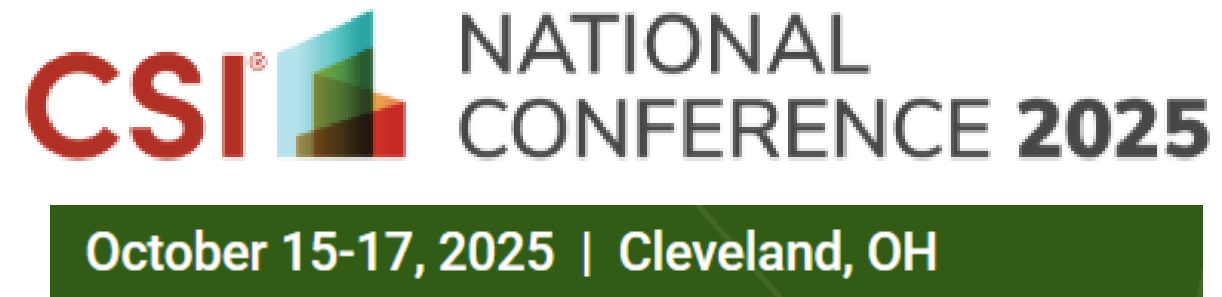
Do not allow containers to freeze. If containers are subjected to temperature below 32°F (0° C), do not apply. Do not apply MEL-ROL LM if rainfall is forecast or imminent within 12 hours at 77° F (23° C). Colder temperatures will increase dry time. For horizontal applications, HYDRALASTIC 836 is recommended. Do not apply MEL-ROL LM or primer when air, material, and surface temperatures are expected to fall below 40° F (4.4° C) within four hours of completed application. Protect the applied material from freezing for 24 hours. Sprayed urethane foams applied over MEL-ROL LM can melt the membrane and cause delamination and failure due to the exothermic reaction that takes place after spraying the foam. These foams should not be sprayed over MEL-ROL LM. The use of MEL-ROL LM does not negate the need for relief of hydrostatic heads. A complete drain tile system should be placed around the exterior of footing and under slabs, as required.



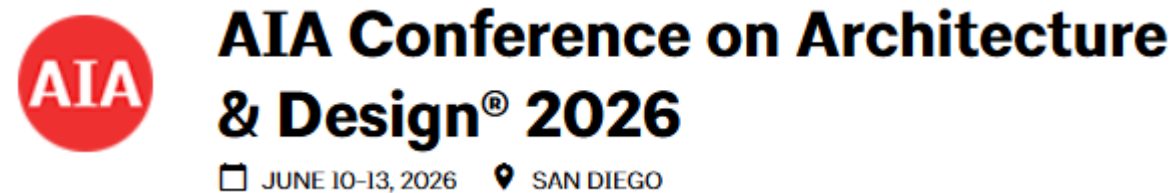
BY W. R. MEADOWS  
Environmentally Responsible Products  
for Concrete Performance

# Sources of Product Information

## → Trade Shows:



**R E G I O N A L  
C O N F E R E N C E**



# Sources of Product Information

## → Product Representatives:



# Schedules For Documentation

**After product evaluation, an approved product data schedule is included in the specifications section or on the drawings.**

- When placed in a specification section, schedules are included at the end of PART 3—EXECUTION.
- Schedules that include materials from multiple specification sections should be included in the drawings or included in a separate specification.

| ACOUSTIC PANEL CEILING |               |                                          |
|------------------------|---------------|------------------------------------------|
| APC-1                  | MANUFACTURER: | ARMSTRONG                                |
|                        | PRODUCT:      | OPTIMA PB - TEGULAR                      |
|                        | SIZE:         | 24" X 24" X 1" IN 15/16" GRID            |
|                        | COLOR:        | WHITE                                    |
|                        | APPLICATION:  | TYPICAL CEILING TILE                     |
| APC-2                  | MANUFACTURER: | ARMSTRONG                                |
|                        | PRODUCT:      | OPTIMA PB HEALTHZONE - TEGULAR           |
|                        | SIZE:         | 24" X 24" X 1" IN 15/16" GRID            |
|                        | COLOR:        | WHITE                                    |
|                        | APPLICATION:  | SCRUBBABLE CEILING TILE - LABS           |
| APC-3                  | MANUFACTURER: | ARMSTRONG                                |
|                        | PRODUCT:      | ULTIMA HIGH NRC - TEGULAR                |
|                        | SIZE:         | 24" X 72" X 7/8" IN 15/16" GRID          |
|                        | COLOR:        | WHITE                                    |
|                        | APPLICATION:  | CORRIDOR CEILING TILE                    |
| APC-4                  | MANUFACTURER: | ARMSTRONG                                |
|                        | PRODUCT:      | OPTIMA PB - TEGULAR                      |
|                        | SIZE:         | 48" X 48" X 1" IN 15/16" GRID            |
|                        | COLOR:        | WHITE                                    |
|                        | APPLICATION:  | LOBBY CEILING TILE                       |
| APC-5                  | MANUFACTURER: | ARMSTRONG                                |
|                        | PRODUCT:      | ULTIMA HEALTHZONE HIGH NRC               |
|                        | SIZE:         | 24" X 24" X 7/8" IN 15/16" ALUMINUM GRID |
|                        | COLOR:        | WHITE                                    |
|                        | APPLICATION:  | WASHABLE, FOOD GRADE                     |
| APC-6                  | MANUFACTURER: | ARMSTRONG                                |
|                        | PRODUCT:      | KITCHEN ZONE - SQUARE LAY IN             |
|                        | SIZE:         | 24" X 24" X 5/8" IN 15/16" GRID          |
|                        | COLOR:        | WHITE                                    |
|                        | APPLICATION:  | RESTROOMS AND AS INDICATED               |

# POLL

## Material/Product Questions

Menti.com Code: 6656 6754



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# RESEARCH CODE & REGULATIONS (COMPETENCY 4B)



## LEARNING OBJECTIVES

- LO1 Identify requirements that must be met for a project to comply with applicable federal, state, and local codes.
- LO2 Select products that meet applicable code requirements.
- LO3 Determine whether a meeting with AHJs is necessary for code modification requests or interpretations.

**Research applicable code requirements.**

**(WHAT IS REQUIRED?)**

# Type of Regulations

## Regulations:

- Building Codes.
- Land Development Regulations (Zoning).
- Accessibility (Law).
- Federal Emergency Management Administration (FEMA).

## Authorities Having Jurisdictions:

- Federal Agency.
- State Agency.
- Locality.

# Type of Regulations

## Regulations:

- Building Codes



- Land Development Regulations



**City Planning & Development Department**



- Accessibility & Safety



# Type of Regulations

## Authorities Having Jurisdiction (AHJ):

- Local City or County:



**City Planning & Development Department**



**Neighborhood Resource Center**

- State



**Virginia Department of General Services**  
Serving Government. Serving Virginians.

- Federal



**U.S. General Services Administration**  
**Public Buildings Service**



# Research Applicable Code Requirements

**The A/E needs to understand federal, state, and local codes applicable to the design.**

- There might be instances where some codes create conflicts that require interpretation by the AHJ.
  - AHJs are the organizations, agencies, or departments that have control over an aspect of construction within an area in which they are given responsibility.



# Code Compliance For Projects

Verify that code requirements and product performance align.

- How do you know that a product is compliant?
  - Compare code requirement with product performance and testing.



# Example – Interior Finish

## 2021 International Building Code (IBC)

### 803.1.2 Interior wall and ceiling finish materials tested in accordance with ASTM E84 or UL 723.

*Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indices.*

*Class A = Flame spread index 0–25; smoke-developed index 0–450.*

*Class B = Flame spread index 26–75; smoke developed index 0–450.*

*Class C = Flame spread index 76–200; smoke-developed index 0–450.*

**Exception:** Materials tested in accordance with Section 803.1.1 and as indicated in Sections 803.1.3 through 803.13.

<https://codes.iccsafe.org/content/IBC2021P2/chapter-8-interior-finishes>

# Example – Interior Finish

## 2021 International Building Code

TABLE 803.13 INTERIOR WALL AND CEILING FINISH REQUIREMENTS BY OCCUPANCY<sup>k</sup>

| GROUP                       | SPRINKLERED <sup>l</sup>                                               |                                                             |                                        | NONSPRINKLERED                                                         |                                                             |                                        |
|-----------------------------|------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------|------------------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------|
|                             | Interior exit stairways and ramps and exit passageways <sup>a, b</sup> | Corridors and enclosure for exit access stairways and ramps | Rooms and enclosed spaces <sup>c</sup> | Interior exit stairways and ramps and exit passageways <sup>a, b</sup> | Corridors and enclosure for exit access stairways and ramps | Rooms and enclosed spaces <sup>c</sup> |
| A-1 & A-2                   | B                                                                      | B                                                           | C                                      | A                                                                      | A <sup>d</sup>                                              | B <sup>e</sup>                         |
| A-3 <sup>f</sup> , A-4, A-5 | B                                                                      | B                                                           | C                                      | A                                                                      | A <sup>d</sup>                                              | C                                      |
| B, E, M, R-1                | B                                                                      | C <sup>m</sup>                                              | C                                      | A                                                                      | B                                                           | C                                      |
| R-4                         | B                                                                      | C                                                           | C                                      | A                                                                      | B                                                           | B                                      |
| F                           | C                                                                      | C                                                           | C                                      | B                                                                      | C                                                           | C                                      |
| H                           | B                                                                      | B                                                           | C <sup>g</sup>                         | A                                                                      | A                                                           | B                                      |
| I-1                         | B                                                                      | C                                                           | C                                      | A                                                                      | B                                                           | B                                      |
| I-2                         | B                                                                      | B                                                           | B <sup>h, i</sup>                      | A                                                                      | A                                                           | B                                      |
| I-3                         | A                                                                      | A <sup>i</sup>                                              | C                                      | A                                                                      | A                                                           | B                                      |
| I-4                         | B                                                                      | B                                                           | B <sup>h, i</sup>                      | A                                                                      | A                                                           | B                                      |
| R-2                         | C                                                                      | C                                                           | C                                      | B                                                                      | B                                                           | C                                      |
| R-3                         | C                                                                      | C                                                           | C                                      | C                                                                      | C                                                           | C                                      |
| S                           | C                                                                      | C                                                           | C                                      | B                                                                      | B                                                           | C                                      |
| U                           | No restrictions                                                        |                                                             |                                        | No restrictions                                                        |                                                             |                                        |

## Felt Wallcovering Product Data Sheet

**WEIGHT** 25 oz/ly (775 g/lm)

**WIDTH** 63" (160 cm)

**CONTENTS** 100% recycled polyester

**RECYCLED CONTENT** 95% post-consumer recycled content by weight

**BACKING** Fused polyester

**THICKNESS** 0.12" (0.3 cm)

**PATTERN MATCH** Non-reverse hang, random match

**FIRE TEST** ASTM E84 Tunnel Test Adhered: Class A, flame spread 5, smoke developed 10 (test procedure is comparable to UL 723, NFPA 255 and UBC 8-1)

ASTM E84 Tunnel Test Unadhered: Class A, flame spread 0, smoke developed 90 (test procedure is comparable to UL 723)

CAN/ULC S102 Tunnel Test: flame spread 15, smoke developed 45

**HEALTH STANDARDS**  
California Section 01350  
Health Product Declaration (HPD)

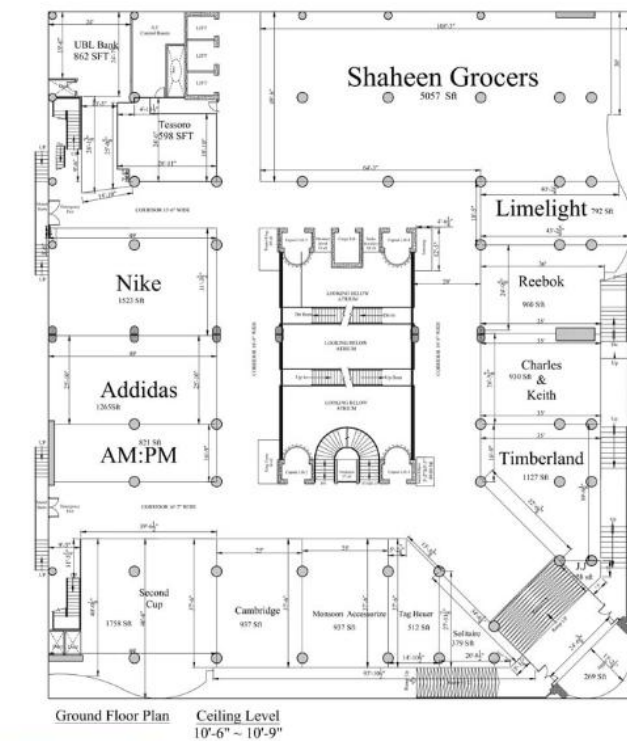
<https://codes.iccsafe.org/content/IBC2021P2/chapter-8-interior-finishes>

# Meetings With AHJs

If the A/E anticipates a need for an interpretation, the information should be forwarded to the AHJ for review before the meeting and may required the following:

- Design Drawings.
- References.
- Product literature.
- Material ratings.
- Product certifications.

*You HAVE TO  
SHOW your work!*



|                  |                                                                                                                                          |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| WEIGHT           | 25 oz/ly (775 g/m)                                                                                                                       |
| WIDTH            | 63" (160 cm)                                                                                                                             |
| CONTENTS         | 100% recycled polyester                                                                                                                  |
| RECYCLED CONTENT | 95% post-consumer recycled content by weight                                                                                             |
| BACKING          | Fused polyester                                                                                                                          |
| THICKNESS        | 0.12" (0.3 cm)                                                                                                                           |
| PATTERN MATCH    | Non-reverse hang, random match                                                                                                           |
| FIRE TEST        | ASTM E84 Tunnel Test Adhered: Class A, flame spread 5, smoke developed 10 (test procedure is comparable to UL 723, NFPA 255 and UBC 8-1) |
|                  | ASTM E84 Tunnel Test Unadhered: Class A, flame spread 0, smoke developed 90 (test procedure is comparable to UL 723)                     |
| CAN/ULC          | S102 Tunnel Test: flame spread 15, smoke developed 45                                                                                    |
| HEALTH STANDARDS | California Section 01350<br>Health Product Declaration (HPD)                                                                             |



# POLL

## Code & Regulation Questions

Menti.com Code: 6656 6754



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# RESEARCH PROJECT (COMPETENCY 4C)



## LEARNING OBJECTIVES

- LO1 Evaluate product suitability against the owner's requirements and the design intent.
- LO2 Compare products from multiple manufacturers to determine product acceptability.
- LO3 Determine a product's expected performance based on prevailing project site conditions.

**Evaluate product suitability for project conditions.**

**(WHAT IS NEEDED?)**

# Evaluate Product Suitability

**What is the rubric for a successful product?**

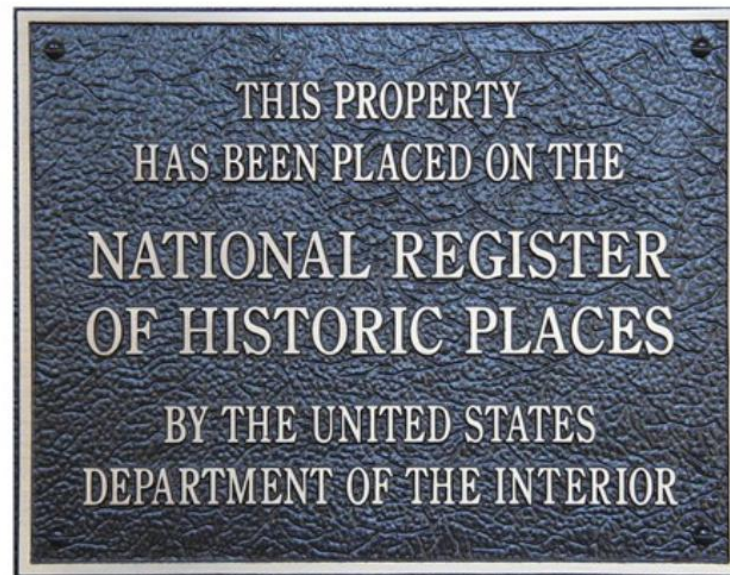
## **Design Objectives – Owner Project Requirements:**

- Historic Preservation. ➡
- Aesthetics. ➡
- Cost Effectiveness. ➡
- Functional / Operational. ➡
- Productive. ➡
- Safe/Secure. ➡
- Sustainable. ➡
- Resilience. ➡
- Accessible. ➡

# Evaluate Product Suitability

Design Objective:

→ **Historic Preservation**



**Technical Preservation Services  
Preservation Briefs**



# Evaluate Product Suitability

Design Objective:

→ **Aesthetics**



**BEAUTY**  
*is in the eye of the beholder*



# Evaluate Product Suitability

Design Objective:

→ **Cost Effectiveness**



Viewed over a 30 year period, initial building costs account for approximately just 2% of the total, while operations and maintenance costs equal 6%, and personnel costs equal 92%. *Graphic: Sieglinde Fuller Source: Sustainable Building Technical Manual / Joseph J. Romm, Lean and Clean Managemen, 1994.*

Life-Cycle Cost Analysis (LCCA) Method

Costs

**INITIAL COSTS**

**ENERGY AND WATER COSTS**

**OPERATION, MAINTENANCE, AND REPAIR COSTS**

**REPLACEMENT COSTS**

**RESIDUAL VALUES**

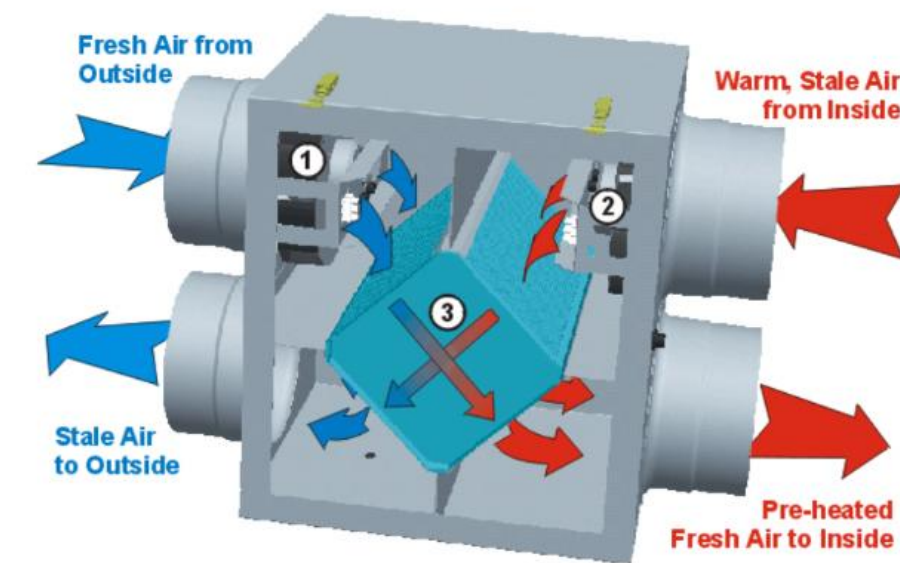
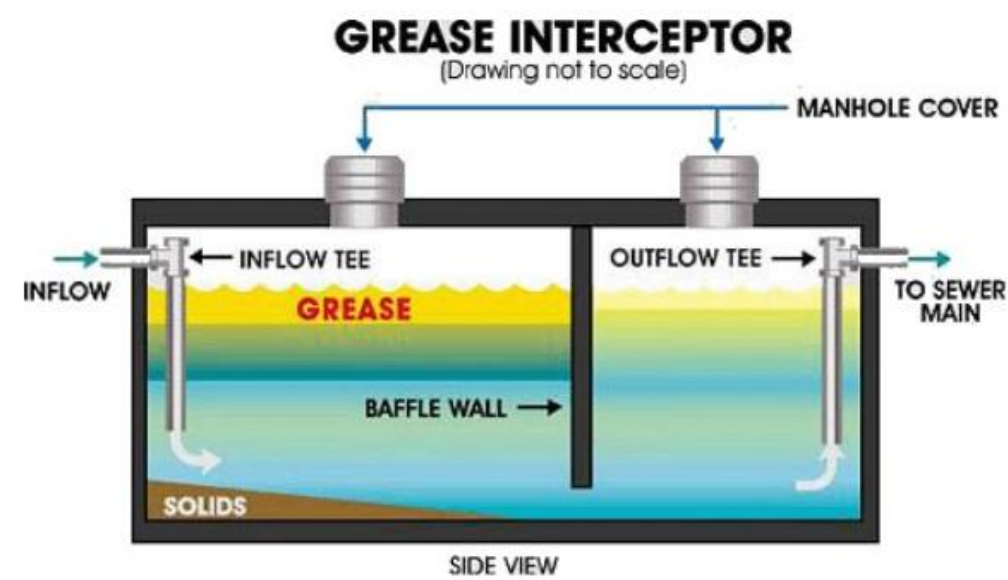
**OTHER COSTS**



# Evaluate Product Suitability

Design Objective:

→ **Functional / Operational**



# Evaluate Product Suitability

Design Objective:

→ **Productive**

## Health and Safety

N C A R B

- Fire safety
- Code compliance
- Public safety
- Structural stability
- Protection from loss of life or property

## Welfare

N C A R B

- Accessibility and universal design
- Indoor air quality
- Code compliance
- Sense of safety and security
- Access to sunlight



Maslow's hierarchy of needs

# Evaluate Product Suitability

Design Objective:

→ **Safety / Security**



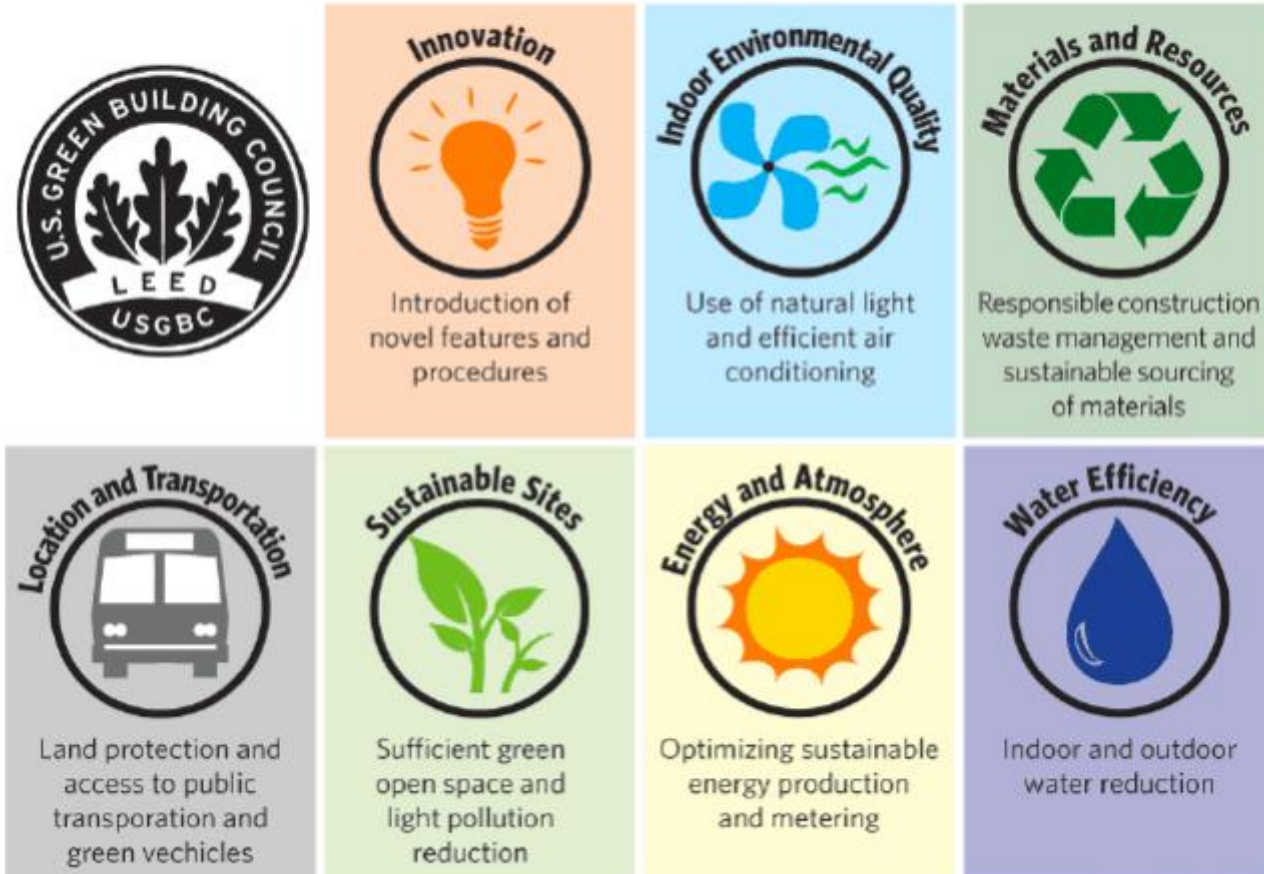
# Evaluate Product Suitability

Design Objective:

→ **Sustainable**

## LEED CERTIFICATION REQUIREMENTS

In order to achieve LEED certification, projects must earn points in these categories:



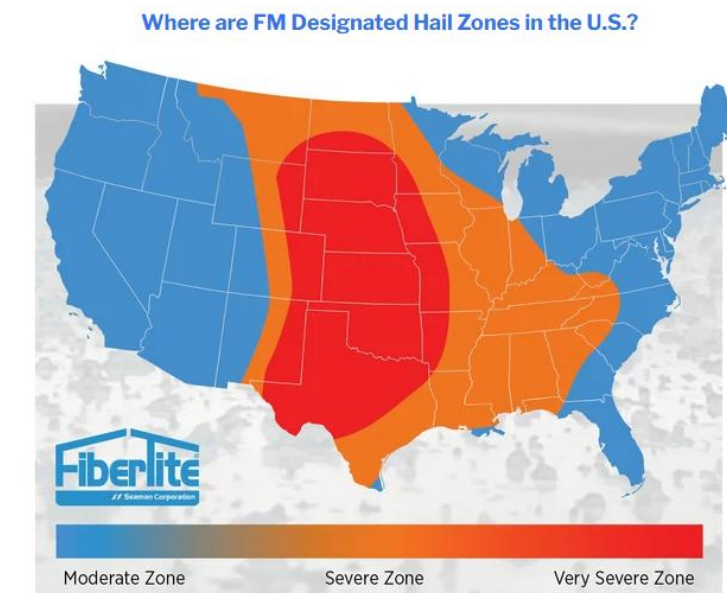
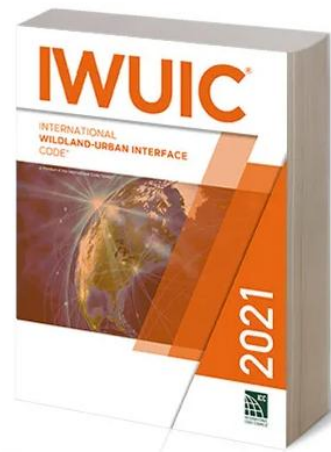
## Sustainability Best Practices Framework



# Evaluate Product Suitability

Design Objective:

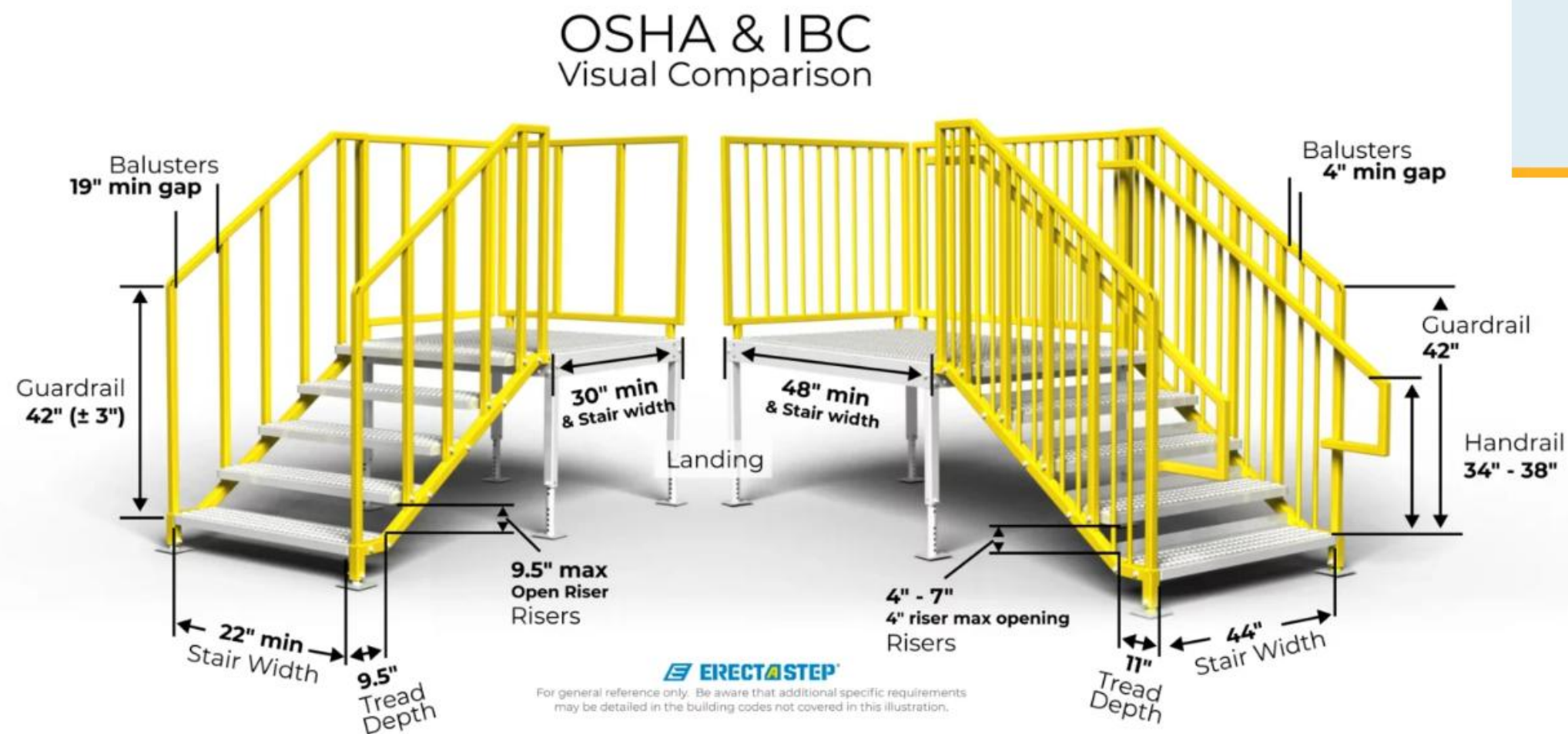
→ **Resilience**



# Evaluate Product Suitability

Design Objective:

→ **Accessible**



## Product Comparisons

**If the product type is available from more than one manufacturer, investigate several manufacturers to determine acceptability.**

- Find product data for both (websites and product data sheets and cut sheets).
- Verify criteria are aligned with the same test.
- Verify code minimum requirements.
- Verify Owner's minimum requirements.

# Product Comparisons - Example

## Felt Wallcovering Product Data Sheet

**WEIGHT** 25 oz/ly (775 g/lm)

**WIDTH** 63" (160 cm)

**CONTENTS** 100% recycled polyester

**RECYCLED CONTENT** 95% post-consumer recycled content by weight

**BACKING** Fused polyester

**THICKNESS** 0.12" (0.3 cm)

**PATTERN MATCH** Non-reverse hang, random match

**FIRE TEST** ASTM E84 Tunnel Test Adhered: Class A, flame spread 5, smoke developed 10 (test procedure is comparable to UL 723, NFPA 255 and UBC 8-1)

ASTM E84 Tunnel Test Unadhered: Class A, flame spread 0, smoke developed 90 (test procedure is comparable to UL 723)

CAN/ULC S102 Tunnel Test: flame spread 15, smoke developed 45

**HEALTH STANDARDS**  
California Section 01350  
Health Product Declaration (HPD)

## Vinyl Wallcovering Product Data Sheet

| Physical Properties                      | Results                                                                          |
|------------------------------------------|----------------------------------------------------------------------------------|
| Product Weight                           | 20oz. per lineal yd.                                                             |
| Vinyl Weight                             | 17oz. per lineal yd.                                                             |
| Fabric Weight                            | 3oz. per lineal yd.                                                              |
| Thickness*                               | 0.015 to 0.030 in.                                                               |
| Fabric(base/backer)                      | Poly-Cotton Osnaburg (standard) or Polyester Nonwoven (special order)            |
| Breaking Strengths lbs. force            | Results                                                                          |
| Machine Direction-warp                   | Exceeds Type II minimum of 50lbs.                                                |
| Cross Machine Direction-fill             | Exceeds Type II minimum of 55lbs.                                                |
| Tearing Strength, Scale                  | Results                                                                          |
| Machine Direction-warp                   | Exceeds Type II minimum of 25lbs.                                                |
| Cross Machine Direction-fill             | Exceeds Type II minimum of 25lbs.                                                |
| Temperature                              | Results                                                                          |
| Cold Crack resistance @ 20 °F            | No change                                                                        |
| Heat Aging (7 days at 158 °F)            | Does not become stiff, brittle, discolored, or show loss of grain                |
| Specifications / Testing / Certification | Results                                                                          |
| Federal Specifications                   | CCC-408-D Type II Class A                                                        |
| CFFA Specification                       | CFFA-W-101-D Type II Class A                                                     |
| Fire Testing                             | Results                                                                          |
| ASTM-E84 Tunnel Test Class A             | Meets or exceeds requirements for flame spread, smoke developments and flashover |
| NFPA286 Corner Burn Test Class A         | Meets or exceeds requirements for flame spread, smoke developments and flashover |
| NFPA265 Corner Burn Test Class A         | Meets or exceeds requirements for flame spread, smoke developments and flashover |
| BS476 Part 6&7                           | Meets or exceeds requirements for flame spread, smoke developments and flashover |

## Project Site Conditions

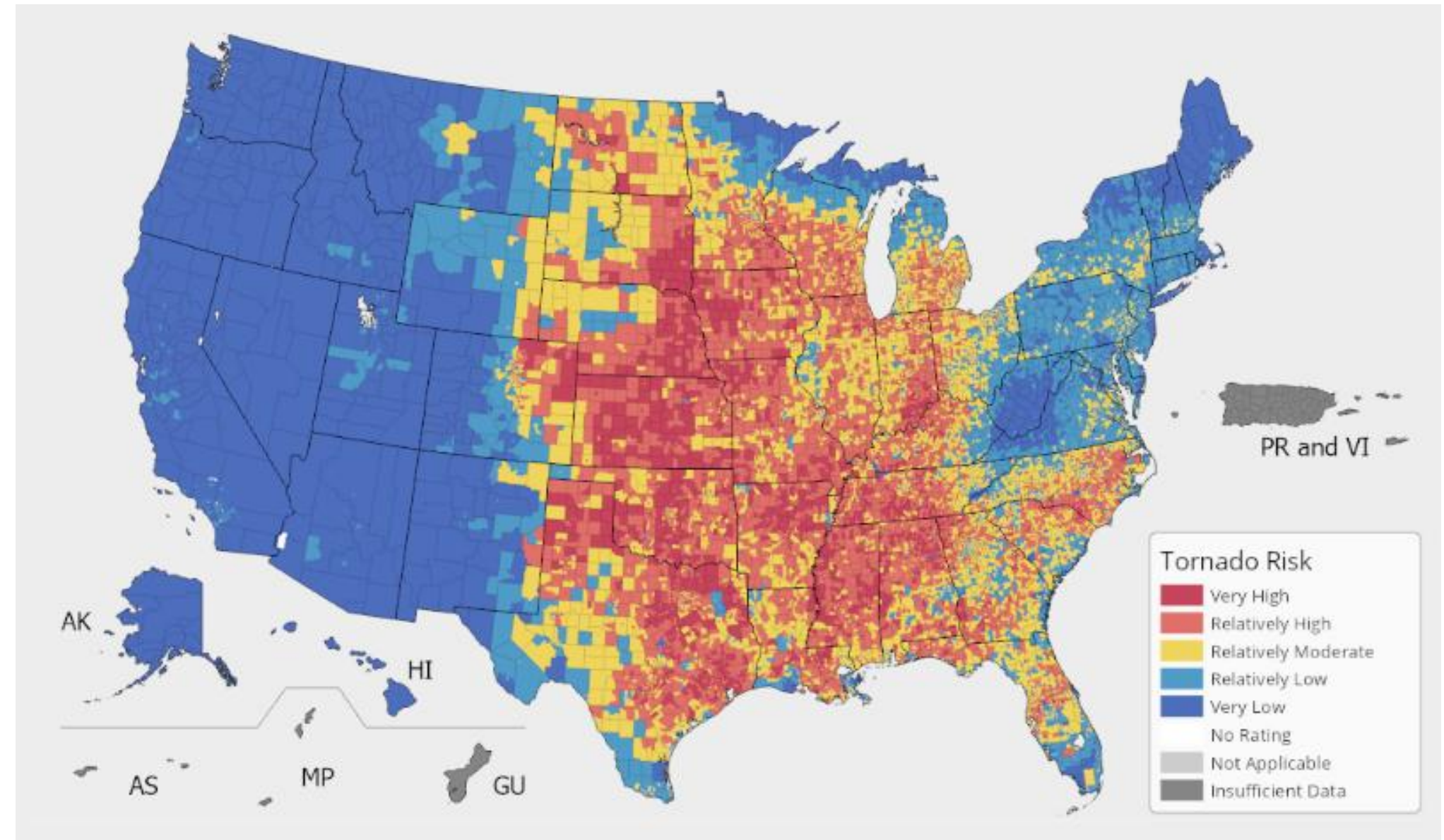
**The specifier should ascertain the other consultants' determinations of characteristics of the project site.**

- Environmental severity classification. →
- Energy code climate zone. →
- Wind loads calculations. →
- Salt exposure. →

# Project Site Conditions

## → Environmental Severity Classification:

- Seismic Class.
- Tornado Risk.
- Flooding Risk.
- Snow Load Issues.
- Rainfall Amounts.
- Wildfire Risk.

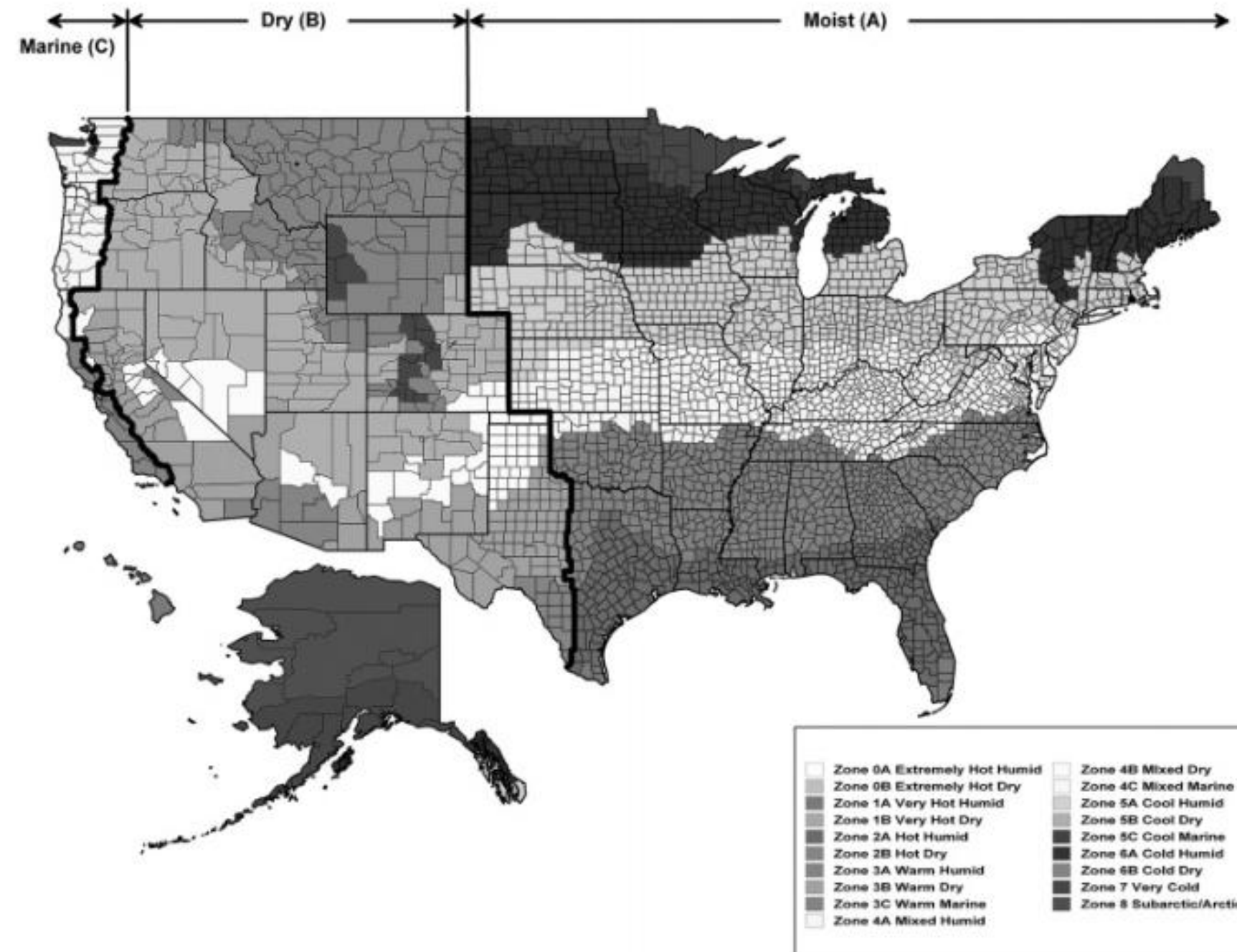


<https://hazards.fema.gov/nri/tornado>

# Project Site Conditions

## → Energy Code Climate Zone:

- International Energy Conservation Code (IECC).

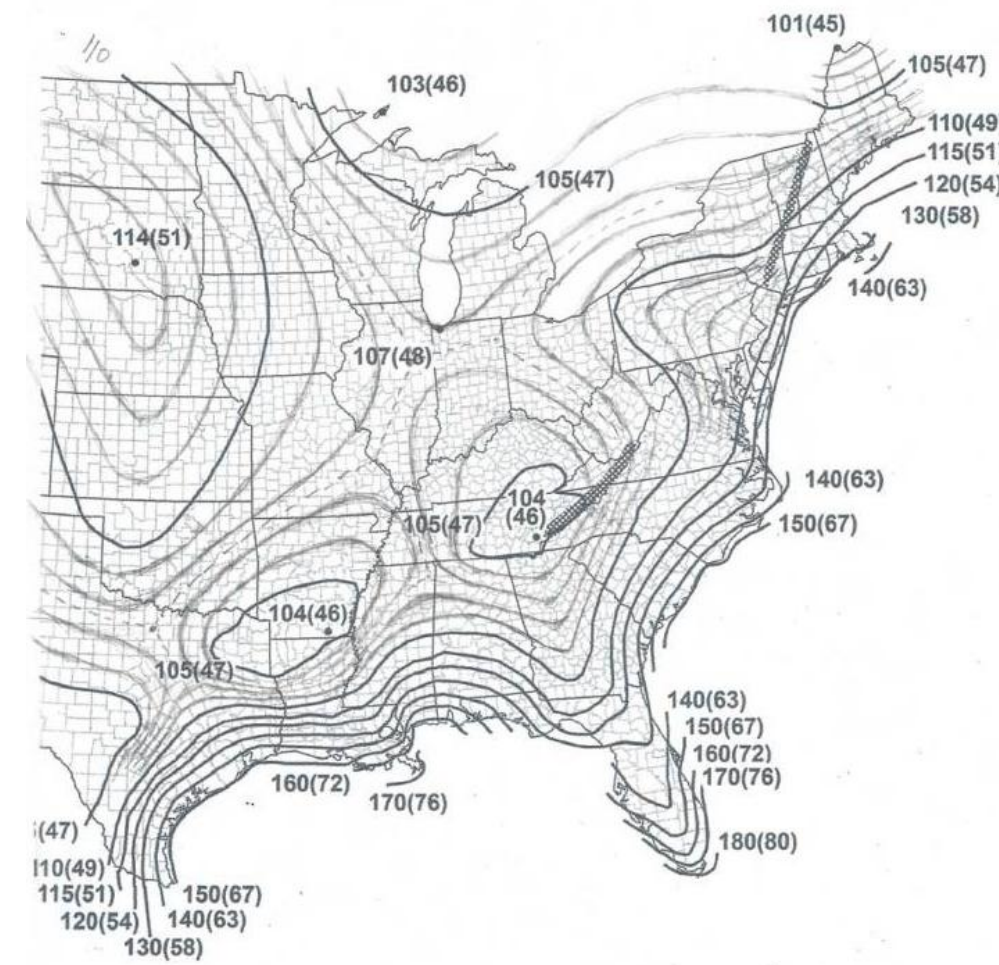
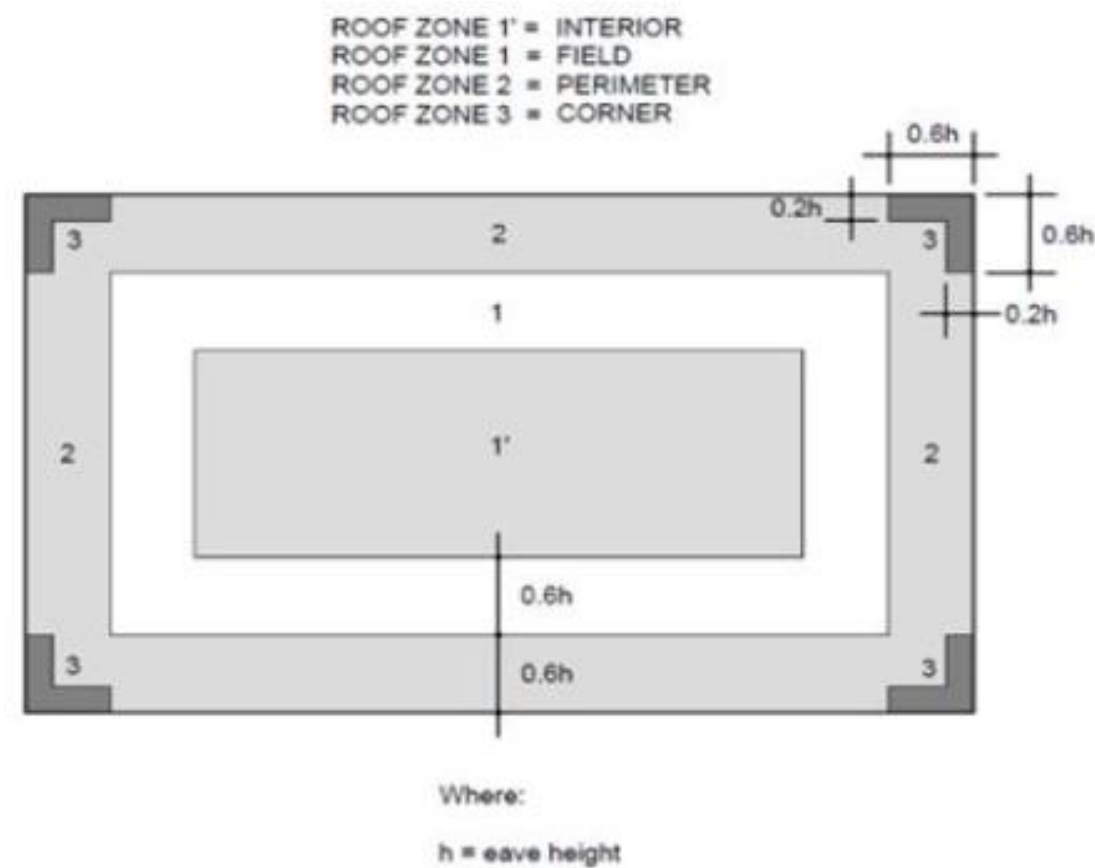


<https://codes.iccsafe.org/content/IECC2021P2/chapter-3-ce-general-requirements>

# Project Site Conditions

## → Wind Load Calculations:

- ASCE 7 – Minimum Design Loads and Associated Criteria for Buildings and Other Structures.
- Contains many other environmental severity classifications, too.



<https://ascehazardtool.org/>

# Project Site Conditions

## → Salt Exposure:

- Coastal Salt Water.
- De-Icing Chemicals.



## Product's Expected Performance

**Products are designed and manufactured to withstand a limited set of project conditions, including the following:**

- Installed location on site.
- Temperature.
- Humidity.
- Wind and solar exposure.
- Seismic risks.
- Atmospheric pressure.
- Exposure to corrosive gases, hazardous chemicals, or possible contamination.
- Interior applications.
- Exterior applications.
- Space constraints.
- Frequency of use.
- Security, vandalism, or theft concerns.
- Owner's or manufacturer's maintenance program.

**TIP!** Review project site conditions with product performance testing.

# POLL

## Project Questions

Menti.com Code: 6656 6754



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# RESEARCH REFERENCE STANDARDS (COMPETENCY 4E)



## LEARNING OBJECTIVES

- LO1 Distinguish between reference standards and codes.
- LO2 Recognize the advantages of using reference standards.
- LO3 Identify duplications and conflicts when two or more standards are used for a given product.
- LO4 Identify the sustainability metrics of products.
- LO5 Determine if a more sustainable product can achieve the project goals.

**Research applicable product standards.**

**(WHAT IS STANDARD?)**

# Reference Standards, Code, and Law

## Reference Standards:



## Codes:



## Law:



# CDT and PDPG Definitions

## Codes, regulations, and standards

**Codes, regulations, and reference standards establish minimum requirements for the design and construction buildings and structures that compose the built environment.**

### Codes

- Mandatory
- Developed and maintained by model code-writing organizations with industry input
- Enforceable after adopted by local authority having jurisdiction

### Regulations

- Mandatory
- Developed and written by authorities having jurisdiction for specific purpose
- Unlike code, may impose fines for failing to comply

### Standards

- Voluntary
- Some reference standards adopted by codes and regulations
- Based on considerable amounts of research and testing by private organizations

## Type of Reference Standards

**Material Standards.** →  
**Product Standards.** →  
**Design Standards.** →  
**Test Method Standards.** →  
**Installation Standards.** →  
**Performance Standards.** →

# Type of Reference Standards

## → Material Standards:



ASTM C476-23 ⓘ

### Standard Specification for Grout for Masonry

#### Abstract

This specification covers two types of grout, fine and coarse grout, for use in the construction of masonry structures. Grout is specified by proportions or strength requirements. Materials used as ingredients in grout shall conform to the requirements specified such as: cementitious materials; blended cements; quicklime; hydrated lime; coal fly ash or raw calcine natural pozzolan; granulated blast furnace slag; air-entraining admixtures; aggregates; water; pumping aids; antifreeze compounds; and storage of materials. Fine grout shall be manufactured with fine aggregates. Coarse grout shall be manufactured with a combination of coarse and fine aggregates. Proportions of ingredients shall be determined by grout proportion requirements and by the specified compressive strength. Materials for grout shall be measured in such a way that the required proportions of the grout materials are controlled and accurately measured. Grout shall be produced using one of the following procedures: grout materials mixed with water at the job site and ready-mixed grout transported to the job site.



# Type of Reference Standards

## → Product Standards:



ASTM C216-24 ⓘ

### Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)

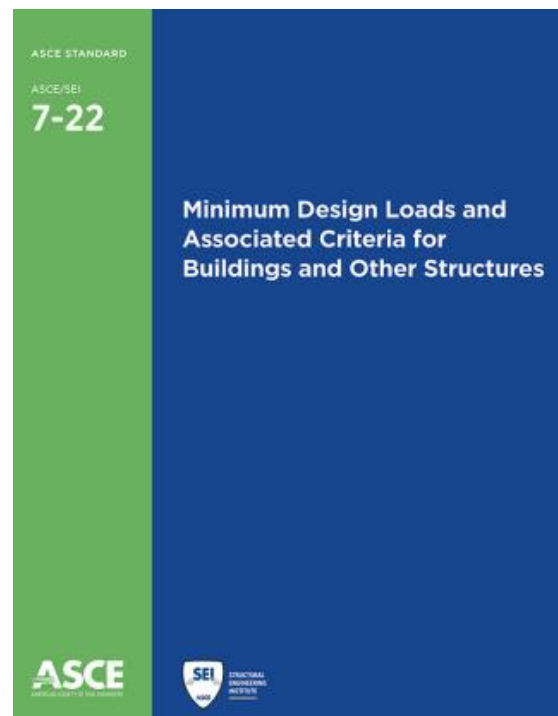
#### Abstract

This specification covers brick intended for use in masonry and supplying structural or facing components, or both, to the structure. Bricks shall be classified according to their resistance to damage by freezing when saturated at a moisture content: Grade SW and Grade MW. The facing bricks shall be classified into three types: Types FBS; FBX; and FBA. Durability; absorption alternate; freezing and thawing alternative; breakage and weight loss; cracking; low weathering index alternative; compressive strength; and initial rate of absorption requirements shall be tested for the material to meet the specified requirements.



# Type of Reference Standards

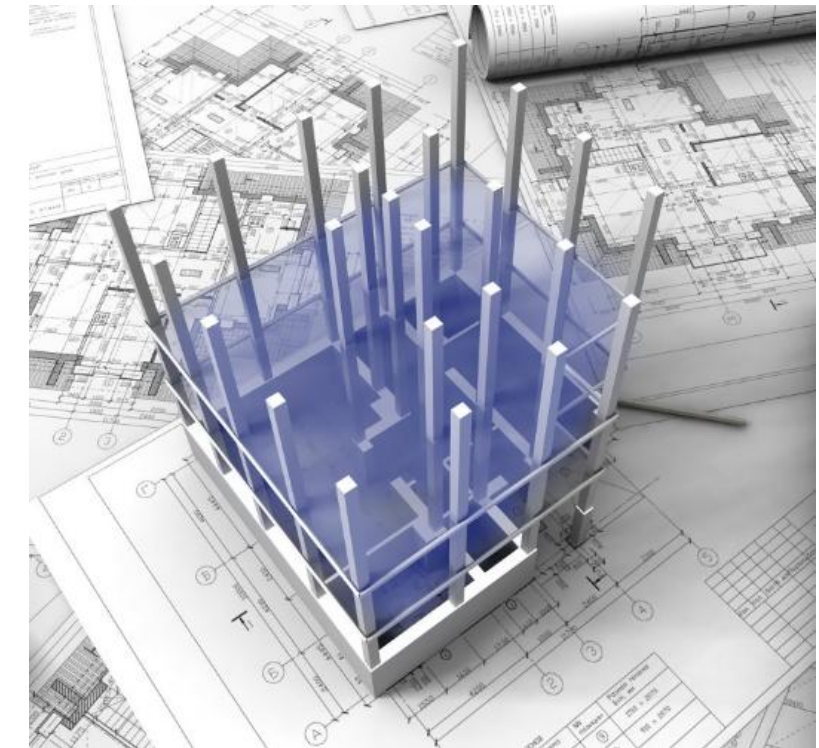
## → Design Standards:



## ASCE 7

### Minimum Design Loads and Associated Criteria for Buildings and Other Structures (ASCE/SEI 7-22)

ASCE 7 is the nationally adopted loading standard for general **structural design**. This standard prescribes design loads for all hazards including dead, live, soil, flood, tsunami, snow, rain, atmospheric ice, seismic, wind, and fire, as well as how to evaluate load combinations.



# Type of Reference Standards

## → Test Method Standards:



ASTM C67/C67M-25 ⓘ

### Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile

#### Abstract

These test methods cover procedures for the sampling and testing of brick and structural clay tile. The tests include modulus of rupture, compressive strength, absorption, saturation coefficient, effect of freezing and thawing, efflorescence, initial rate or absorption, and determination of weight, size, warpage, length change, and void areas. For purposes of these tests, full-size bricks, tiles, or solid masonry units shall be used as test specimens. They shall be representative of the lot of units from which they are to be selected in respect of the range of colors, textures, and sizes and shall be free of or brushed to remove dirt, mud, mortar, or other foreign materials unassociated with the manufacturing process.

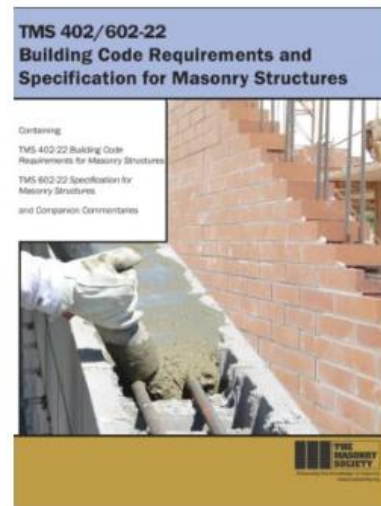


# Type of Reference Standards

## → Installation Standards:



### TMS 602



TMS 402/602 *Building Code Requirements and Specification for Masonry Structures* contains two standards and their commentaries: *Building Code Requirements for Masonry Structures* (TMS 402) and *Specification for Masonry Structures* (TMS 602). The Standards are written as legal documents so that they may be adopted by reference in building codes. The Code (TMS 402) covers the design and construction of masonry structures while the Specification (TMS 602) is concerned with minimum construction requirements for masonry in structures. The commentaries present background details, Committee considerations, and research data used to develop the standards. The commentaries are not mandatory and are for information of the user only.



# Type of Reference Standards

## → Performance Standards:



ASTM F1487-25 ⓘ

### Standard Consumer Safety Performance Specification for Playground Equipment for Public Use

#### Scope

1.1 This consumer safety performance specification provides safety and performance standards for various types of public playground equipment and dimensional requirements for their clearance and use zones. Its purpose is to reduce life-threatening and debilitating injuries.

1.2 The range of users encompassed by this consumer safety performance specification is the 5th percentile 2-year-old through the 95th percentile 12-year-old.

1.3 Home playground equipment, toys, amusement rides, sports equipment, fitness equipment intended for users over the age of 12, public use play equipment for children 6 to 24 months, and soft contained play equipment are not included in this specification.

1.4 Products or materials (site furnishings) that are installed outside the equipment use zone, such as benches, tables, independent shade structures, and borders used to contain protective surfacing, are not considered playground equipment and are not included in this specification.

1.5 This specification does not address accessibility, except as it pertains to safety issues not covered in the DOJ 2010 Standard for Accessible Design.

1.6 This consumer safety performance specification includes the following sections:



## Reference Standards - Advantages

There are many advantages for the use of reference standards, including the following:

- Quality assurance.
  - Uniformity.
  - Reduced conflict and duplication.
  - Reduced work.
- (Associations know their industry.)  
(Consensus among the industry.)  
(Documents are reviewed by industry experts.)  
(References reduce verbiage.)



# Reference Standards - Cautions

**Users of reference standards should be familiar with the following issues:**

- Applicability. (Does it apply?)
- Quality. (Is the minimum standard enough?)
- Design criteria. (Is the minimum standard too high?)
- Availability. (Is the standard well-known in the industry?)
- Duplication and conflict. (If using two, where do they conflict?)
- Optional provisions. (Did you select from the options listed?)
- Multiple standards. (Are multiple standards listed?)



# Sustainability Metrics - General

## Sustainability Design:

- Site Optimization.
- Energy Performance and Conservation.
- Water Use and Conservation.
- Materials and Resources.
  - Reduce / Reuse / Recycle.
  - Regional Materials.
  - Rapidly Renewable Materials.
- Environmental Quality.
  - Air Quality (Low VOC / High Ventilation).
  - Acoustic Quality.
  - Thermal Comfort.
  - Daylighting.
- Historic Preservation and Rehabilitation.



# Sustainability Metrics

The A/E also should understand the sustainability and environmental impact of the products being evaluated.

- Ecolabels: Identify sustainability performance.



# Sustainable Goals

**The sustainability of a product over the product's entire anticipated lifespan should be evaluated during product selection.**

- Sustainability Standards: Evaluate environmental performance.



# **POLL**

## **Reference Standard Questions**

**Menti.com Code: 6656 6754**



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# RESEARCH PRODUCT REPRESENTATIVE (COMPETENCY 4D)



## LEARNING OBJECTIVES

- LO1 Recognize the value of a manufacturer product representative's role as a consultant.
- LO2 Identify the types of information typically available on manufacturer websites.
- LO3 Compare a product's documented properties and limitations against the design criteria for a project.
- LO4 Analyze product manufacturer guide specifications for biases and accuracy.

**Review key product selections with product representatives.**

# Product Representatives

**The product representative is often consulted to determine product details and product viability.**

- Experts on their Products and Information.
  - Selection Advisor for Design.
  - Solutions Advisor for Construction.
- Current Industry Trends.



# Product Representatives - Questions

## Questions to ask a product representative as a consultant:

- Would the Product Representative recommend the use of the product for this application?
- Do they train and/or certify installers?
- What issues have they seen in the field?
- Are there changes in production/manufacturing?
- What are the comparable products?
  - They know their own competition.

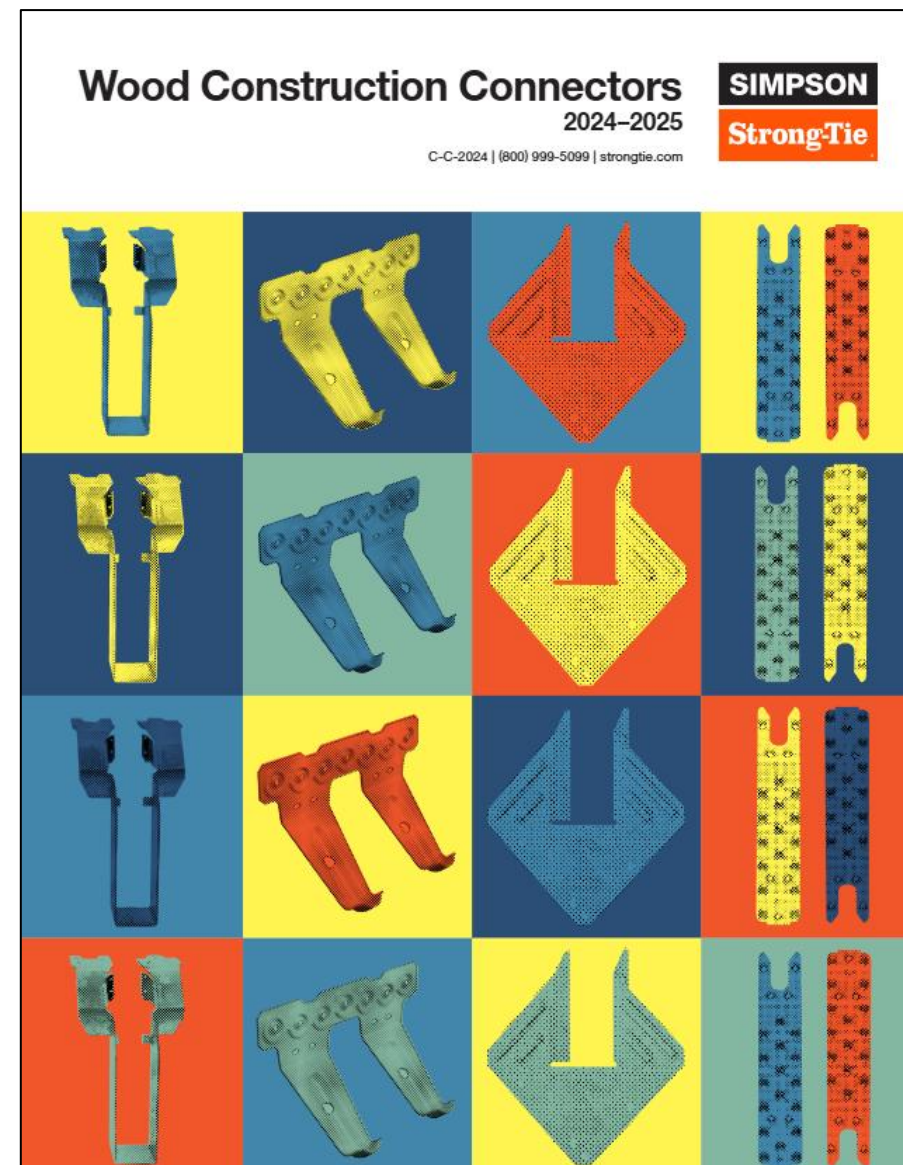


# Product Representatives – Manufacturer Websites

- Catalogs. ➡
- Product datasheets. ➡
- Installation instructions. ➡
- Safety Data Sheets (SDSs). ➡
- Environmental Product Declarations (EPDs). ➡
- Health Product Declarations® (HPDs). ➡
- Test reports. ➡
- Evaluation service reports. ➡
- Drawing details and building information model (BIM) objects. ➡
- Manufacturer guide specifications. ➡
- Contact information for product representatives. ➡
- Continuing education presentations, seminars, and whitepapers. ➡

# Product Representatives – Manufacturer Websites

→ Catalogs:



# Product Representatives – Manufacturer Websites

## Product Data Sheets:

NO. 714-A

DATA SHEET



MasterFormat: 07 14 16

APRIL 2025  
(Supersedes February 2025)

MEL-ROL® LM

Single-Component, Water-Based, Polymer-Modified, Cold-Applied, Waterproofing Membrane

**DESCRIPTION**

MEL-ROL LM is a single-component, polymer-modified, cold-applied, water-based, liquid waterproofing membrane ideal for below-grade vertical seamless waterproofing applications. We have taken the same high quality rubber polymers found in W. R. MEADOWS' successful MEL-ROL "peel and stick" membrane and converted them into a heavy-bodied, high solids, quick drying liquid membrane.

With MEL-ROL LM, installation time is reduced, utilizing either a spray or roller application. A variety of different protection courses, insulation boards, or drainage boards can be embedded into the membrane to create a superior waterproofing system. With the application of PERMINATOR® vapor barrier over the membrane, a composite system can be created that has the combined advantages of both "peel and stick" and liquid-applied membranes.

**USES**

MEL-ROL LM can be used on new and remedial waterproofing applications on concrete or masonry block substrates. Since the formula is water-based, MEL-ROL LM can also be used on both ICFs and "green concrete" applications.

**FEATURES/BENEFITS**

- Waterproof – very low vapor permeability (perm rating).
- Superior elongation – bridges minor cracks; will not become brittle with age.
- Fully bonded – water will not run beneath the membrane.
- High solids, single-component, fast drying formulation – easy to apply; low-cost application equipment; eliminates two-component mixing problems.
- Cold-applied/water-based – will not adversely affect insulated forms (ICFs) or various protection board options. Allows for application to damp or "green concrete."
- VOC content is 0.0 g/L. Produces no harmful odors.

Easy application – no heating necessary. Eliminates fire hazards associated with heating kettles. Apply with roller or airless sprayer.

**PACKAGING**

5 Gallon (18.93 Liter) Pails  
55 Gallon (208.20 Liter) Drums\*  
\*Special order only

**COVERAGE**

20 - 25 ft.<sup>2</sup>/gal. (0.49 – 0.61 m<sup>2</sup>/L) @ 60 mils. Coverage dependent on substrate type, weather, and application conditions.

**SPECIFICATIONS/STANDARDS**

- Complies with all current federal, state, and local maximum allowable VOC requirements, including National EPA VOC Emission Standard for Architectural Coatings, CARB, Colorado AIM, LADCO, OTC Phase I and II, and SCAQMD.

**SHELF LIFE**

When stored indoors in original, unopened containers at temperatures between 40° - 90° F (4° - 32° C), optimum performance and best use is obtained within one year of date of manufacture.

**APPLICATION**

**Surface Preparation** ... Concrete shall be cured in place for at least three days at 75° F (23.9° C). All surfaces must be clean (free of all coatings and curing compounds), free of frost, relatively smooth, and structurally sound. Patch any bug holes, tie holes, large gaps, or cracks with MEADOW-PATCH® 5 or MEADOW-PATCH 20 from W. R. MEADOWS. All loose laitance on the substrates, such as dirt, dust, loose stones, and debris, should be either swept or blown clean. All inside corners should be addressed with a cove of BEM from W. R. MEADOWS prior to application of MEL-ROL LM.

**Detailing** ... After surface preparations are complete, detailing should be addressed. The desired thickness of membrane coverage is 120 mils for inside/outside corners and non-moving and hairline cracks, as well as around drains and penetrations.

CONTINUED ON REVERSE SIDE ...

W. R. MEADOWS, INC.  
P.O. Box 338 • Hampshire, IL 60140-0338  
Phone: 847/214-2100 • Fax: 847/683-4544  
1-800-342-5976  
www.wrmeadows.com • info@wrmeadows.com

HAMPSHIRE, IL / CARTERSVILLE, GA / YORK, PA  
FORT WORTH, TX / BENICIA, CA / POMONA, CA  
GOODYEAR, AZ / MILTON, ON / SHERWOOD PARK, AB

PAGE 2 ... MEL-ROL LM #714-A ... APRIL 2025

All shrinkage cracks less than 1/16" (1.6 mm) should be pretreated with a 60-mil coat of MEL-ROL LM 6" (152.4 mm) wide. All cracks greater than 1/16" (1.6 mm) should be taped with DETAIL STRIP from W. R. MEADOWS prior to application of the membrane. For specific project recommendations, please contact W. R. MEADOWS technical services.

**Priming** ... To reduce blistering on concrete surfaces, a thin coat of MEL-ROL LM diluted with water may be required. (Approximate dilution ratio of MEL-ROL LM to water is between 4:1 and 5:1.)

Thoroughly mix primer with a mechanical mixer. Prime the entire concrete surface to be waterproofed by spraying or rolling on a single coat at a coverage rate of 100 - 150 ft.<sup>2</sup>/gal. (2.45 - 3.68 m<sup>2</sup>/L). Allow primer to dry (approximately one hour, depending on temperature and conditions).

**Mixing** ... Mix thoroughly with a low-speed mechanical mixer prior to application. Ensure that the material is uniform in appearance with no water on the surface or settlement.

TECHNICAL DATA

| Membrane                                      |                                              |                   |
|-----------------------------------------------|----------------------------------------------|-------------------|
| Property                                      | Typical Value                                | Test Method       |
| Color                                         | Black                                        |                   |
| Solids                                        | 70%                                          |                   |
| VOC Content                                   | 0 g/L                                        |                   |
| Total Cure Time                               | 16 - 24 hours                                |                   |
| Service Temperature                           | -20° - 140° F<br>(-29° - 60° C)              |                   |
| Application Temperature                       | 40° F (4.4° C) minimum                       |                   |
| Shore "00" Hardness                           | Passes                                       | ASTM C836         |
| Stability                                     | Exceeds                                      | ASTM C836         |
| Elongation                                    | 1500%                                        | ASTM D412         |
| Water Absorption                              | 0.7%                                         | ASTM D1970        |
| WVT                                           | 0.03 Perms                                   | ASTM E96, B       |
| Composite (55 Mil Membrane/10 Mil PERMINATOR) |                                              |                   |
| Peel Adhesion                                 | 7 lb./in.<br>(125 g/mm)                      | ASTM C794         |
| Tensile Strength (Film)                       | 5000 psi<br>(36 MPa)                         | ASTM D412 (Die C) |
| Elongation                                    | 900%                                         | ASTM D412 (Die C) |
| Water Vapor Permeability                      | 0.02 Perms<br>(0.013 g/m <sup>2</sup> /24 h) | ASTM E96, B       |
| Water Absorption                              | 0.1%                                         | ASTM D1970        |
| Resistance to Hydrostatic Head                | 48 psi (0.3 MPa)                             | ASTM D751         |
| Puncture Resistance                           | 22 lbf. (98 N)                               | ASTM D4833        |

PAGE 3 ... MEL-ROL LM #714-A ... APRIL 2025

**Footing Details** ... Use DETAIL STRIP from W. R. MEADOWS for impaction sheet coverage. First, fold strips lengthwise and then cut at the fold. Material is then ready to install as 4 1/2" (114.3 mm) strips on either side of the rebar. Any excess can be turned down on the face of the footing. Next, fill the voids around rebars in the keyway with BEM. Pour the walls. Install DETAIL STRIP horizontally along the wall where it meets the footing, placing half the material up the wall and the other half onto the footing. Extend the material 4 1/2" (114.3 mm) beyond outside corners. Slit extended portion of DETAIL STRIP lengthwise. Place the horizontal flap out onto the footing and bend the vertical flap around the wall. Repeat this procedure in the opposite direction. In high water table applications, install WATERSTOP EC from W. R. MEADOWS directly to the cold joint before application of DETAIL STRIP.

**Roller Application** ... MEL-ROL LM can be applied directly from the container using a 3/4" (19.1 mm) nap roller. Apply in two coats, each 30 mils thick, allowing first coat to reach initial set prior to application of second coat.

**Spray Application** ... MEL-ROL LM may be sprayed on at a minimum coverage thickness of 60 mils wet (45 mils dry). To obtain 60 mils wet thickness, and to prevent slumping, apply MEL-ROL LM in two coats of 30 wet mils. Apply the second coat after the first coat has dried (approximately one to two hours).

**Spraying Equipment** ... MEL-ROL LM is most effectively applied by using the Graco HydraMax 350 or the Graco GH833 Big Rig. The Graco heavy-duty texture gun is recommended for use with the following tips: For best results, use the 0.051" (Graco GHD551) heavy-duty switch tip. For spraying of primer coat, a smaller orifice tip such as the 0.035" (Graco GHD35) can be used. Tips should be reversible types for easy clean out. For more complete spraying equipment information, please view INSTALLATION INSTRUCTIONS: SPRAYER EQUIPMENT GUIDELINES FOR W. R. MEADOWS FLUID-APPLIED MEMBRANES available at [www.wrmeadows.com](http://www.wrmeadows.com).

**Horizontal Application** ... For horizontal applications, use HYDRALASTIC 836 from W. R. MEADOWS.

**Thickness Control** ... Frequently inspect surface area with a wet mil gauge to ensure desired consistent thickness is achieved. Porous substrates or masonry block walls may require additional coats to obtain desired thickness.

**Cleanup** ... Material should not be left in the pump, lines, or gun when finished spraying. CAUTION: Solvents must not come in contact with MEL-ROL LM in the sprayer, as they will break the emulsion and plug up the entire sprayer system. After spraying, promptly flush water only (no soap) through the system until pump and hose are clear [approx. five gallons (18.9 L)]. Aromatic solvents, such as xylene or toluene [approx. two gallons (7.6 L)], should be used for final flushing after water is flushed through the pump and lines.

Mineral spirits, paint thinner, gasoline, etc., must not be used to flush system. NOTE: Water must be flushed through the machine to remove any solvents prior to spraying of MEL-ROL LM.

**Protection** ... Cover vertical applications with PROTECTION COURSE, MEL-DRAIN®, or PERMINATOR from W. R. MEADOWS. MEL-DRAIN (type B with polymeric backing film) should be used. View MEL-DRAIN INSTALLATION GUIDELINES at <https://www.wrmeadows.com/mel-drain-installation-guidelines> for detailed information. Surfaces must be covered within 45 days.

**Backfilling** ... Allow 24 hours for complete cure of membrane prior to backfilling.

**PRECAUTIONS**

Do not allow containers to freeze. If containers are subjected to temperature below 32°F (0° C), do not apply. Do not apply MEL-ROL LM if rainfall is forecast or imminent within 12 hours at 77° F (23° C). Colder temperatures will increase dry time. For horizontal applications, HYDRALASTIC 836 is recommended. Do not apply MEL-ROL LM or primer when air, material, and surface temperatures are expected to fall below 40° F (4.4° C) within four hours of completed application. Protect the applied material from freezing for 24 hours. Sprayed urethane foams applied over MEL-ROL LM can melt the membrane and cause delamination and failure due to the exothermic reaction that takes place after spraying the foam. These foams should not be sprayed over MEL-ROL LM. The use of MEL-ROL LM does not negate the need for relief of hydrostatic heads. A complete drain tile system should be placed around the exterior of footing and under slabs, as required.



Environmentally Responsible Products  
for Concrete Performance

# Product Representatives – Manufacturer Websites

## Installation Instructions:

**Safety**

When working on any construction project, you should wear protective clothing and safety equipment. Wear safety glasses, gloves, a dust mask and long sleeves, particularly when cutting in confined spaces.

**Tools**

**SAWS**  
**Miter Saw:**  
When using a miter saw we recommend using the Trex Blade™ or a carbide-tipped blade with 60 teeth or more. The Trex Blade comes in three different sizes and is ideal for cutting all Trex decking and railing products.

**Jigsaw:**  
For detailed and/or small cuts (i.e., cutting deck board to fit around a post), a jigsaw with a carbide-tipped blade can be used.

**DRILLS**  
Install Trex recommended fasteners with standard power drills, impact drivers (use care if using impact drivers), or right angle drills.

**SPECIFIC DECK BOARD ATTACHMENT TOOLS**  
**Screw Guns:**

Some Trex recommended deck fasteners are compatible with screw guns. Refer to the recommended fasteners page for more information.

**TigerClaw® Pneumatic Gun:**  
If choosing the TigerClaw TC-G Hidden Fasteners, the TigerClaw pneumatic gun is a terrific option that allows for quicker install time.

**Trex Router Bit:**  
Trex decking routes to give extremely crisp edges when using the Trex Router Bit with standard router, and can be used with all Trex Hideaway Hidden Fasteners.

\*Trex® Blade™ is manufactured and sold by Freud Tools, Inc. under a Trademark License Agreement with Trex Company, Inc.

\*Tiger Claw® is a registered trademark of Tiger Claw, Inc.

NOTE: Construction methods are always improving. Please refer to [www.trex.com](http://www.trex.com) for the most up-to-date installation requirements.

GENERAL INFORMATION

3

**TREX HIDEAWAY®**  
**One-Step Hidden Fastener Tool Instructions/CONTINUED**

**NOTE:** See instructions included with Trex Hideaway Universal Hidden Fasteners for general rules including clean cutting board ends, gapping rules, abutted board rules and installation of angled deck boards, as well as start clip instructions, steps to take for large temperature shifts and installation of last deck board.

**Installation Instructions**

**1**

Place Hideaway hidden fastener into one-step tool. There will be a slight click when fastener is engaged properly. Screw will also be slightly at an angle when engaged in one-step tool properly.

**2**

Center one-step tool (with fastener included) on joist and push into groove of board.

**3**

Using bit included with one-step tool, install screw as shown. Screw should be slightly countersunk into fastener when installed correctly. Continue to install fasteners on every joist. **Do Not Overdrive Screw.**

**4**

Install next board against installed hidden fasteners. Some slight force (using a rubber mallet) to seat next board against fasteners may be required.

**NOTE:** Signs of overtightening would be the tool getting stuck and unable to remove properly and/or signs that the shaft of the bit is damaging the conical screw guide.

DECKING

26

**Trex**

**2024 DECKING**  
**INSTALLATION GUIDE**

**Installing Trex Signature®, Transcend®, Enhance®, Select® Decking/continued**  
**Installing Last Deck Board (Square-Edge Board Recommended)**

**9**

Route one side of square-edge board to use with hidden fasteners.

**10**

Fascia screws supplied by installer (1" x 8" fascia shown)

**NOTE:** Refer to page 16 for detailed fascia attachment instructions.

**TIP:** Use a recommended hidden fastener screw and plug for last board installation.

**Replacing Trex Decking (Signature®, Transcend®, Enhance®, Select®)**  
**Installed with Trex Hideaway® Universal Fasteners**

**1**

**2**

New board at an angle

Existing Deck

**3**

Insert Fasteners

Insert Fasteners

**4**

**NOTE:** Construction methods are always improving. Please refer to [www.trex.com](http://www.trex.com) for the most up-to-date installation requirements.

HOW TO INSTALL DECKING

29

# Product Representatives – Manufacturer Websites

## Safety Data Sheets (SDS):



**SAFETY DATA SHEET**

Revision Date: 24-May-2019

Revision Number: 4

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product Name** ben PREMIUM INTERIOR LATEX PAINT & PRIMER, SEMI-GLOSS FINISH BASE 3

**Product Code** W6273X

**Alternate Product Code** W6273X

**Product Class** Water thinned paint

**Color** All

**Recommended use** Paint

**Restrictions on use** No information available

**Manufacturer** Benjamin Moore & Co.  
101 Paragon Drive  
Montvale, NJ 07645  
Phone: 1-866-708-9180  
www.benjaminmoore.com

**Emergency Telephone**  
CHEMTREC (US): 800-424-9300  
CHEMTREC (outside US): (703)-527-3887

**2. HAZARDS IDENTIFICATION**

**Classification**  
This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

**Label elements**  
Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

**Appearance** liquid

**Odor** little or no odor

**Hazards not otherwise classified (HNOC)**  
Not applicable

**Other information**  
No information available

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**3. COMPOSITION INFORMATION ON COMPONENTS**

| Chemical name    | CAS No.    | Weight-% |
|------------------|------------|----------|
| Kaolin           | 1332-58-7  | 5 - 10   |
| Titanium dioxide | 13463-67-7 | 1 - 5    |

**4. FIRST AID MEASURES**

**General Advice** No hazards which require special first aid measures.

**Eye Contact** Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

**Skin Contact** Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

**Inhalation** Move to fresh air. If symptoms persist, call a physician.

**Ingestion** Clean mouth with water and afterwards drink plenty of water. Consult a physician if necessary.

**Most Important Symptoms/Effects** None known.

**Notes To Physician** Treat symptomatically.

**5. FIRE-FIGHTING MEASURES**

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Protective equipment and precautions for firefighters** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**Specific Hazards Arising From The Chemical** Closed containers may rupture if exposed to fire or extreme heat.

**Sensitivity to mechanical impact** No

**Sensitivity to static discharge** No

**Flash Point Data**  
**Flash point (°F)** Not applicable  
**Flash Point (°C)** Not applicable  
**Method** Not applicable

**Flammability Limits In Air**  
**Lower flammability limit:** Not applicable  
**Upper flammability limit:** Not applicable

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Possibility of hazardous reactions None under normal conditions of use.

**11. TOXICOLOGICAL INFORMATION**

**Product Information**  
**Information on likely routes of exposure**  
**Principal Routes of Exposure** Eye contact, skin contact and inhalation.

**Acute Toxicity**  
**Product Information** No information available

**Symptoms related to the physical, chemical and toxicological characteristics**  
**Symptoms** No information available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**  
**Eye contact** May cause slight irritation.  
**Skin contact** Substance may cause slight skin irritation. Prolonged or repeated contact may dry skin and cause irritation.  
**Inhalation** May cause irritation of respiratory tract.  
**Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.  
**Sensitization** No information available.  
**Neurological Effects** No information available.  
**Mutagenic Effects** No information available.  
**Reproductive Effects** No information available.  
**Developmental Effects** No information available.  
**Target organ effects** No information available.  
**STOT - single exposure** No information available.  
**STOT - repeated exposure** No information available.  
**Other adverse effects** No information available.  
**Aspiration Hazard** No information available

**Numerical measures of toxicity**  
The following values are calculated based on chapter 3.1 of the GHS document  
**ATEmix (oral)** 218537 mg/kg

**Component Information**

| Chemical name                  | Oral LD50             | Dermal LD50 | Inhalation LC50 |
|--------------------------------|-----------------------|-------------|-----------------|
| Titanium dioxide<br>13463-67-7 | > 10000 mg/kg ( Rat ) | -           | -               |

**Carcinogenicity**  
The information below indicates whether each agency has listed any ingredient as a carcinogen:.

| Chemical name    | IARC                           | NTP | OSHA   |
|------------------|--------------------------------|-----|--------|
| Titanium dioxide | 2B - Possible Human Carcinogen |     | Listed |

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# Product Representatives – Manufacturer Websites

## Environmental Product Declarations (EPDs):



PPG Architectural Coatings  
400 Bertha Lamme Drive  
Cranberry Township, PA, 16066

### Environmental Product Declaration – SPEEDHIDE® zero



Certified  
Environmental  
Product Declaration  
www.nsf.org

SPEEDHIDE® zero is a professional line of zero-VOC\* interior latex sealer and paints designed to provide professional painters the ease of application, good hide, and outstanding durability required for interior jobs on drywall, wood, and masonry. Speedhide zero is available in 2,000+ colors along with professional color tools from PPG THE VOICE OF COLOR® program to meet any project need. Visit [ppgpaints.com](http://ppgpaints.com) for more information.

\*Colorants added to base paints may increase the VOC significantly depending on color choice. However, PPG offers a zero-VOC line of colorants which, if used, will provide a zero-VOC final tinted product. The product image to the right is an example of one of the formulas covered by the EPD. A list of all relevant Speedhide zero formulas is shown in Table 1 in this EPD.



|                                  |                                                                                                                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Declaration Holder               | PPG Architectural Finishes, Inc. (email: <a href="mailto:PPGACProductStewardship@ppg.com">PPGACProductStewardship@ppg.com</a> ); website: <a href="http://www.ppg.com">www.ppg.com</a> for additional information) |
| Declaration Number               | EPD10074                                                                                                                                                                                                           |
| Declared Product                 | SPEEDHIDE zero                                                                                                                                                                                                     |
| Product Category and Subcategory | Architectural Coatings – Interior Coatings                                                                                                                                                                         |
| Program Operator                 | NSF International ( <a href="http://ncs.nsf.org">ncs.nsf.org</a> )                                                                                                                                                 |
| PCR                              | PCR for Architectural Coatings – 7-18-2015                                                                                                                                                                         |
| Date of Issue                    | June 23, 2016                                                                                                                                                                                                      |
| Period of Validity               | 5 years from date of issue                                                                                                                                                                                         |
| Product Contents                 | See Figure 1.                                                                                                                                                                                                      |

|                                                                                                         |                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The PCR review was conducted by                                                                         | Thomas P. Gloria, PhD – Industrial Ecology Consultants ( <a href="mailto:t.gloria@industrial-ecology.com">t.gloria@industrial-ecology.com</a> )                       |
| This EPD was independently verified by NSF International in accordance with ISO 21930 and ISO 14025.    | Jenny Oorbeck ( <a href="mailto:joorbeck@nsf.org">joorbeck@nsf.org</a> ) <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External               |
| This life cycle assessment was independently verified in accordance with ISO 14040/14044 and the PCR by | Jack Geibig – EcoForm ( <a href="mailto:jgeibig@ecoform.com">jgeibig@ecoform.com</a> ) <input type="checkbox"/> Internal <input checked="" type="checkbox"/> External |

|                                            |                                                                                                                          |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Functional Unit                            | 1m <sup>2</sup> of covered and protected substrate for a period of 60 years (the assumed average lifetime of a building) |
| Market-Based Lifetime Used in Assessment   | 5 years                                                                                                                  |
| Design Lifetime Used in Assessment         | 3 or 7 years depending on Speedhide zero product number as identified by base and sheen (See Table 4)                    |
| Test Methods Used to Calculate Design Life | ASTM D2805-11, ASTM D2486-06, ASTM D6736-08, ASTM D4828-94                                                               |
| Estimated Amount of Colorant               | Varies (see Table 4)                                                                                                     |
| Data Quality Assessment Score              | Very Good                                                                                                                |
| Manufacturing Location(s)                  | All PPG manufacturing locations in the United States producing the products listed in this EPD.                          |

#### Contents of the Declaration:

[Product Definition, Characteristics and Specifications](#) | [LCA Methodology](#) | [Key Environmental Parameters](#)  
[Material and Energy Resource Use, Emissions and Waste](#) | [LCA Interpretation](#) | [Additional Environmental Information](#) | [Data Quality Assessment](#) | [References](#) | [Glossary](#)

In order to support comparative assertions, this EPD meets all comparability requirements stated in ISO 14025:2006. However, differences in certain assumptions, data quality, and variability between LCA data sets may still exist. As such, caution should be exercised when evaluating EPDs from different manufacturers, as the EPD results may not be entirely comparable. Any EPD comparison must be carried out at the building level per ISO 21930 guidelines. The results of this EPD reflect an average performance by the product and its actual impacts may vary on a case-to-case basis.



PPG Architectural Coatings  
400 Bertha Lamme Drive  
Cranberry Township, PA, 16066

### Material and Energy resources, Emissions and Wastes:

#### Additional Life Cycle Inventory Results

The additional inventory results required by the PCR for each product are shown in Table 6. Average results for all products included in this EPD are documented and grouped separately into the different life cycle stages from ISO 21930 (as shown in Figure 2) and are shown graphically in Figure 3 (preceding page).

Table 6 - Additional life cycle inventory results

| Impact category                                                                   | Formulations                                                   |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
|-----------------------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------|
|                                                                                   | Speedhide Zero VOC Latex Flat White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Flat Midtone Base (6-41200X) | Speedhide Zero VOC Latex Flat Neutral Base (6-41300X) | Speedhide Zero VOC Latex Eggshell White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Eggshell Midtone Base (6-41200X) | Speedhide Zero VOC Latex Eggshell Neutral Base (6-41300X) | Speedhide Zero VOC Latex Satin White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Satin Midtone Base (6-41200X) | Speedhide Zero VOC Latex Satin Neutral Base (6-41300X) | Speedhide Zero VOC Latex Semi-Gloss White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Semi-Gloss Midtone Base (6-41200X) | Speedhide Zero VOC Latex Semi-Gloss Neutral Base (6-41300X) | Speedhide Zero VOC Latex Semi-Gloss White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Semi-Gloss Midtone Base (6-41200X) | Speedhide Zero VOC Latex Semi-Gloss Neutral Base (6-41300X) | Speedhide Zero VOC Latex Sealer (6-49000X) |
| Additional environmental metrics results for technical life scenario (See note 1) |                                                                |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
| Depletion of non-renewable energy resources (MJ)                                  | 103.5                                                          | 96                                                    | 42.0                                                  | 47.1                                                               | 44.9                                                      | 42.0                                                      | 49.0                                                            | 126.1                                                  | 41.9                                                   | 54.0                                                                 | 123.9                                                       | 107.8                                                       | 112                                                                  |                                                             |                                                             |                                            |
| Fossil                                                                            | 97.6                                                           | 92.6                                                  | 40.9                                                  | 44.3                                                               | 43.2                                                      | 41.0                                                      | 46.2                                                            | 120.3                                                  | 40.9                                                   | 51.4                                                                 | 119.3                                                       | 105.2                                                       | 106.2                                                                |                                                             |                                                             |                                            |
| Nuclear                                                                           | 6.0                                                            | 3.0                                                   | 1.0                                                   | 2.7                                                                | 1.8                                                       | 1.1                                                       | 2.9                                                             | 5.7                                                    | 1.0                                                    | 2.6                                                                  | 4.6                                                         | 2.5                                                         | 6.1                                                                  |                                                             |                                                             |                                            |
| Depletion of non-renewable material resources (kg)                                | 6.17                                                           | 5.4                                                   | 2.0                                                   | 2.48                                                               | 2.0                                                       | 2.0                                                       | 2.55                                                            | 5.4                                                    | 2.0                                                    | 2.30                                                                 | 5.2                                                         | 4.0                                                         | 5.5                                                                  |                                                             |                                                             |                                            |
| Use of renewable primary energy (MJ)                                              | 6.64                                                           | 4.40                                                  | 1.42                                                  | 2.73                                                               | 1.98                                                      | 1.42                                                      | 2.98                                                            | 5.72                                                   | 1.44                                                   | 2.79                                                                 | 5.06                                                        | 3.11                                                        | 5.02                                                                 |                                                             |                                                             |                                            |
| Bio-based                                                                         | 3.67                                                           | 2.16                                                  | 0.67                                                  | 1.37                                                               | 0.97                                                      | 0.67                                                      | 1.53                                                            | 2.78                                                   | 0.67                                                   | 1.57                                                                 | 2.32                                                        | 1.31                                                        | 2.61                                                                 |                                                             |                                                             |                                            |
| Wind/Solar/Geothermal                                                             | 0.58                                                           | 0.64                                                  | 0.25                                                  | 0.26                                                               | 0.27                                                      | 0.25                                                      | 0.28                                                            | 0.80                                                   | 0.26                                                   | 0.22                                                                 | 0.72                                                        | 0.63                                                        | 0.50                                                                 |                                                             |                                                             |                                            |
| Water                                                                             | 2.39                                                           | 1.60                                                  | 0.49                                                  | 1.10                                                               | 0.73                                                      | 0.50                                                      | 1.17                                                            | 2.14                                                   | 0.51                                                   | 1.00                                                                 | 2.02                                                        | 1.17                                                        | 1.91                                                                 |                                                             |                                                             |                                            |
| Use of renewable material resources (mg)                                          | 0.36                                                           | 0.17                                                  | 0.07                                                  | 0.10                                                               | 0.06                                                      | 0.07                                                      | 0.12                                                            | 0.14                                                   | 0.07                                                   | 0.10                                                                 | 0.14                                                        | 0.09                                                        | 0.11                                                                 |                                                             |                                                             |                                            |
| Consumption of freshwater (m <sup>3</sup> )                                       | 0.16                                                           | 0.09                                                  | 0.03                                                  | 0.07                                                               | 0.04                                                      | 0.03                                                      | 0.08                                                            | 0.14                                                   | 0.03                                                   | 0.09                                                                 | 0.13                                                        | 0.08                                                        | 0.15                                                                 |                                                             |                                                             |                                            |
| Hazardous waste (%)                                                               | 0.80                                                           | 0.50                                                  | 0.16                                                  | 0.08                                                               | 0.12                                                      | 0.15                                                      | 0.07                                                            | 0.67                                                   | 0.17                                                   | 0.19                                                                 | 0.45                                                        | 0.42                                                        | 0.02                                                                 |                                                             |                                                             |                                            |
| Non-hazardous waste (%)                                                           | 0.46                                                           | 0.29                                                  | 0.12                                                  | 0.13                                                               | 0.12                                                      | 0.12                                                      | 0.11                                                            | 0.40                                                   | 0.12                                                   | 0.09                                                                 | 0.23                                                        | 0.22                                                        | 0.31                                                                 |                                                             |                                                             |                                            |
| Additional environmental metrics results for market life scenario (See note 1)    |                                                                |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
| Depletion of non-renewable energy resources (MJ)                                  | 64.1                                                           | 57.3                                                  | 63.0                                                  | 70.6                                                               | 67.4                                                      | 63.1                                                      | 73.6                                                            | 75.6                                                   | 62.9                                                   | 81.0                                                                 | 74.3                                                        | 64.7                                                        | 67.4                                                                 |                                                             |                                                             |                                            |
| Fossil                                                                            | 60.4                                                           | 55.5                                                  | 61.4                                                  | 66.5                                                               | 64.8                                                      | 61.5                                                      | 69.2                                                            | 72.2                                                   | 61.4                                                   | 77.1                                                                 | 71.6                                                        | 63.1                                                        | 63.7                                                                 |                                                             |                                                             |                                            |
| Nuclear                                                                           | 3.7                                                            | 1.8                                                   | 1.6                                                   | 4.1                                                                | 2.6                                                       | 1.6                                                       | 4.3                                                             | 3.4                                                    | 2.5                                                    | 3.9                                                                  | 2.7                                                         | 1.5                                                         | 3.7                                                                  |                                                             |                                                             |                                            |
| Depletion of non-renewable material resources (kg)                                | 3.82                                                           | 3.23                                                  | 2.95                                                  | 3.72                                                               | 3.06                                                      | 2.96                                                      | 3.82                                                            | 3.27                                                   | 2.95                                                   | 3.45                                                                 | 3.15                                                        | 2.38                                                        | 3.33                                                                 |                                                             |                                                             |                                            |
| Use of renewable primary energy (MJ)                                              | 4.11                                                           | 2.64                                                  | 2.12                                                  | 4.09                                                               | 2.96                                                      | 2.13                                                      | 4.48                                                            | 3.43                                                   | 2.36                                                   | 4.19                                                                 | 3.03                                                        | 1.87                                                        | 3.01                                                                 |                                                             |                                                             |                                            |
| Bio-based                                                                         | 2.27                                                           | 1.30                                                  | 1.00                                                  | 2.05                                                               | 1.46                                                      | 1.01                                                      | 2.29                                                            | 1.67                                                   | 1.00                                                   | 2.35                                                                 | 1.39                                                        | 0.79                                                        | 1.57                                                                 |                                                             |                                                             |                                            |
| Wind/Solar/Geothermal                                                             | 0.36                                                           | 0.38                                                  | 0.38                                                  | 0.39                                                               | 0.41                                                      | 0.38                                                      | 0.42                                                            | 0.48                                                   | 0.34                                                   | 0.34                                                                 | 0.43                                                        | 0.38                                                        | 0.30                                                                 |                                                             |                                                             |                                            |
| Water                                                                             | 1.48                                                           | 0.96                                                  | 0.74                                                  | 1.65                                                               | 1.10                                                      | 0.74                                                      | 1.76                                                            | 1.29                                                   | 0.76                                                   | 1.50                                                                 | 1.21                                                        | 0.70                                                        | 1.15                                                                 |                                                             |                                                             |                                            |
| Use of renewable material resources (mg)                                          | 0.22                                                           | 0.10                                                  | 0.10                                                  | 0.15                                                               | 0.09                                                      | 0.10                                                      | 0.18                                                            | 0.08                                                   | 0.10                                                   | 0.15                                                                 | 0.08                                                        | 0.05                                                        | 0.06                                                                 |                                                             |                                                             |                                            |
| Consumption of freshwater (m <sup>3</sup> )                                       | 0.10                                                           | 0.05                                                  | 0.05                                                  | 0.11                                                               | 0.07                                                      | 0.05                                                      | 0.12                                                            | 0.08                                                   | 0.05                                                   | 0.13                                                                 | 0.08                                                        | 0.05                                                        | 0.09                                                                 |                                                             |                                                             |                                            |
| Hazardous waste (%)                                                               | 0.17%                                                          | 0.17%                                                 | 0.14%                                                 | 0.06%                                                              | 0.11%                                                     | 0.13%                                                     | 0.05%                                                           | 0.17%                                                  | 0.14%                                                  | 0.20%                                                                | 0.19%                                                       | 0.19%                                                       | 0.01%                                                                |                                                             |                                                             |                                            |
| Non-hazardous waste (%)                                                           | 99.8%                                                          | 99.8%                                                 | 99.9%                                                 | 99.9%                                                              | 99.9%                                                     | 99.9%                                                     | 99.9%                                                           | 99.8%                                                  | 99.9%                                                  | 99.8%                                                                | 99.8%                                                       | 99.8%                                                       | 100%                                                                 |                                                             |                                                             |                                            |

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June 23, 2016

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PPG Architectural Coatings  
400 Bertha Lamme Drive  
Cranberry Township, PA, 16066

### Key Environmental Parameters:

The LCIA results from the TRACI method for each product are shown in Table 5. Average results for all products included in this EPD are documented and grouped separately into the different life cycle stages from ISO 21930 (as shown in Figure 2) and are shown graphically in Figure 3.

Table 5 - LCIA results (TRACI impact categories)

| Impact category                                                  | Formulations                                                   |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
|------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------|
|                                                                  | Speedhide Zero VOC Latex Flat White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Flat Midtone Base (6-41200X) | Speedhide Zero VOC Latex Flat Neutral Base (6-41300X) | Speedhide Zero VOC Latex Eggshell White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Eggshell Midtone Base (6-41200X) | Speedhide Zero VOC Latex Eggshell Neutral Base (6-41300X) | Speedhide Zero VOC Latex Satin White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Satin Midtone Base (6-41200X) | Speedhide Zero VOC Latex Satin Neutral Base (6-41300X) | Speedhide Zero VOC Latex Semi-Gloss White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Semi-Gloss Midtone Base (6-41200X) | Speedhide Zero VOC Latex Semi-Gloss Neutral Base (6-41300X) | Speedhide Zero VOC Latex Semi-Gloss White and Pastel Base (6-41100X) | Speedhide Zero VOC Latex Semi-Gloss Midtone Base (6-41200X) | Speedhide Zero VOC Latex Semi-Gloss Neutral Base (6-41300X) | Speedhide Zero VOC Latex Sealer (6-49000X) |
| Life cycle impact assessment results for technical life scenario |                                                                |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
| Ozone depletion (mg CFC-11 eq)                                   | 0.91                                                           | 0.61                                                  | 0.19                                                  | 0.42                                                               | 0.27                                                      | 0.19                                                      | 0.45                                                            | 0.79                                                   | 0.19                                                   | 1.98                                                                 | 2.70                                                        | 6.33                                                        | 0.74                                                                 |                                                             |                                                             |                                            |
| Global warming (kg CO <sub>2</sub> eq)                           |                                                                |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
| Without biogenic carbon                                          | 6.82                                                           | 6.43                                                  | 2.44                                                  | 2.93                                                               | 2.81                                                      | 2.44                                                      | 3.05                                                            | 8.11                                                   | 2.43                                                   | 3.33                                                                 | 7.70                                                        | 6.38                                                        | 6.71                                                                 |                                                             |                                                             |                                            |
| With biogenic carbon                                             | 7.26                                                           | 6.78                                                  | 2.56                                                  | 3.10                                                               | 2.95                                                      | 2.56                                                      | 3.23                                                            | 8.54                                                   | 2.55                                                   | 3.51                                                                 | 8.05                                                        | 6.64                                                        | 7.34                                                                 |                                                             |                                                             |                                            |
| Smog (kg O <sub>3</sub> eq)                                      | 0.57                                                           | 0.34                                                  | 0.07                                                  | 0.26                                                               | 0.15                                                      | 0.07                                                      | 0.27                                                            | 0.48                                                   | 0.07                                                   | 0.26                                                                 | 0.43                                                        | 0.17                                                        | 0.46                                                                 |                                                             |                                                             |                                            |
| Acidification (kg SO <sub>2</sub> eq)                            | 0.03                                                           | 0.02                                                  | 0.01                                                  | 0.01                                                               | 0.01                                                      | 0.01                                                      | 0.02                                                            | 0.03                                                   | 0.01                                                   | 0.02                                                                 | 0.03                                                        | 0.02                                                        | 0.03                                                                 |                                                             |                                                             |                                            |
| Eutrophication (kg N eq)                                         | 0.05                                                           | 0.03                                                  | 0.01                                                  | 0.02                                                               | 0.01                                                      | 0.01                                                      | 0.02                                                            | 0.04                                                   | 0.01                                                   | 0.02                                                                 | 0.04                                                        | 0.02                                                        | 0.04                                                                 |                                                             |                                                             |                                            |
| Life cycle impact assessment results for market life scenario    |                                                                |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
| Ozone depletion (mg CFC-11 eq)                                   | 0.56                                                           | 0.37                                                  | 0.28                                                  | 0.63                                                               | 0.41                                                      | 0.28                                                      | 0.67                                                            | 0.47                                                   | 0.28                                                   | 2.98                                                                 | 1.62                                                        | 3.80                                                        | 0.44                                                                 |                                                             |                                                             |                                            |
| Global warming (kg CO <sub>2</sub> eq)                           |                                                                |                                                       |                                                       |                                                                    |                                                           |                                                           |                                                                 |                                                        |                                                        |                                                                      |                                                             |                                                             |                                                                      |                                                             |                                                             |                                            |
| Without biogenic carbon                                          | 4.22                                                           | 3.86                                                  | 3.65                                                  | 4.40                                                               | 4.21                                                      | 3.66                                                      | 4.58                                                            | 4.87                                                   | 3.65                                                   | 4.99                                                                 | 4.62                                                        | 3.83                                                        | 4.03                                                                 |                                                             |                                                             |                                            |
| With biogenic carbon                                             | 4.49                                                           | 4.07                                                  | 3.82                                                  | 4.66                                                               | 4.43                                                      | 3.84                                                      | 4.85                                                            | 5.13                                                   | 3.82                                                   | 5.27                                                                 | 4.83                                                        | 3.99                                                        | 4.28                                                                 |                                                             |                                                             |                                            |
| Smog (kg O <sub>3</sub> eq)                                      | 0.35                                                           | 0.20                                                  | 0.11                                                  | 0.39                                                               | 0.22                                                      | 0.11                                                      | 0.41                                                            | 0.29                                                   | 0.11                                                   | 0.39                                                                 | 0.26                                                        | 0.10                                                        | 0.28                                                                 |                                                             |                                                             |                                            |
| Acidification (kg SO <sub>2</sub> eq)                            | 0.02                                                           | 0.01                                                  | 0.01                                                  | 0.02                                                               | 0.02                                                      | 0.01                                                      | 0.02                                                            | 0.02                                                   | 0.01                                                   | 0.02                                                                 | 0.02                                                        | 0.01                                                        | 0.02                                                                 |                                                             |                                                             |                                            |
| Eutrophication (kg N eq)                                         | 0.03                                                           | 0.02                                                  | 0.02                                                  | 0.03                                                               | 0.02                                                      | 0.02                                                      | 0.03                                                            | 0.03                                                   | 0.02                                                   | 0.03                                                                 | 0.02                                                        | 0.01                                                        | 0.02                                                                 |                                                             |                                                             |                                            |

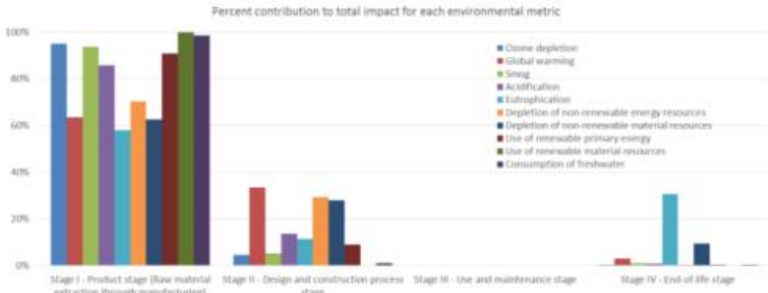


Figure 3 - Graphical impacts for the average SPEEDHIDE zero product showing % contribution by life cycle stage

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June 23, 2016

6

# Product Representatives – Manufacturer Websites

## Health Product Declarations (HPDs):

## SPEEDHIDE ZERO Interior Eggshell Midtone Base 6-5320

by PPG Architectural Finishes

**Health Product Declaration v2.2**

created via: HPDC Online Builder

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**HPD UNIQUE IDENTIFIER:** 27820

**CLASSIFICATION:** 09 91 23 Interior Painting

**PRODUCT DESCRIPTION:** PPG Speedhide Zero Interior Eggshell Midtone Base is a professional grade zero VOC\* interior paint formulated to meet the performance requirements of professional applicators. PPG Speedhide Zero provides excellent hide, great touch-up, easy application, and provides a mold and mildew resistant coating. This zero-VOC\*, low-odor paint is ideal for painting occupied spaces while delivering the durable product performance required. Recommended for interior walls, ceilings, and trim where a consistent finish is desirable. \*Colorants added to base paints may increase the VOC significantly depending on color choice. However PPG offers a low VOC line of colorants which, if used even at maximum tint load in any color, contributes less than 8 g/L of VOC to the final tinted product.

**Health Product Declaration v2.2**

created via: HPDC Online Builder

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**Section 1: Summary**

**Basic Method / Product Threshold**

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**CONTENT INVENTORY**

|                                                                                                                                                                                                                                                           |                                                                                                                                                    |                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Inventory Reporting Format</b><br><ul style="list-style-type: none"> <li>☑ Needed Material Method</li> <li>☑ Basic Method</li> </ul> <b>Threshold Disclosed Per</b><br><ul style="list-style-type: none"> <li>☑ Material</li> <li>☑ Product</li> </ul> | <b>Threshold Level</b><br><ul style="list-style-type: none"> <li>☑ 100 ppm</li> <li>☑ 1,000 ppm</li> <li>☑ Per GHS SDS</li> <li>☑ Other</li> </ul> | <b>Residuals/Impurities</b><br><ul style="list-style-type: none"> <li>☑ Considered</li> <li>☑ Partially Considered</li> <li>☑ Not Considered</li> </ul> <b>Explanation(s) provided for Residuals/Impurities?</b><br><ul style="list-style-type: none"> <li>☑ Yes ☑ No</li> </ul> | <p style="font-size: 0.8em;"><i>All Substances Above the Threshold Indicated Are:</i></p> <p>Characterized ☑ Yes ☑ Ex/SC ☑ Yes ☑ No</p> <p><i>Weight and role provided for all substances</i></p> <p>Screened ☑ Yes ☑ Ex/SC ☑ Yes ☑ No</p> <p><i>All substances screened using Priority Hazard Lists with results disclosed.</i></p> <p>Identified ☑ Yes ☑ Ex/SC ☑ Yes ☑ No</p> <p><i>One or more substances not disclosed by Name (Specific or Generic) and Identifier and/ or one or more Special Condition did not follow guidance.</i></p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Health Product Declaration v2.2**

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**CONTENT IN DESCENDING ORDER OF QUANTITY**

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

**MATERIAL | SUBSTANCE | RESIDUAL OR IMPURITY**

**GREENSCREEN SCORE | HAZARD TYPE**

**SPEEDHIDE ZERO INTERIOR EGGSHELL, MDTONE BASE 6-5320 |**

**WATER BM-4 | VINYL ACETATE, POLYMER WITH N-BUTYL ACRYLATE**

**LT-UNK | TITANIUM DIOXIDE LT-1 |** CAN | END | LIMESTONE, CALCIUM CARBONATE BM-3a5 | KAOLIN, CALCINED LT-UNK | UNDISCLOSED LT-UNK | ALCOHOLS, C12-14-SECONDARY, ETHOXYLATED LT-PI | SEPIOLITE LT-UNK | CAN | HYDROTREATED HEAVY PARAFFINIC PETROLEUM DISTILLATES (MINERAL OIL) CONTAINING LESS THAN 3% DMSO AS MEASURED BY IP 346 LT-PI | CAN | TRIETHYLENE GLYCOL DI(2-ETHYLHEXOATE) LT-UNK | HYDROXYETHYL CELLULOSE LT-PI | END | SOLVENT-DEWAXED HEAVY PARAFFINIC PETROLEUM DISTILLATES LT-1 | CAN | MUL ALUMINA TRIHYDRATE BM-2 SILICA, AMORPHOUS BM-1 | CAN | UNDISCLOSED LT-UNK | SODIUM NITRATE LT-PI | END | QUARTZ BM-1 | CAN | 3-INDO-2-PROPYNYLBUTYL CARBAMATE BM-2 | END | SKI | MIL | MAM | AQU | EYE |

**Health Product Declaration v2.2**

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**VOLATILE ORGANIC COMPOUND (VOC) CONTENT**

Material (g/L): 0.0 Regulatory (g/L): 0.0

Does the product contain exempt VOCs: No

Are ultra-low VOC tints available: Yes

**Health Product Declaration v2.2**

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**CERTIFICATIONS AND COMPLIANCE** See Section 3 for additional **listings.**

VOC emissions: UL/GreenGuard Certified

VOC emissions: UL/GreenGuard Gold Certified

VOC content: SCAGMD Rule 1113 Architectural Coatings - Flats, floor coatings, non flat coatings, quick dry enamels, roof coatings only - 2007 amendments

**COMPLIANCE WITH OTHER PROGRAMS**

No pre-checks completed or disclosed.

**Health Product Declaration v2.2**

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Page 1 of 1

**Health Product Declaration v2.2**

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| Section 2: Content in Descending Order of Quantity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| <p><i>This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:</i></p> <ul style="list-style-type: none"> <li>• <i>Basic Inventory method with Product-level threshold.</i></li> <li>• <i>Nested Material Inventory method with Product-level threshold</i></li> <li>• <i>Nested Material Inventory method with individual Material-level thresholds</i></li> </ul> <p><i>Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.2, available on the HPDC website at: <a href="http://www.hpd-collaborative.org/hpd-2-2-standard">www.hpd-collaborative.org/hpd-2-2-standard</a></i></p> |                                           |
| SPEEDHIDE ZERO INTERIOR EGGSHELL, MDTONE BASE 6-5320                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                           |
| PRODUCT THRESHOLD: 1000 ppm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | RESIDUALS AND IMPURITIES CONSIDERED: Yes  |
| <p>RESIDUALS AND IMPURITIES NOTES: PPG's Product Stewardship and Hazard Communication program requires disclosure by our raw material suppliers of all components both intentional and residual, considered to be hazardous. PPG relies on the measurements of the raw material suppliers and the details of their disclosure in an extensive raw materials introduction process. Always refer to the Product label, Technical Data sheet (TDS), and Safety Data Sheet (SDS) for all safety and detailed application instructions.</p> <p>OTHER PRODUCT NOTES: NA</p>                                                                                                                                                                                                                                                                                     |                                           |
| WATER                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                           |
| ID: 7732-18-5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |
| HAZARD SCREENING METHOD: Pharos Chemical and Materials Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | HAZARD SCREENING DATE: 2022-03-15 5:23:45 |
| %: 60.0000 - 70.0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | GS: BM-4                                  |
| RC: None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NANO: No                                  |
| SUBSTANCE ROLE: Solvent                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |
| HAZARD TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AGENCY AND LIST TITLES                    |
| WARNINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |
| None found                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |
| No warnings found on HPD Priority Hazard Lists                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                           |
| SUBSTANCE NOTES: Range listed represents standard manufacturing variability.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                           |
| VINYL ACETATE, POLYMER WITH N-BUTYL ACRYLATE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                           |
| ID: 25067-01-0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                           |
| HAZARD SCREENING METHOD: Pharos Chemical and Materials Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | HAZARD SCREENING DATE: 2022-03-15 5:23:46 |
| %: 10.0000 - 15.0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | GS: LT-UNK                                |
| RC: None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NANO: No                                  |
| SUBSTANCE ROLE: Binder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                           |
| HAZARD TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | AGENCY AND LIST TITLES                    |
| WARNINGS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                           |
| None found                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |
| No warnings found on HPD Priority Hazard Lists                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                           |
| SUBSTANCE NOTES: Range listed represents standard manufacturing variability. Identification of this substance is not being disclosed due to raw material supplier holding chemical substance as proprietary. For the purpose of this screening, PPG relies on extensive internal, external, and raw material supplier resources to assign CAS numbers that represent the chemical family and associated hazards.                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
| TITANIUM DIOXIDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                           |
| ID: 13463-67-7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                           |
| HAZARD SCREENING METHOD: Pharos Chemical and Materials Library                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | HAZARD SCREENING DATE: 2022-03-15 5:23:46 |
| %: 5.0000 - 10.0000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GS: LT-1                                  |
| RC: None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | NANO: No                                  |
| SUBSTANCE ROLE: Pigment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |

| HAZARD TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AGENCY AND LIST TITLES                    | WARNINGS                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------|
| CAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | US CDC - Occupational Carcinogens         | Occupational Carcinogen                                                                              |
| CAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CA EPA - Prop 65                          | Carcinogen - specific to chemical form or exposure route                                             |
| CAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | IARC                                      | Group 2B - Possibly carcinogenic to humans - inhaled from occupational sources                       |
| CAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MAK                                       | Carcinogen Group 3A - Evidence of carcinogenic effects but not sufficient to establish MAK/BAT value |
| END                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | TEDX - Potential Endocrine Disruptors     | Potential Endocrine Disruptor                                                                        |
| CAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MAK                                       | Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels                     |
| CAN                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | EU - GHS (H-Statements) Annex 6 Table 3-1 | H351 - Suspected of causing cancer [Carcinogenicity - Category 2]                                    |
| <p>SUBSTANCE NOTES: Range listed represents standard manufacturing variability. TiO2 has been classified as a GHS Carcinogen Category 2 based on its IARC 2B classification. When TiO2 is utilized as a raw material in a liquid coating formulation, TiO2 particles are bound in a matrix with no meaningful potential for human exposure to unbound particles of TiO2 when the product is applied with a brush or roller. Sanding the coating surface or mist from spray applications may be harmful depending on the duration and level of exposure and require the use of appropriate personal protective equipment and/or engineering controls.</p> |                                           |                                                                                                      |
| <p><b>LIMESTONE, CALCIUM CARBONATE</b> ID: 1317-65-3</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                           |                                                                                                      |
| HAZARD SCREENING METHOD: <b>Pharos Chemical and Materials Library</b> HAZARD SCREENING DATE: <b>2022-03-15 5:23:47</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |                                                                                                      |
| %: <b>5.0000 - 7.0000</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | GS: <b>BM-3dg</b>                         | RC: <b>None</b> NANO: <b>No</b> SUBSTANCE ROLE: <b>Filler</b>                                        |
| HAZARD TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AGENCY AND LIST TITLES                    | WARNINGS                                                                                             |
| None found                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                           | No warnings found on HPD Priority Hazard Lists                                                       |
| SUBSTANCE NOTES: Range listed represents standard manufacturing variability.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |                                                                                                      |
| <p><b>KAOLIN, CALCINED</b> ID: 92704-41-1</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                           |                                                                                                      |
| HAZARD SCREENING METHOD: <b>Pharos Chemical and Materials Library</b> HAZARD SCREENING DATE: <b>2022-03-15 5:23:47</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |                                                                                                      |
| %: <b>2.0000 - 4.0000</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | GS: <b>LT-UNK</b>                         | RC: <b>None</b> NANO: <b>No</b> SUBSTANCE ROLE: <b>Filler</b>                                        |
| HAZARD TYPE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | AGENCY AND LIST TITLES                    | WARNINGS                                                                                             |
| None found                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                           | No warnings found on HPD Priority Hazard Lists                                                       |
| SUBSTANCE NOTES: Range listed represents standard manufacturing variability.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                           |                                                                                                      |
| <p><b>UNDISCLOSED</b> ID: Undisclosed</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                           |                                                                                                      |
| HAZARD SCREENING METHOD: <b>Pharos Chemical and Materials Library</b> HAZARD SCREENING DATE: <b>2022-03-15 5:23:48</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                           |                                                                                                      |
| %: <b>1.0000 - 3.0000</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | GS: <b>LT-UNK</b>                         | RC: <b>None</b> NANO: <b>No</b> SUBSTANCE ROLE: <b>Opacifier</b>                                     |

SPEEDHIDE Zero Interior Eggshell Midtone Base 6-5320  
hpdrepository.hpd-collaborative.org

HPD v2.2 created via HPDC Builder Page 4 of 10


**Section 3: Certifications and Compliance**

*This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.*

| VOC EMISSIONS                                                                                                                                                                                                                                                                                                                                                         |                           | UL/GreenGuard Certified                                                                                                                     |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--|
| CERTIFYING PARTY: Third Party<br>APPLICABLE FACILITIES: n/a<br>CERTIFICATE URL: <a href="https://spot.ul.com/main-app/products/detail/5ad1e8ca55b0e82d946a281d7?page_type=Products%20Catalog">https://spot.ul.com/main-app/products/detail/5ad1e8ca55b0e82d946a281d7?page_type=Products%20Catalog</a>                                                                 |                           | ISSUE DATE: 2011-02-07<br>EXPIRY DATE: 2023-02-07<br>CERTIFIER OR LAB: UL                                                                   |  |
| CERTIFICATION AND COMPLIANCE NOTES: Certificate # 19543-410                                                                                                                                                                                                                                                                                                           |                           |                                                                                                                                             |  |
| VOC EMISSIONS                                                                                                                                                                                                                                                                                                                                                         |                           | UL/GreenGuard Gold Certified                                                                                                                |  |
| CERTIFYING PARTY: Third Party<br>APPLICABLE FACILITIES: n/a<br>CERTIFICATE URL: <a href="https://spot.ul.com/main-app/products/detail/5ad1e8ca55b0e82d946a281d7?page_type=Products%20Catalog">https://spot.ul.com/main-app/products/detail/5ad1e8ca55b0e82d946a281d7?page_type=Products%20Catalog</a>                                                                 |                           | ISSUE DATE: 2011-02-07<br>EXPIRY DATE: 2023-02-07<br>CERTIFIER OR LAB: UL                                                                   |  |
| CERTIFICATION AND COMPLIANCE NOTES: Certificate # 19543-420                                                                                                                                                                                                                                                                                                           |                           |                                                                                                                                             |  |
| VOC CONTENT                                                                                                                                                                                                                                                                                                                                                           |                           | SCAQMD Rule 1113 Architectural Coatings - Flats, floor coatings, non flat coatings, quick dry enamels, roof coatings only - 2007 amendments |  |
| CERTIFYING PARTY: Self-declared<br>APPLICABLE FACILITIES: All<br>CERTIFICATE URL:                                                                                                                                                                                                                                                                                     |                           | ISSUE DATE: 2019-06-13<br>EXPIRY DATE:<br>CERTIFIER OR LAB: None                                                                            |  |
| CERTIFICATION AND COMPLIANCE NOTES: VOC content is a calculated value based on EPA Method 24.                                                                                                                                                                                                                                                                         |                           |                                                                                                                                             |  |
| PPG FORMULA PRO                                                                                                                                                                                                                                                                                                                                                       | HPD URL: no HPD available |                                                                                                                                             |  |
| CONDITION WHEN RECOMMENDED OR REQUIRED AND/OR OTHER NOTES:<br>PPG Formula Pro colorant system is a low VOC line of colorants composed of 12 tints which can be combined to create over 6000 colors. When added to Speedhide Zero base paints at maximum tint load for any color, the Formula Pro tints contribute less than 8 g/L of VOC to the final tinted product. |                           |                                                                                                                                             |  |

# Product Representatives – Manufacturer Websites

## Test Reports:



**TEST REPORT**  
100 Clemson Research Blvd.  
Anderson, SC 29625  
(864) 656-1094  
Fax: (864) 656-1095



*Results of Tests on brick Conducted in accordance with C67/C67M - 24 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile*

07/30/2025

|                |                          |                |            |
|----------------|--------------------------|----------------|------------|
| Name:          | The Belden Brick Company | Plant:         | Sugarcreek |
|                | P. O. Box 430            | Sampled Date:  | 7/17/2025  |
|                | Sugarcreek, OH 44681     | Received Date: | 7/17/2025  |
| Phone:         | 330-456-0031             | Fired Date:    | 7/17/2025  |
| Fax:           | 330-456-2694             |                |            |
| Report Number: | 14093-34999              |                |            |

Description: **PLT 3 SANDMOLD (Face)**

| Absorption               | 1    | 2    | 3    | 4    | 5    | Average | Test Date |
|--------------------------|------|------|------|------|------|---------|-----------|
| 24 Hour Cold Water (%)   | 6.7  | 7.3  | 5.6  | 6.5  | 6.4  | 6.5     | 7/24/2025 |
| 5 Hour Boiling Water (%) | 10.7 | 11.3 | 9.5  | 10.2 | 10.4 | 10.4    |           |
| Saturation Coefficient   | 0.63 | 0.64 | 0.59 | 0.63 | 0.62 | 0.62    |           |

| Compressive Strength | 1     | 2     | 3      | 4     | 5     | Average | Test Date |
|----------------------|-------|-------|--------|-------|-------|---------|-----------|
| psi                  | 6,330 | 7,500 | 10,330 | 9,480 | 6,310 | 7,990   | 7/24/2025 |

| IRA (Oven Dried Method)   | 6    | 7    | 8    | 9    | 10   | Average | Test Date |
|---------------------------|------|------|------|------|------|---------|-----------|
| g/min/30 in. <sup>2</sup> | 14.4 | 20.4 | 17.5 | 18.6 | 16.0 | 17.4    | 7/22/2025 |

| Efflorescence           | 11          | 12          | 13          | 14          | 15          | Test Date |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-----------|
| Efflorescence Detection | Not         | Not         | Not         | Not         | Not         | 7/29/2025 |
|                         | Effloresced | Effloresced | Effloresced | Effloresced | Effloresced |           |

*The brick represented by the test results shown here comply with the physical property requirements of the standards listed below:*

ASTM C216 - 24 Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale)  
Grade: SW, MW



Katherine Hill, Quality Manager

\*The temperature and humidity of the Bishop Materials Laboratory is constantly kept between 60-90°F, and 30-70% RH. The sampling for these tests was done by the customer. These results are specific to the samples tested. A Simple Acceptance Decision Rule was applied when determining the conformity statement shown on this report. Reporting of test results follows the requirements of the appropriate ASTM Test Method. For information on the decision rules or measurement uncertainty, please contact Kathy Hill, BML Quality Manager. This test report shall not be reproduced except in full, without written approval of the laboratory.

Lab Reference: 14093.34999 Page 1 of 1



**TEST REPORT**  
100 Clemson Research Blvd.  
Anderson, SC 29625  
(864) 656-1094  
Fax: (864) 656-1095



*Results of Tests on brick Conducted in accordance with C67/C67M - 24 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile*

07/30/2025

|                |                          |                |            |
|----------------|--------------------------|----------------|------------|
| Name:          | The Belden Brick Company | Plant:         | Sugarcreek |
|                | P. O. Box 430            | Sampled Date:  | 7/17/2025  |
|                | Sugarcreek, OH 44681     | Received Date: | 7/17/2025  |
| Phone:         | 330-456-0031             | Fired Date:    | 7/17/2025  |
| Fax:           | 330-456-2694             |                |            |
| Report Number: | 14093-34999              |                |            |

Description: **PLT 3 SANDMOLD (Face)**

| Absorption               | 1    | 2    | 3    | 4    | 5    | Average | Test Date |
|--------------------------|------|------|------|------|------|---------|-----------|
| 24 Hour Cold Water (%)   | 6.7  | 7.3  | 5.6  | 6.5  | 6.4  | 6.5     | 7/24/2025 |
| 5 Hour Boiling Water (%) | 10.7 | 11.3 | 9.5  | 10.2 | 10.4 | 10.4    |           |
| Saturation Coefficient   | 0.63 | 0.64 | 0.59 | 0.63 | 0.62 | 0.62    |           |

| Compressive Strength | 1     | 2     | 3      | 4     | 5     | Average | Test Date |
|----------------------|-------|-------|--------|-------|-------|---------|-----------|
| psi                  | 6,330 | 7,500 | 10,330 | 9,480 | 6,310 | 7,990   | 7/24/2025 |

| IRA (Oven Dried Method)   | 6    | 7    | 8    | 9    | 10   | Average | Test Date |
|---------------------------|------|------|------|------|------|---------|-----------|
| g/min/30 in. <sup>2</sup> | 14.4 | 20.4 | 17.5 | 18.6 | 16.0 | 17.4    | 7/22/2025 |

| Efflorescence           | 11          | 12          | 13          | 14          | 15          | Test Date |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-----------|
| Efflorescence Detection | Not         | Not         | Not         | Not         | Not         | 7/29/2025 |
|                         | Effloresced | Effloresced | Effloresced | Effloresced | Effloresced |           |

*The brick represented by the test results shown here comply with the physical property requirements of the standards listed below:*

ASTM C216 - 24 Standard Specification for Facing Brick (Solid Masonry Units Made From Clay or Shale)  
Grade: SW, MW



**National Brick  
Research Center**  
Clemson University

<https://brickandtile.org/astm-c67/>



# Product Representatives – Manufacturer Websites

## Evaluation Service Reports:

ES

ICC  
EVALUATION  
SERVICE®

ICC-ES Evaluation Report

ESR-1539P

Reissued July 2024

Revised December 2024

Subject to renewal July 2026

This report also contains:

[• CA Supplement](#)

[• FL Supplement \(with HVHZ\)](#)

[• City of LA Supplement](#)

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DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 05 23.13—Nails

Section: 06 05 23.15—Staples

REPORT HOLDER:

INTERNATIONAL STAPLE, NAIL AND TOOL ASSOCIATION (ISANTA)

ADDITIONAL LISTEES:  
(see below)

EVALUATION SUBJECT:

POWER-DRIVEN STAPLES AND NAILS



ACCENT BUILDING MATERIALS

AIMS LEADING INDUSTRIAL FACTORY (ALIF)

BECK AMERICA, INC.

ELEMENTAL CONNECTORS PRIVATE LIMITED

FALCON FASTENERS REG'D

GEEKAY WIRES LTD.

HUTTIG BUILDING PRODUCTS

ILLINOIS TOOL WORKS

INMAX INDUSTRIES SDN. BHD.

KOKI HOLDINGS AMERICA LTD.

KYOCERA SENCO INDUSTRIAL TOOLS, INC.

MID-CONTINENT STEEL & WIRE (MID-CONTINENT NAIL)

NATIONAL NAIL CORP.

OMAN FASTENERS, LLC

PEACE INDUSTRIES

PRIMESOURCE BUILDING PRODUCTS

SHANGHAI YUEDA NAILS CO., LTD. –

SHANGHAI YUEDA NAILS CO. LTD.

SHANGHAI YUEDA NAILS (CHUZHOU) LTD. YF

TECHNOLOGY CORPORATION (THAILAND) LTD.

SPECIALTY FASTENING SYSTEMS, INC. DBA

SPECIALTY NAIL CO.

STANLEY BLACK AND DECKER INC.

1.0 EVALUATION SCOPE

Compliance with the following codes:

■ 2024, 2021, 2018 and 2015 [International Building Code® \(IBC\)](#)

■ 2024, 2021, 2018 and 2015 [International Residential Code® \(IRC\)](#)

Properties evaluated:

■ Bending yield strength

■ Compliance with prescriptive requirements of the IBC and IRC.

■ Compliance with material requirements, dimensions, and tolerances of ASTM F1667.

■ Use in diaphragms, shear walls and braced walls.

■ Fastening schedules which are alternates to those included in the codes.



ANAB

Page 1 of 48

ES

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EVALUATION  
SERVICE®

ICC

INTERNATIONAL  
CODE  
COUNCIL®

ISANTA

ICC-ES Evaluation Report

ESR-1539P

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES  
Section: 06 05 23.13—Nails  
Section: 06 05 23.15—Staples

REPORT HOLDER:  
  
INTERNATIONAL STAPLE, NAIL AND TOOL ASSOCIATION (ISANTA)

EVALUATION SUBJECT:  
  
POWER-DRIVEN STAPLES AND NAILS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Power-Driven Staples and Nails described in ICC-ES evaluation report [ESR-1539](#), have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2023 [City of Los Angeles Building Code \(LABC\)](#)
- 2023 [City of Los Angeles Residential Code \(LARC\)](#)

2.0 CONCLUSIONS

The Power-Driven Staples and Nails, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1539](#), comply with the LABC Chapter 23, and the LARC, and are subject to the conditions of use described in this supplement.

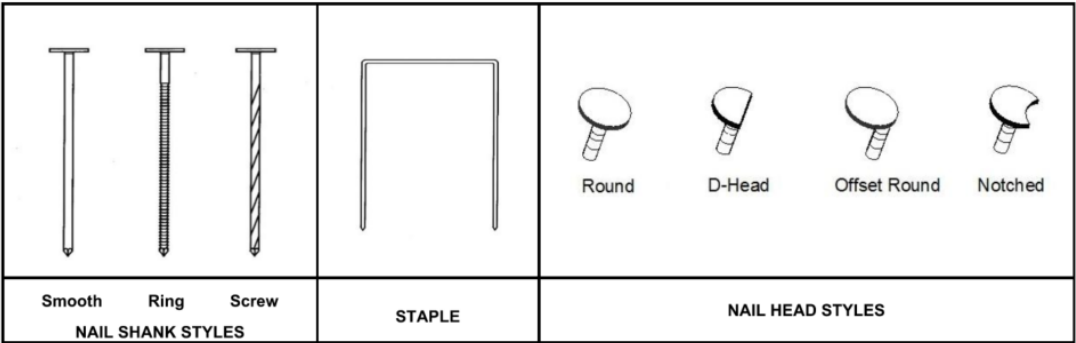
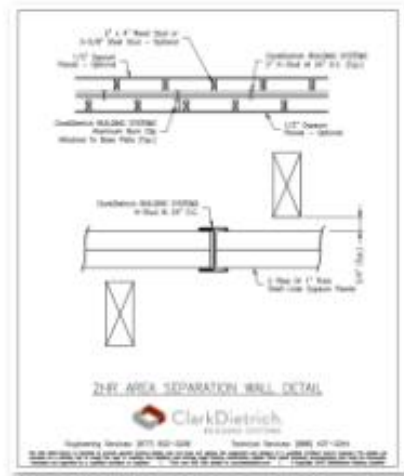


FIGURE 1—BASIC FASTENER STYLES

<https://icc-es.org/reports-directory/>

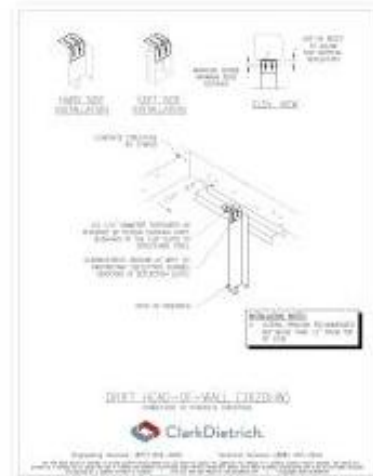
# Product Representatives – Manufacturer Websites

## → Drawing Details and BIM Objects:



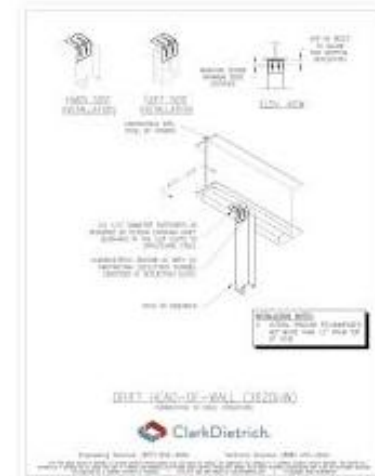
PDF DWG DXF

2HR Area Separation Wall  
Detail



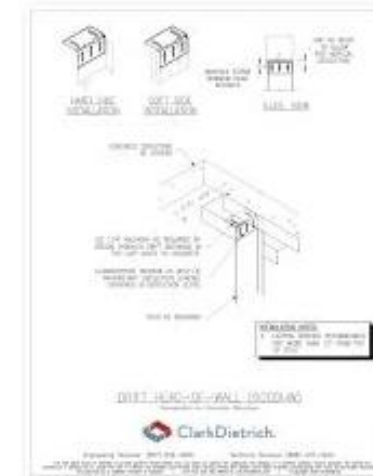
PDF DWG DXF

362DHW to Concrete



PDF DWG DXF

362DHW to Steel

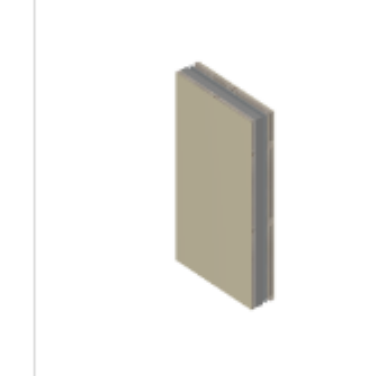


PDF DWG DXF

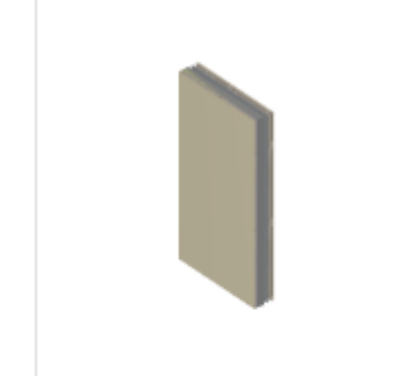
600DHW to Conc



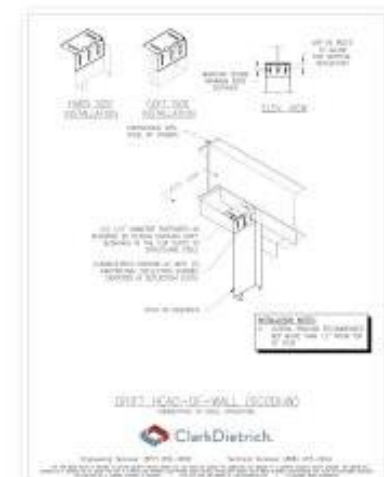
3-5/8" METAL STUDS  
WITH 4 LAYER / 4  
LAYER GYPSUM  
BOARD



3-5/8" METAL STUDS  
W/ RC DELUXE  
W/BATT W/ 2 LAYER /  
2 LAYER GYP. BD.

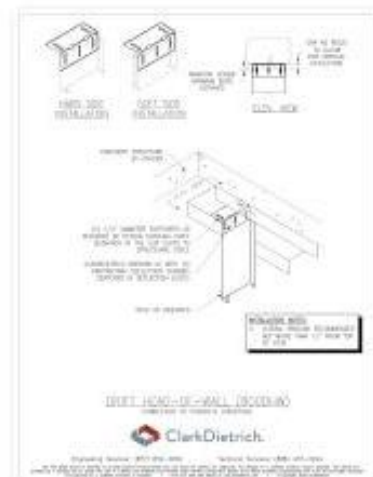


3-5/8" METAL STUDS  
W/ RC DELUXE  
W/BATT W/ 1 LAYER /  
1 LAYER GYP. BD.



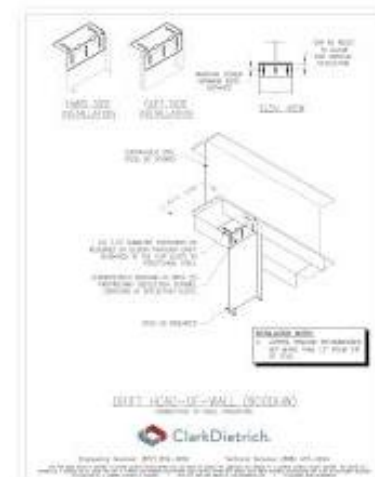
PDF DWG DXF

600DHW to Steel



PDF DWG DXF

800DHW to Conc



PDF DWG DXF

800DHW to Steel



PDF DWG DXF

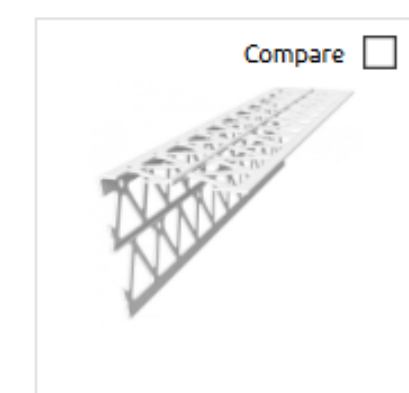
Adjustable Stud Assembly



3-5/8" METAL STUDS  
W/ 1 LAYER / 1 LAYER  
GYP. BD.



3-5/8" METAL STUDS  
WITH 3 LAYER / 3  
LAYER GYPSUM  
BOARD



EASY EMBEDMENT  
SYSTEM  
Easy Embedment System  
Stucco

# Product Representatives – Manufacturer Websites

## → Manufacturer Guide Specifications:

### ROOFING GUIDE SPECIFICATIONS (PVC)



Technical Documents > Roofing Guide Specifications

#### Roofing Guide Specifications:

|                          |                                                                                                                   |               |                   |  |  |
|--------------------------|-------------------------------------------------------------------------------------------------------------------|---------------|-------------------|--|--|
| <input type="checkbox"/> | Sarnafil Adhered & Decor Roof Guide Specification                                                                 | Specification | DOCX - 96 KB (EN) |  |  |
| <input type="checkbox"/> | Sarnafil Adhered & OneDek Roof System                                                                             | Specification | DOCX - 85 KB (EN) |  |  |
| <input type="checkbox"/> | Sarnafil G 410 Hybrid Guide Specification                                                                         | Specification | DOCX - 91 KB (EN) |  |  |
| <input type="checkbox"/> | Sarnafil G 410 PMR LightGuard HeavyGuard Guide Specification                                                      | Specification | DOCX - 91 KB (EN) |  |  |
| <input type="checkbox"/> | Sarnafil G 410 Ballasted Guide Specification                                                                      | Specification | DOCX - 88 KB (EN) |  |  |
| <input type="checkbox"/> | Sarnafil S 327 Mechanically Attached Guide Specification                                                          | Specification | DOCX - 93 KB (EN) |  |  |
| <input type="checkbox"/> | Sikaplan Universal Guide Specification                                                                            | Specification | DOCX - 96 KB (EN) |  |  |
| <input type="checkbox"/> | Sika SolarRoof® Sarnafil® S327 RhinoBond® System with SarnaRoof® Solar Mount-2 Photovoltaic Module Racking System | Specification | DOCX - 92 KB (EN) |  |  |
| <input type="checkbox"/> | Sika SolarRoof® Sarnafil® Adhered System with SarnaRoof Solar Mount-2 Photovoltaic Module Racking System          | Specification | DOCX - 93 KB (EN) |  |  |
| <input type="checkbox"/> | SarnaRoof® Solar Mount Photovoltaic Module Racking System                                                         | Specification | DOCX - 75 KB (EN) |  |  |



#### 3 Part Specifications

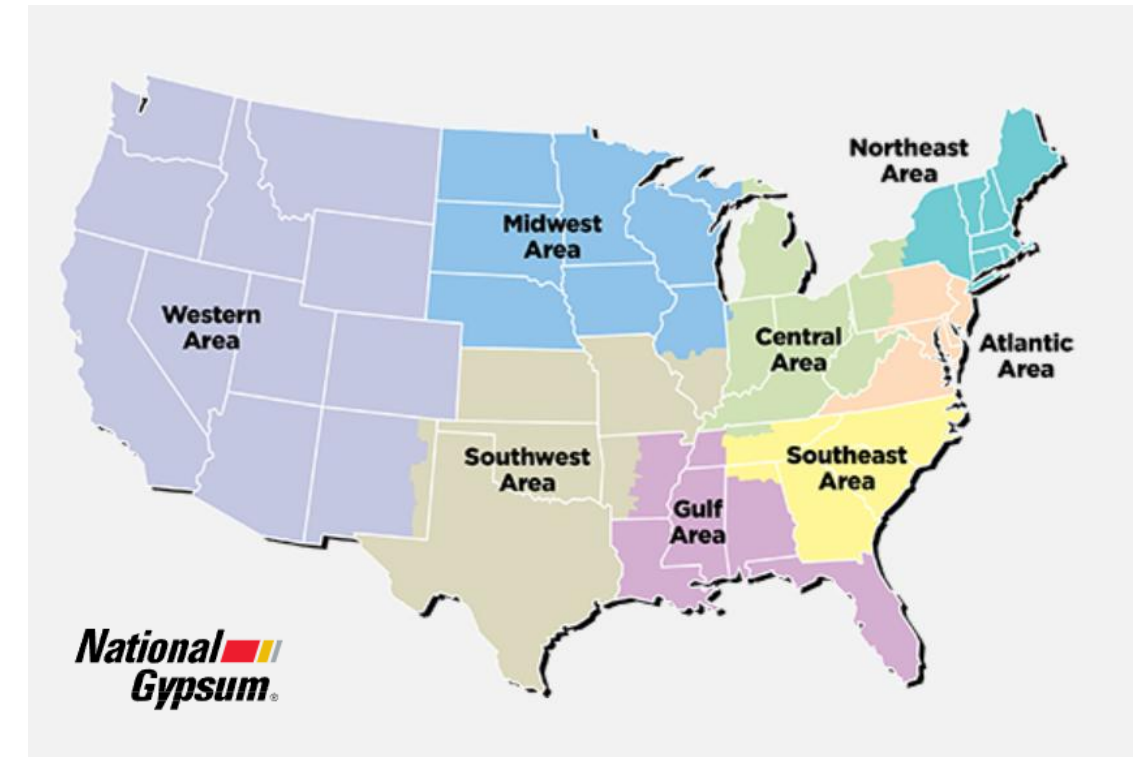
**042100**  
Endicott Clay Unit Masonry  
[Download](#)

**042313**  
Endicott Thin Brick  
[Download](#)

**321400**  
Endicott Brick Pavers  
[Download](#)

# Product Representatives – Manufacturer Websites

## → Contact Information for Product Representatives:



# Product Representatives – Manufacturer Websites

➔ Continuing Education Presentations, Seminars, or White Papers.



VAPROSHIELD OFFERS FOUR WAYS TO EARN CEU CREDITS:



**TREMCO**  
**UNIVERSITY**  
ON THE ROAD | IN PERSON | ONLINE



CONTINUING EDUCATION CENTER



# Product Representatives

## Information Overload!!



# Product Representative - Product Properties

**The product's documented properties and limitations should be compared against the design criteria established for the project.**

- Ask a Product Representative to help you with this comparison.



## TECHNICAL DATA

| PROPERTY                               | TEST METHOD                              | RESULTS                                                                        |
|----------------------------------------|------------------------------------------|--------------------------------------------------------------------------------|
| FLASH POINT                            | ASTM D-92<br>CGSB-37.50-M89              | ≥500°F<br>(260°C)*                                                             |
| PENETRATION                            | ASTM D-5329<br>CGSB-37.50-M89            | 98 mm @77°F (25°C)<br>187mm @122°F (50°C)                                      |
| FLOW                                   | ASTM D-5329<br>CGSB-37.50-M89            | 1.0 mm @140°F (60°C)                                                           |
| TOUGHNESS                              | CGSB-37.50-M89                           | 16.0 Joules                                                                    |
| RATIO OF TOUGHNESS TO PEAK LOAD        | CGSB-37.50-M89                           | 0.069                                                                          |
| WATER VAPOR PERMEABILITY               | ASTM E-96, Procedure E<br>CGSB-37.50-M89 | 0.3 ng/Pa(s)m2                                                                 |
| WATER ABSORPTION                       | CGSB-37.50-M89                           | 0.11 gram weight gain                                                          |
| LOW TEMPERATURE FLEXIBILITY (-25°C)    | CGSB-37.50-M89                           | No delamination,<br>adhesion loss or cracking                                  |
| LOW TEMPERATURE CRACK BRIDGING (-25°C) | CGSB-37.50-M89                           | No cracking, adhesion,<br>loss or splitting                                    |
| HEAT STABILITY                         | CGSB-37.50-M89                           | No change in viscosity,<br>penetration, flow or low<br>temperature flexibility |
| VISCOSITY                              | CGSB-37.50-M89                           | 11.0 seconds                                                                   |
| WATER RESISTANCE (5 days @ 50°C)       | CGSB-37.50-M89                           | No delamination,<br>blistering, emulsification<br>or deterioration             |
| SOFTENING POINT                        | ASTM D-36                                | 180°F (82°C)                                                                   |
| ELONGATION                             | ASTM D-5329                              | 1000% minimum                                                                  |

\*or alternatively not less than 77°F (25°C) above the manufacturer's maximum recommended application temperature.  
(values published are min. req)

# Manufacturer Guide Specifications

## Things to look for when reviewing guide specifications:

- Typos.
- Incorrect, non-applicable, or outdated testing standards.
- Proprietary requirements.
- Specified Means and Methods.

## What is the intent of the manufacturer guide spec?

- Marketing.
- Information Listing.
- Legal Protection.
- Detailed Installation Instructions/Data.

### SECTION 071418 FLUID-APPLIED WATERPROOFING DECK SYSTEM

#### PART 1 — GENERAL

##### 1.01 RELATED DOCUMENTS

- A. All of the Contract Documents, including General and Supplementary Conditions and Division 1 General Requirements, apply to the work of this section.

##### 1.02 SUMMARY

- A. The work of this section includes, but is not limited to, the following:

1. Fluid applied waterproofing system
2. Prefabricated drainage composite
3. Protection board
4. Insulation

- B. System Description

The fluid applied membrane shall consist of the following:

Vertical Application: Vertical applications at parapet walls, upstands, etc. shall be coated with a minimum thickness of 80 mils applied in two 40 mil layers

Horizontal Application: Horizontal applications shall be coated with a minimum thickness of 80 mils applied in one 80 mil layer.

- C. Related Sections: Other specification sections which directly relate to the work of this section include, but are not limited to, the following:

1. Section 033000 – Cast-In-Place Concrete
2. Section 042000 – Unit Masonry
3. Section 071100 – Dampproofing
4. Section 076000 – Flashing and Sheet Metal
5. Section 079200 – Joint Sealants
6. Section 079500 – Expansion Control
7. Section 334600 – Subdrainage

# **POLL**

# **Product Representative Questions**

**Menti.com Code: 6656 6754**





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# RECAP: RESEARCH



## COMPETENCIES

- 4A Conduct research on materials and systems for product selection.
- 4B Research applicable code requirements.
- 4C Evaluate product suitability for project conditions.
- 4D Review key product selections with product representatives.
- 4E Research applicable product standards.

# QUESTIONS?

## CONTACT US



609.628.2390



cricke@conspectusinc.com



<https://www.conspectusinc.com/>

Questions about CEs and recordings:



tmontone@conspectusinc.com



Chris Ricke, CCS®

# THANKYOU





Loading...

## How do you retain and organize information? (Software platforms?)

Responses can be up to 200 characters and will appear here.

You can group responses if you get more than 10.

Turn on voting so people can flag their favorite responses.



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Waiting for participants