PZ-HIST-23-000302

Menu Reports Help

File Date: 11/27/2023
Application Status: Pending

Assigned To: Alexander Castro

Description of Work: Replace existing windows on street elevation to new Double hungs. Install new vinyl replacement windows on both left and right elevation. Remove and replace existing vinyl replacement windows on both left and right elevation. Remove and replace existing vinyl replacement windows on both left and right elevation. Remove and replace existing vinyl replacement windows on both left and right elevation.

front roofline elevation and above store front elevation. Remove and replace existing store front windows and entry doors. Replace entry door and roof overhang to buildir

Application Detail: Detail

Application Type: Historic Preservation

Thetation Type: Thetation Treservation

Documents:	File Name	Document Group	Category	Description	Туре	Docum
	Permit Set 10-27-2023	PLNG_COA	Plans		application/pdf	Upload
	<u>100.pdf</u>	PLNG_COA	Photos		application/pdf	Upload
	S100-20230707.pdf	PLNG_COA	Product Specs		application/pdf	Upload
	400.pdf	PLNG_COA	Photos		application/pdf	Upload
	S400-20230707.pdf	PLNG_COA	Product Specs		application/pdf	Upload
	monogram-HObrochure-04	PLNG_COA	Photos		application/pdf	Upload
	Monogram-spec-e-2301ct	PLNG_COA	Product Specs		application/pdf	Upload
	PB 80306 80307 80310 S	PLNG_COA	Product Specs		application/pdf	Upload
	EPD_EPS_Insulation_Boa	PLNG_COA	Product Specs		application/pdf	Upload
	PB 80266 Sto Gold Fill	PLNG_COA	Product Specs		application/pdf	Upload
	SDS EPS Carpenter.pdf	PLNG_COA	Product Specs		application/pdf	Upload
	PB 80919 80920 81920 S	PLNG_COA	Product Specs		application/pdf	Upload
	PB 80101 Sto Primer Ad	PLNG_COA	Product Specs		application/pdf	Upload
	PB 5782430 Sto EPS Ins	PLNG_COA	Product Specs		application/pdf	Upload
	PB 80306 80307 80310 S	PLNG_COA	Product Specs		application/pdf	Upload
	owners authorization f	PLNG_COA	Owners Authoriz		application/pdf	Upload

Show all

Address: 379 CAPITOL AV, HARTFORD, CT 06106

Owner Name: CAPLAW LLC

Owner Address: 369 CAPITOL AV, HARTFORD, CT 06106

Application Name:

Parcel No: 202423074

 Contact Info:
 Name
 Organization Name
 Contact Type
 Contact Primary Address
 Status

 CAPLAW LLC
 Caplaw Properti...
 Owner
 Mailing, 369 Capitol A...
 Active

Licensed Professionals Info: Primary License Number License Type Name Business Name Business License #

Yes <u>ct</u> MAJOR CONTRACTOR Bill Miller Ronnie Demeo Co... Ronnie Demeo Co

Job Value: <u>\$0.00</u>

Total Fee Assessed: \$50.00

Total Fee Invoiced: \$50.00

Balance: \$0.00

Custom Fields: PLNG_COA_CF

GIS Information

Zoning District
Zoning Overlay
FEMA Flood Zone
Land Use Per Assessor
PRIMARILY COMMERCIAL
WITH APARTMENT

NRZ Neighborhood Local Historic District

FROG HOLLOW NRZ FROG HOLLOW

Historic District Historic Landmark/Site

State Historic District

State Historic District

Dispersion met? Identify Dispersion National Historic District

<u>Frog Hollow</u>

General Project Information

Is this application a result of a violation notice?

Zoning Enforcement Case ID #

No

No

Is this a contributing building or structure?

<u>Unknown</u>

Is this proposed work visible from the street?

Yes

Historic Review Types	
New Construction/Addition No	Exterior Alteration Yes
Demolition No	Signage Yes
Solar Panel <u>No</u>	
Other	
Does this project include a d	emolition?
If a demolition request, what	alternatives have you sought?
Exterior Alterations	
Windows √	Doors <u>√</u>
Porches/Walkways	Siding √
Roofs	Mechanical Appurtenances
Other	
Describe the existing condition vinyl siding and vinyl windows	ons and materials
Describe the proposed mate EIFS comices, vinyl siding and	
Hardships and Reason for H	
Is this an owner-occupied pr No	incipal residence?
Is this a non-owner occupied Yes	d residential building containing six (6) or fewer dwelling units?
Is this a commercial and indexing	ustrial building?
Is this a request for demolition No	on where there is no feasible and prudent alternative to demolition?
Other Payment Required	
Green Infrastructure Fund	Amount
	_

City Tree Fund

Amount

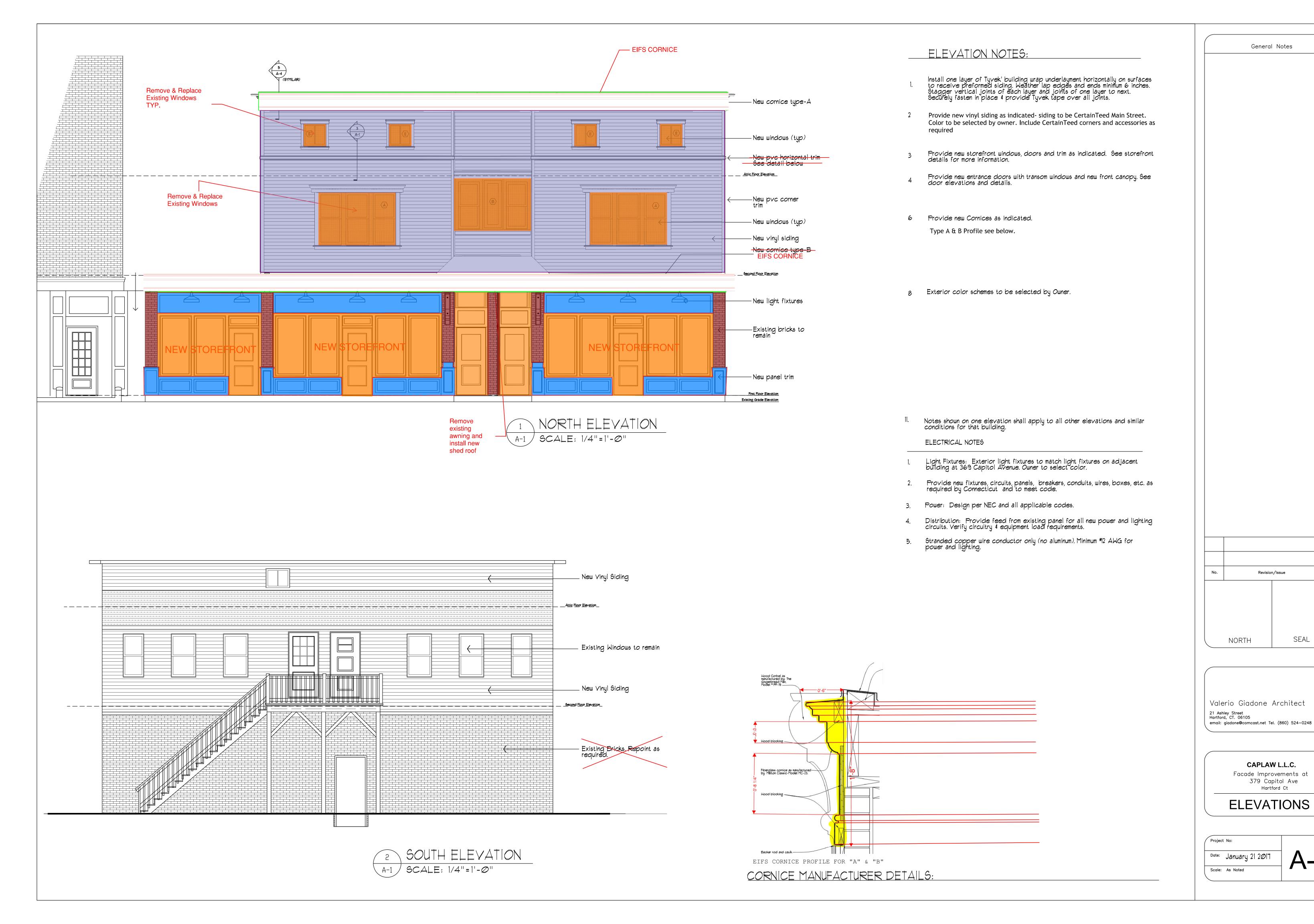
Complete Street Fund Amount **Describe Reason for Payments** Reason for Request Reason for Request Recommendation Recommendation Adverse Impacts on Neighboring Lands Suitability as Presently Zoned Consistency with POCD This is a dynamic label. PLNG COA DIGEPLAN Enhanced Doc List Reason for Hardship Cost of historic preservation recommendations: Economic circumstances of the applicant:Lack of availa Impact of the historic preservation recommendations on the district as a whole and on property value **Dates and Notices** Open Hearing Deadline Close Hearing Deadline Application Received **Decision Deadline** Extensions Requested? If yes, describe how the dates abo Notice sent to NRZ/CRCOG Legal Ad #1 Legal Ad #2 Sign Affidavit Received Certificate of Mailings Returned Notice of Decision Published Approval Expiration Date Recordation Date Sign Deposit Check # Sign Deposit Date Received Sign Deposit Check Amount Public Hearing Date Meeting Link or Location Public Hearing Time Document Link Certificate of Compliance As-Built Drawing Date Type of Bond Escrow Account # Bonding Company Name Bonding Contact Name Bonding Primary Phone # Bonding Email Drawings Number of Sheets Drawings Last Revised Prior Approvals Type of Permit/Authorization Issued By Issued Date Expiration Date **Resolution Clauses** Type Comment Workflow Status: Task Assigned To Status Status Date Action By Alexander Castro Application Intake

Planning and Zoning Re...

Public Notice Historic Commission

Notice of Decision Appeal Period Permit Issuance

	Task		Assigned To	Status	St	tatus Date	Action By		
	Permit Status								
	Certificate of Plan	nin							
	Case Complete								
Condition Status:	Name		Short Comments	Sta	atus	Apply Date	Severi	ty	Action By
Application Comments:	View ID Comment					Date			
Initiated by Product:	ACA								
Scheduled/Pending Inspections:	Inspection Type		Scheduled Date	Inspector	St	tatus	Co	mments	
Resulted Inspections:	Inspection Type		Inspection Date	Inspector	St	tatus	Co	mments	



SEAL

A-1



Valerio Giadone Architect
21 Ashley Street
Hartford, CT. 06105
email: giadone@comcast.net Tel. (860) 524-0248

CAPLAW L.L.C.
Facade Improvements at
379 Capitol Ave
Hartford Ct

ELEVATIONS

Project No:

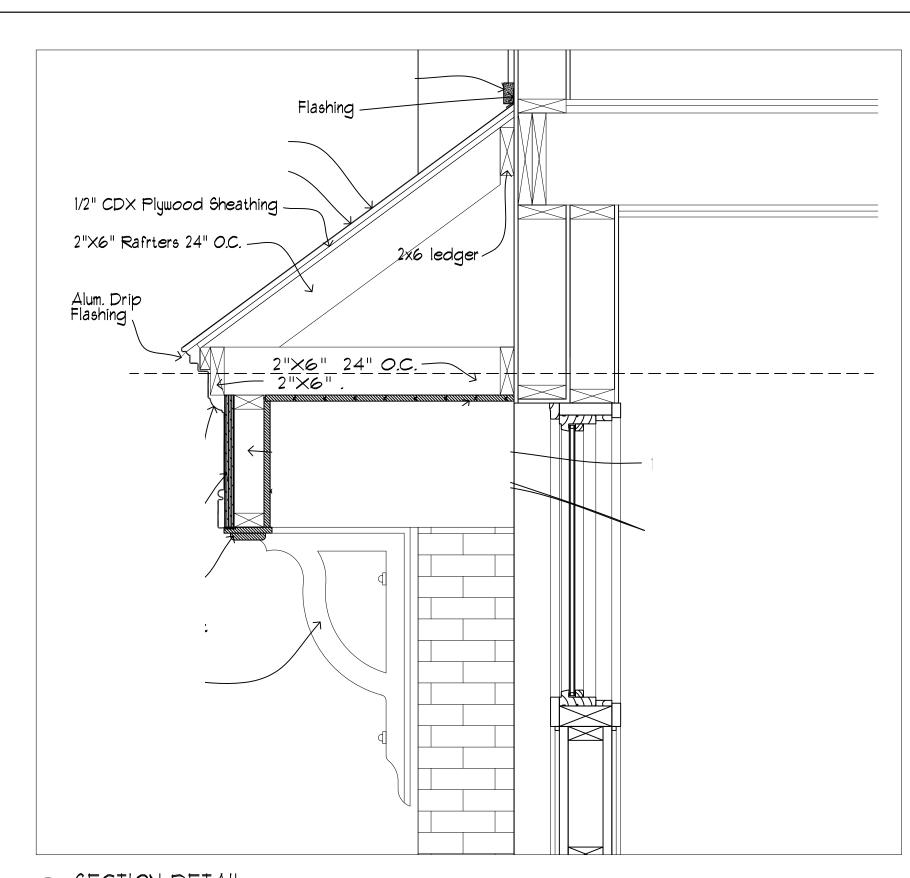
Date: January 21 2017
Scale: As Noted

Revision/Issue

NORTH

SEAL

General Notes



9 SECTION DETAIL

SCALE: 1"=1'-0"

General Notes

No. Revision/Issue Date

NORTH SEAL

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CAPLAW L.L.C.

Facade Improvements at 379 Capitol Ave Hartford Ct

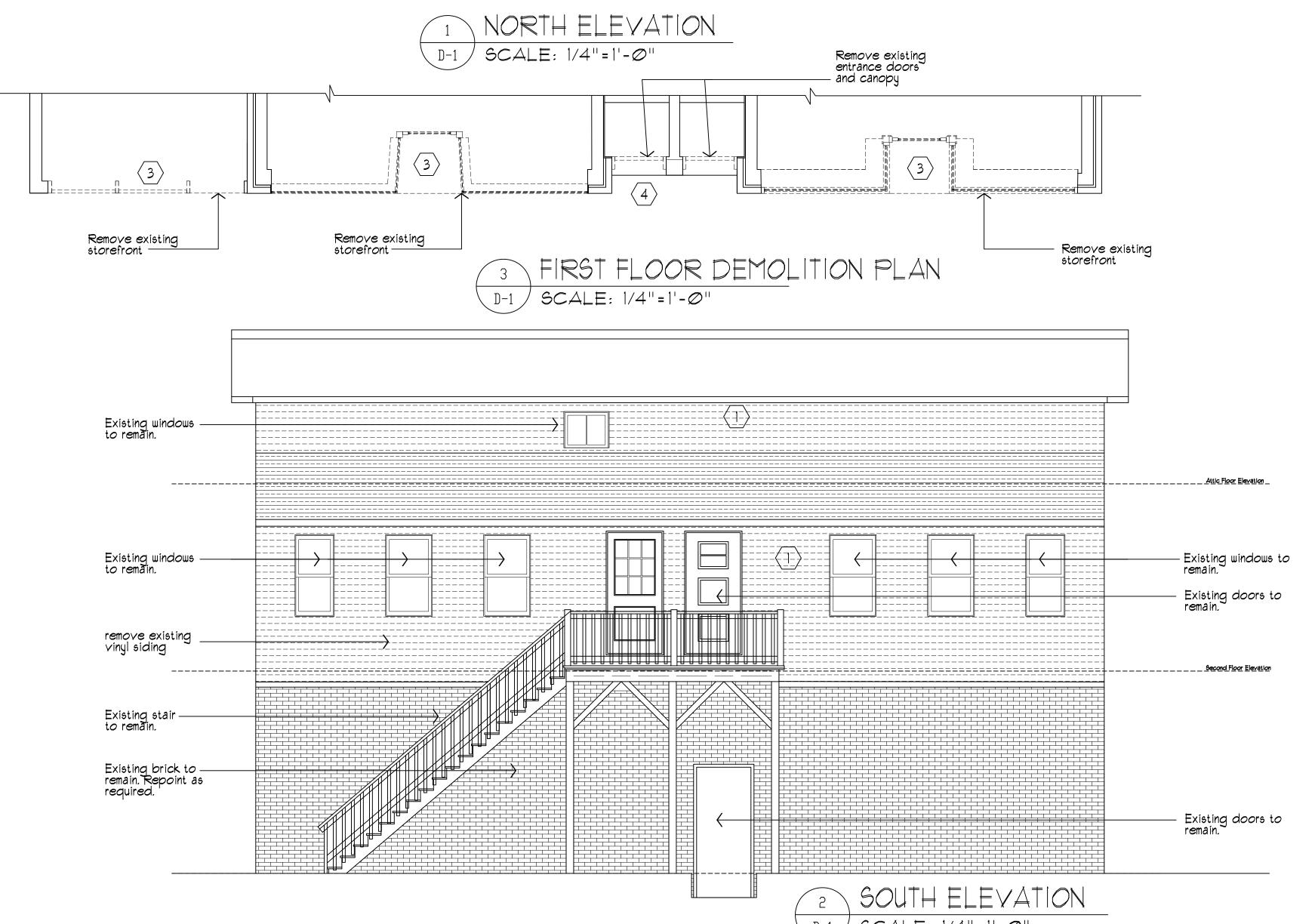
ELEVATION DETAILS

Project N

Date: January 21 20
Scale: As Noted

A-3





General Demolition Notes:

- A. These demolition diagrams are intended to provide a schematic representation of demolition.

 Information shown on these diagrams shall not limit the scope of demolition work. Contractor shall be responsible for providing all necessary demolition as required to complete scope of work.
- Provide temporary barriers and pedestrian safety protection at all public areas.
- When removing existing components, care must be taken to ensure that adjacent surfaces to remain are not damaged. Patch and repair any damage that may occur. Prepare for new layout and finishes.
- D. Legally dispose of all construction debris off site.
- E. All components shown as dashed shall be removed. Conponents that are not dashed shall remain.

BUILDING DEMOLITION NOTES:

- Remove exterior siding and underlayment to sheathing layer. Repair and or replace any damaged or deteriorated sheathing material.
- $\left\langle 2 \right\rangle$ Remove & Replace windows, window frames, and all associated materials.
- Remove storefront windows, doors, and all associated materials as required for new storefront construction. See complete construction documents for new storefront construction and details.
- Remove main entry doors, door canopy and all associated materials as required for new door installation and new canopy construction. Patch interior finish floor, ceiling and walls with new finish to match existing.
- 5 Remove roof eaves as required for new cornice installation.

No. Revision/Issue Date

NORTH SEAL

General Notes

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CAPLAW L.L.C.
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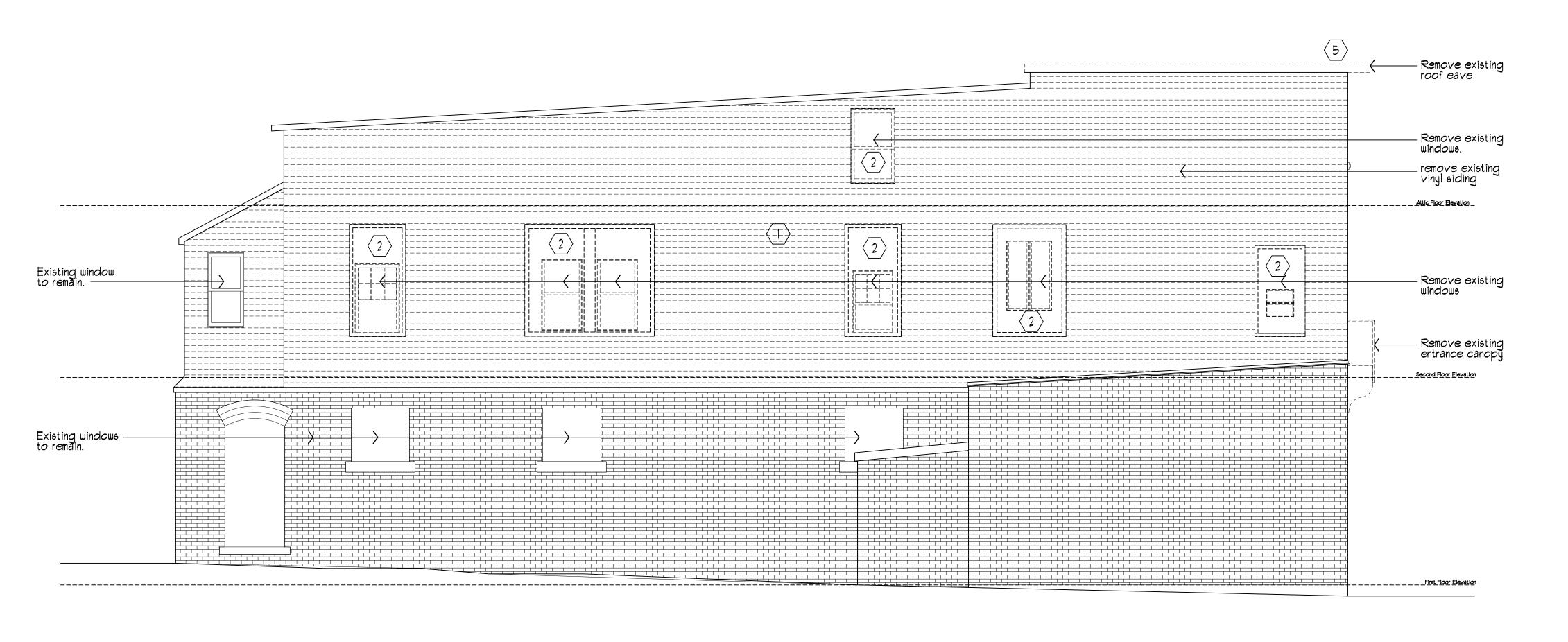
Hartford Ct

DEMOLITION

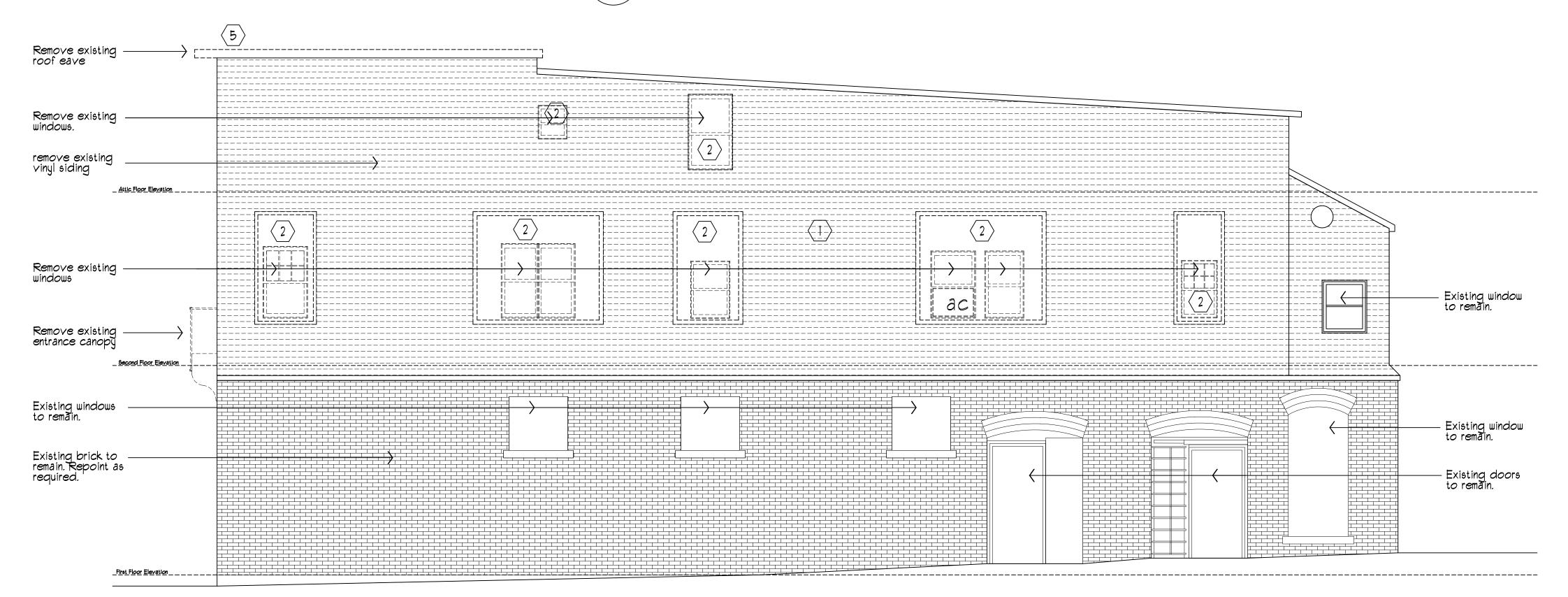
Project No:

Date: January 21 2017

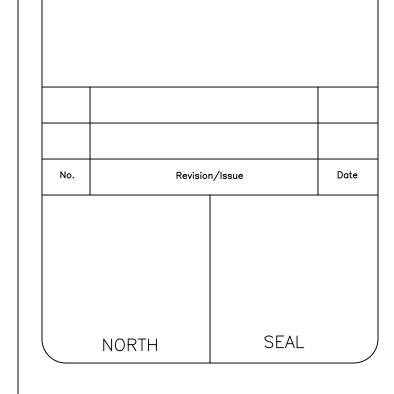
Scale: As Noted











General Notes

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DEMOLITION

Project No:

Date: January 21 2017

Scale: As Noted

Prior to performing any work or ordering any materials, the Contractor shall be responsible for verifying all conditions and dimensions. The Contractor shall further be responsible for advising the designer of any discrepancies and/or conflicts between the existing conditions and the Project Documents prior to proceeding with the work, or related work, in question.

Contractor shall be responsible for familiarizing himself with all Contract Documents, field conditions and dimensions and confirming that the work may be accomplished as shown, prior to proceeding with construction. Should there be any question regarding Contract Documents, existing conditions and/or design intent, the Contractor shall be responsible for obtaining a clarification from the Owner/Designer prior to proceeding with the work, or related work, in

Install all manufactured items, materials and equipment in strict accordance with the manufacturer's recommended specifications, except in the case where Contract Documents are more stringent.

Contractor shall be responsible for familiarizing himself with the Project Schedule and deadlines. The Contractor shall further be responsible for advising the Owner of all long lead time items affecting the Project Schedule and shall submit order confirmations and delivery dates. All Contractor or Supplier requests for substitutions of specified items shall be <u>submitted in</u> uriting, accompanied by the alternative product information, to the Owner/Designer. Substitutions will be considered only if it does not sacrifice quality, appearance and function. Under no circumstances will the Designer be required to prove that a product proposed for substitution is or is not of equal quality to the product specified.

Installation of all selected materials shall be complete in all respects prior to final acceptance, unless otherwise agreed to in writing. Any miscellaneous items or materials not specifically noted, but required for the proper installation shall be furnished by the Contractor(s) at no cost to the owner. The Contractor(s) shall furnish to Property manager all warranties and guarantees required at the

BID INFORMATION

G.C. to provide lump sum bid price itemized with a schedule of values matching the specification section

01000 - GENERAL REQUIREMENTS

1. AIA Document A201: General Conditions of the Contract for

2. Provide all labor materials and equipment necessary to complete the work shown on the drawings and specified herein.

3. Utilities and Services a. Trash removal for construction shall be provided by the Contractor.

4. General Contractor to protect existing materials to remain.

5. General Contractor to schedule work so as to avoid disruption of other building tenants and their visitors.

5. a. Some of the work required by the General Contractor will be execute the work with the least possible disturbance to the tenant operations and with the least possible damage to the tenant spaces and property. The General Contractor is responsible for reparation or replacement of damaged tenant or landlord owned property.

b. In all tenant occupied areas, and areas affecting the use of the tenant spaces, the General Contractor shall coordinate and schedule outside of normal business hours at times acceptable to the building owner. The General Contractor shall clean up public and tenant spaces after each work period and before the next normal business day.

6. All materials shown are new unless noted otherwise.

Ø1100 - BUILDING ACCESS

Access to fit-up space for personnel/materials shall be coordinated with

Ø12ØØ - DEMOLITION Provide demolition of existing materials as required to complete the

scope of work shown on the drawings. Ø1300 - DISPOSAL

Ø1400 - CLEAN-UP

Demolition/Waste Materials: Dispose of off site. Provide a dumpster

Return all existing materials removed which are reusable to Building Owner

Representative.

01500 - SUBMITTALS TO TENANT \$

BUILDING MANAGER

Schedule Submittal Required for: (six copies) - Hardware including cuts

Samples Submittals Required for (two samples)

- Paint & stain chips

Design submittals Millwork shop drawings

GENERAL CONTRACTOR TO PROVIDE UNIT PRICES FOR:

1. BRICK REPOINTING------SF 2. BRICK REPLACEMENT------SF

Ø33ØØ CONCRETE

- I.Ø CONCRETE MATERIAL
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

- A. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with
- B. Select proportions for normal weight concrete in accordance with ACI 301
- C. Provide concrete to the following criteria:
- D. Concrete Exposed to Weather:

A. ANSI A412 - Building Code Requirements for Reinforced Masonry.

Recommended Practices and Guide Specifications for Cold Weather

C. U.S. Department of the Interior, Preservation Brief *2 -

D. U.S. Department of the Interior, Preservation Brief *6 - 'Dangers of Abrasive Cleaning to Historic Buildings'.

- A. Portland Cement: ASTM CI50, Type I, gray color to match existing.
- B. Mortar Aggregate: ASTM Cl44, to match existing.
- C. Hydrated Lime: ASTM C207, Type S.
- E. Water: Clean and potable.

A. Mortar color for repointing: To match existing.

A. Pointing Mortar: One part Portland cement, one part hydrated lime, and two parts graded (80 mesh) aggregate, proportioned by volume. Portland cement up to a maximum of 20 percent of total volume of the lime and cement combined. Mortar mix shall match existing in color, mix ratio, and other strength properties.

- A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance
- B. Do not use anti-freeze compounds to lower the freezing point of mortar.
- C. If water is lost by evaporation, retemper only within two hours of mixing.
- D. Use mortar within two hours after mixing at temperatures of 80 degrees F (26 degrees C), or two-and-one-half hours at temperatures under 50 degrees F (10 degrees C).

2.08 GROUT MIXING A. Thoroughly mix mortar ingredients in quantities needed for immediate use in accordance

with ASTM C476 Course grout. B. Do not use anti-freeze compounds to lower the freezing point of grout.

3.05 RESTORATION CLEANING

- A. Clean surfaces and remove large particles with wood scrapers
- or non-ferrous wire brush. Spray coat masonry with masonry restoration cleaner, mixed
- into solution in strict accordance with manufacturer's instructions. Provide a second application if required by preliminary test of
- Allow sufficient time for solution to remain on masonry.
- Rinse from the bottom up with potable water applied at 400 psi and at a rate of 4 gal/min.

3.06 REBUILDING

- Cut out damaged and deteriorated masonry with care in a manner to prevent damage to any adjacent remaining materials.
- Support structure as necessary in advance of cutting out units. Cut away loose or unsound adjoining masonry as directed to
- provide firm and solid bearing for new work D. Build in new or reclaimed masonry units following procedures
- E. Mortar Mix: Of equal strength to existing mortar. Colored to match existing work
- Ensure that anchors, ties, reinforcing, stone cramps and dowels,
- flashings are correctly located and built-in. Build in masonry work to match and align with existing, with

joints and coursing true and level, faces plumb and in line. Build-in all

openings, accessories, and fittings.

for new work

- 3.07 REPOINTING Repointing shall match the color, texture, strength, joint width
- B. Cut out loose or disintegrated mortar in joints to a 1/2 depth of
- 2-1/2 times the mortar joint thickness.

and joint profile of the existing historic masonru.

- C. Do not damage masonry units.
- D. When cutting is complete, remove dust and loose material by rinsing with a jet of water.
- E. Pre-moisten joint and apply mortar.
- Pack tightly in maximum 1/4-inch layers. Allow each layer to harden before applying next layer. Leave a smooth, compact joint and tool to match existing.
- G. Moist cure for 72 hours.

06100 - ROUGH CARPENTRY

Non-Treated Wood Blocking: Provide behind all door wall bumpers, at perimeter of all new door/borrowed lite openings, toilet accessories, etc..and as noted on plans, and as required to complete the work

<u>Pressure-Treated Wood Blocking:</u> All lumber in contact with masonry or concrete or as noted on plans, and as required to complete the work.

Exposed Framing: Framing not concealed by other construction.

Dimensional Lumber: Lumber of 2 inches nominal or greater but less than 5 inches nominal in least dimension.

Timber: Lumber 5 inches nominal or greater in the least dimension. Lumber Grading Agencies:

WCLIB: West Coast Lumber Inspection Bureau

WWPA: Western Wood Products Association

NeLMA: Northeastern Lumber Manufacturer's Association NLGA: national Lumber Grades Authority RIS: Redwood Inspection Service SPIB: The Southern Pine Inspection Bureau

08200 - WOOD DOORS

Wood Products: Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated

1. Factory marked each piece of lumber with grade stamp of grading agency.

2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.

3. Where nominal sizes are indicated, provide actual size required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.

4. Provide dressed lumber, \$45, unless indicated

<u>Dimensional Lumber Framing:</u> IDouglas Fir larch: WCLIB or WWPA

Miscellaneous Lumber: 2. blocking 3. Nailers

4. Cants

5. Furring

6. Grounds 06200 - FINISH CARPENTRY

PART 2 PRODUCTS 2.01 FABRICATORS

- A. Brockway-Smith Company.
- B. Custom Millwork Shop. C. Substitutions: Under provisions of Section 01600.

2.02 LUMBER MATERIALS

- A. Softwood Lumber: PS 20± Premium grade in accordance with AWI± maximum moisture content of 6 percent. Pine species, with plain sawn
- grain, of quality capable of transparent finish. B. Hardwood Lumber: F5 MM1/2L1/8736 t Premium grade in accordance with AWI ± maximum moisture content of 6 percent. Birch or oak species,
- with plain sawn grain, of quality capable of transparent finish. C. MDO Plywood: Grade C-D: Graded in accordance with AWI Custom: veneer coret paper facet exterior glue.

2.06 ACCESSORIES

- A. Nails: Size and type to suit application, plain and coated finish. B. Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws: Size and type
- to suit application± plain and galvanized finish. C. Lumber for Shimming, Blocking, Softwood lumber of Southern yellow
- pine species. D. Primer: Alkyd primer sealer type.
- E. Wood Filler: Oil base, tinted to match surface finish color.

2.10 FABRICATION A. Fabricate to AWI Premium standards.

- PART 3 EXECUTION
- 3.01 EXAMINATION A. Verify that surfaces and openings are ready to receive work and
- field measurements are as shown on the drawings. B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work
- C. Beginning of installation means acceptance of existing conditions. 3.02 PREPARATION
- A. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.
- B. Before installation, back prime paint all unexposed surfaces.

06200 - FINISH CARPENTRY (CONTINUATION)

3.03 INSTALLATION

- A. Install work in accordance with AWI Premium quality standard.
- B. Set and secure materials and components in place, plumb and level.
- C. Install components and trim with nails and screws at 8 inch on center. D. Install hardware in accordance with manufacturer's instructions.

3.08 SCHEDULE

paint finish.

- 3.04 TOLERANCES
- A. Maximum Variation from True Position: 1/16 inch (1.5 mm). B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch
- 3.05 SITE TREATMENT OF WOOD MATERIALS
- A. Brush apply one coat of primer on hidden surfaces of exterior
- located finish carpentry items. B. Apply preservative treatment in accordance with manufacturer's
- C. Treat site, sawn ends. Allow preservative to cure prior to erecting
- D. Verify that materials requiring paint finish do not exceed 6 percent moisture content before applying treatment.
- 3.06 PREPARATION FOR SITE FINISHING
- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: Refer to Section 09900.
- 3.01 PROTECTION A. Protect finished installation under provisions of Section 01500.

A. Trim and Moldings: Clear Ponderosa Pine as detailed. Prepare for

1.1 MANUFACTURERS

MARVIN. or approved equal

1.2 DOOR TYPES

- A. Wood Commercial Doors Raised Panel.
- B. Clad Commercial Doors Raised Panel.

DOOR CONSTRUCTION

Solid Mahogany

- 1.7 FABRICATION A. Fabricate non-rated doors in accordance with AWI Quality
- Standards requirements. B. Fabricate fire rated doors in accordance with AWI Quality Standards and to UL requirements. Attach fire rating label to
- C. Vertical Exposed Edge of Stiles: Hardwood for transparent finish. D. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions. Do not machine for surface
- hardware. Provide solid blocking for through bolted hardware. E. Factory fit doors for frame opening dimensions identified on shop
- F. Cut and configure exterior door edge to receive recessed
- weather stripping devices. G. Provide edge clearances in accordance with AWI 1600.

Ø862Ø

- OPERABLE WINDOWS
- MANUFACTURED UNITS A. Description: Double Hung and Casement Aluminum clad wood windows as manufactured by Harvey Windows, Majesty type.
- 2.2 FRAME Pine wood interior and Exterior standard frame.
- Pine wood interior and Exterior standard frame.
- 2.4 GLAZING A. Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in
- accordance with ASTM E 2190. B. Insulated Glass Units at Exterior Window Openings: Double pane units with aluminum double edge seal both panes of clear glass with Low 'E'± interpane space purged with dry hermetic air± total thickness of 5/8 inch.

B. Interior: Painted Interior Finish: Factory applied water based acrylic paint over compatible primer. Available on Pine products only. Color -2.7WEATHER STRIP

A. Operating units: Continuous leaf weather strip at head jamb parting

- stopt foam filled bulb weather strip at check railt foam filled bulb weather strip along vertical sash edget bulb weather-strip at
- bottom rail. Color: Beige. Jamb weather-strip available in White 2.8 JAMB EXTENSION
- A. Factory installed jamb extension for wall thickness indicated or
- 2.10 INSECT SCREENS

A. Primed wood interior and exterior.

- A. Factory installed full screen. 2.13 AUTENTIC DIVIDED LITES (ADL)
- 2.15 ACCESSORIES AND TRIM A. Installation Accessories:
- 1. Factory installed vinyl nailing fin/drip cap. STORESRIQNETACINEDE LAGINCH (152 mm)± 10 inch (254 mm).
- 3. Marvin SillGuard. 4. Exterior Brick mould casing.

2.1 MANUFACTURED UNITS

Description: Factory-assembled Aluminum Clad Ultimate Casement Picture StormPlus 1" IG IZ4 as manufactured by Marvin Windows and Doors, Warroad, Minnesota.

- A. Interior: finger-jointed core with non finger-jointed Douglas Fir veneer. Kiln-dried to moisture content no greater than twelve (12) percent at the time of fabrication B. Frame exterior aluminum clad with 0.050 inch (1.3mm) thick extruded aluminum
- 2.3 SASH A. Interior: finger-jointed core with non finger-jointed Douglas Fir veneer. Kiln-dried to
- moisture content no greater than twelve (12) percent at the time of fabrication B. Frame exterior aluminum clad with 0.050 inch (1.3mm) thick extruded aluminum

C. Frame thickness: 13/16" (30mm)

- C. Frame thickness: 13/16" (30mm) 2.4 GLAZING
- to performance level CBA when tested in accordance with ASTM E 2190. E. Glazing method: Insulating glass, consisting of inboard lite of laminated glass. Exterior glass is standard annealed glass with optional tempered glass available. F. Glazing seal: Silicone bedding at interior and exterior

D. Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified

- G Select quality complying with ASTM C 1036. Insulating glass SIGMA/IGCC certified to performance level CBA when tested in accordance with ASTM E 2190.
- 2.5 FINISH A. Exterior: Aluminum clad. Fluoropolymer modified acrylic topcoat applied over primer.
- B. Interior Finish: Factory-applied water-borne urethane stain. Stain applied over a wood conditioner. A water-borne acrylic enamel clear coat applied in two separate coats,

Meets AAMA 2605 requirements.

to allow for seamless corner joints

with light sanding between coats, applied over the stain. WEATHER STRIP A. Weather strip at the frame is a hollow foamed material bent around 90 degree corner

A. Factory installed jamb extension for wall thickness indicated or required.

B. Sash weather strip bulb shaped glass filled material 1. Color: White, beige or black

2.8 JAMB EXTENSION

1. Color: Beige

2.9 ACCESSORIES AND TRIM A. Installation Accessories:

1. Factory installed vinyl nailing fin/drip cap

Glass Type: Clear, Laminated, Low E2 with Argon,

- 2. Masonry brackets: 6 inch (152 mm)± 10 inch (254 mm). 3. Marvin SillGuard.
- 4. Exterior Brick mould casing.

08700 - HARDWARE Hardware Requirements: (Review with tenant & Building

- Misc. Hardware:
- Silencers: All frames

Manager prior to purchase).

- Wall stops: All Doors Finish: Consult with Tenant & Building Manager
- Match existing Keying: Coordinate with Tenant & Building Manager
- <u> Hardware Series/Style:</u> Manufacturer: Von Duprin 88 series mortise lock device
- Style: 373L Lever Handle All hardware shall be heavy duty commercial grade. Comply with UL for
- all fire openings and AMSI All I.I for handicapped accessibility. Hinges: Shall be five knuckle, full mortise, ball bearing, with non rising
- loose pin and button tip. Closers: Closers on all rated doors. Full rack and pinion type with

adjustable spring power and backcheck LCN 4010T series or

approved equal.

- 08800 GLASS & GLAZING
- 2.01 ACCEPTABLE GLASS MANUFACTURERS A. Pittsburg Plate Glass
- B. LOF.
- 2.02 GLASS MATERIALS A. Insulated Tempered Glass Units at Storefront: Double pane units with aluminum edge sealt outer pane of tinted glass, inner pane of clear glass tinterpane space purged with dry hermetic air total unit
- thickness of one inch. B. Insulated Glass Units at Exterior Window Openings: Double pane units with aluminum double edge seal both panes of clear glass with Low 'E't interpane space purged with dry hermetic airt total thickness of
- 2.05 ACCEPTABLE GLAZING COMPOUND MANUFACTURERS
- A. Dow Chemical.
- 2.06 GLAZING COMPOUNDS A. Silicone Sealant: Single component, capable of water immersion without loss of properties + nonlybleeding + nonlystaining + cured

Shore A hardness of 151/225± dark brown color.

supplied by door and window manufacturer. Notify Architect if non-silicone compatible accessories are supplied and require a field applied glazing sealant.

B. Verify glazing sealant is compatible with glazing accessories as

2.07 GLAZING ACCESSORIES A. Supply glazing accessories in accordance with window and door manufacturer's standard shop glazing procedures and as shown on the

B. Supply field installed glazing accessories in accordance with window

09900 - PAINTING

and door manufacturer's recommendations.

- ACCEPTABLE MANUFACTURERS: PAINT & PRIMER-SEALER A. Benjamin Moore, Product: Latex Enamel. b. Sherwin Williams, Product: Latex Enamel C. Pittsburg Paints, Product: Latex enamel.
- ACCEPTABLE MANUFACTURERS: URETHANE A. ZAR Products High Gloss and Satin Polyurethane B. Substitutions: Approved equal.

ACCEPTABLE MANUFACTURERS: CONCRETE SEALER

A. Minwax Products: Semi transparent stain B. Substitutions: Approved equal.

ACCEPTABLE MANUFACTURERS: STAIN

- A. KEIM Products: Royalan Grob, Royalan dilution and primer, and
- Royalan top coat B. Substitutions: Approved equal.

Items to be Painted/Finished:

- Interior and exterior trim

- Windows and window frames - Doors & frames - Storefronts
- Stain color: Provide samples for owner selection. Exteror Wood Doors & Misc. trim: I coat Primer, 2 coats latex enamel, semily gloss

Interior Window trim: I coat Primer, 2 coats latex enamel, semily gloss

color: Provide samples for owner selection.

color: Provide samples for owner selection.

Interior Storefront and trim: 2 coats Minwax stain, 2 coats of Zar satin

of sealed drawings.

to be demolished.

and lighting.

16000 - ELECTRICAL

General: All work to be provided in accordance w/all applicable

Permits: Provide permits as required. <u>Demolition:</u> Trace, disconnect and tag all outlets in G.W.B. partitions called

Submittals: Submit 3 sets of product information cuts, 3 sets of copies

- <u>Light Fixtures:</u> Exterior light fixtures to match existing light fixtures at 369 Capitol Avenue. Coordinate exact number, location and color with
- Power: Design per NEC and all applicable codes. Distribution: Provide feed from existing P/L 100 A panel for all new power and lighting circuits. Verify circuitry & equipment load
- Identification: Provide nameplates as required, including disconnect switches, motor starters, factory assembled distribution equipment and control panels.

A. Stranded copper wire conductor only (no aluminum). Minimum #12 AWG for power

General Notes

Date Revision/Issue SEAL NORTH

CAPLAW L.L.C.

Facade Improvements at

379 Capitol Ave

Valerio Giadone Architect

email: giadone@comcast.net Tel. (860) 524-0248

21 Ashley Street Hartford, CT. 06105

Hartford Ct **SPECIFICATIONS**

Date: January 21 2017 Scale: As Noted

Ø4500 - MASONRY RESTORATION

- 1.03 REFERENCES
- B. International Masonry Industry All-Weather Council (IMIAC)
- 'Repointing Mortar Joints in Historic Brick Buildings

- 2.002 MATERIALS
- D. Grout Aggregate: ASTM C404.

2.03 MORTAR COLOR

- 2.06 MORTAR MIXING
- with ASTM C270.
- A Lintels & Miscellaneous: 3000 psi strength at 28 days + 7-8 inches slump + premixed type in accordance with ASTM C94.
- Construction shall be a part of this specification.
- b. Contractor will provide temporary utilities as required during
- executed in the areas of the building used and occupied by tenants having agreement with the building owner. The General contractor shall
- the building owner representative.
- at rear loading dock of building. Reusable Materials:
- Pick up/clean daily.
- Grout specs and samples
- A. Cement: ASTM CI50, Type I Normal Portland type.
- 2.0 CONCRETE MIX

 - (28 days): 4000 psi 3 to 5 inch

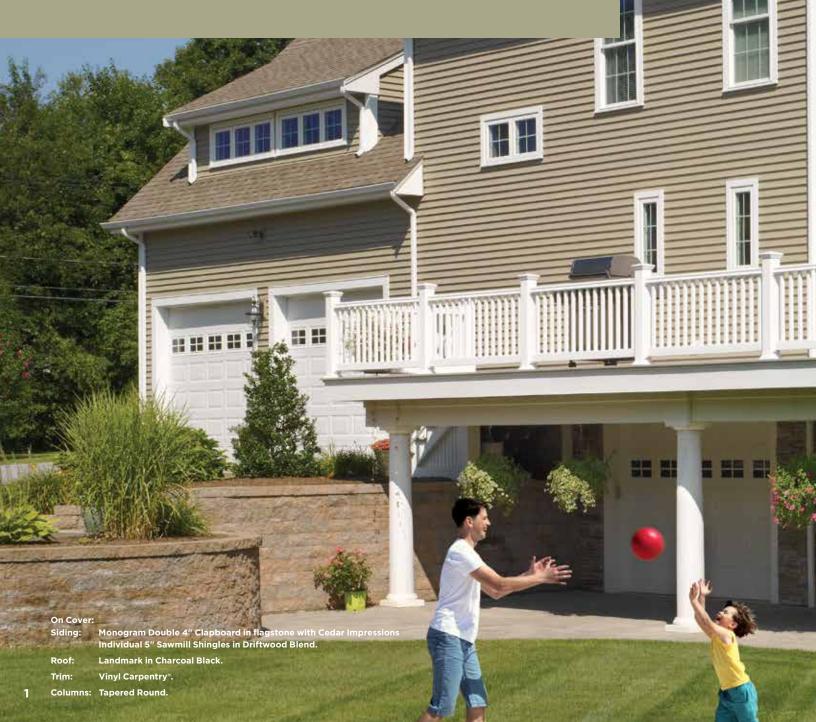
- exterior panels

- 1. Compressive Strength





40 colors. 3 styles. Unlimited possibilities. As the setting for your life story, your home should reflect your family's lifestyle and personality. With the widest color spectrum in the vinyl siding industry, Monogram offers unparalleled versatility to design your home to your unique taste.





Installing vinyl siding is a smart investment, with **one of the highest returns** of any major home remodeling project when it's time to sell.

74.7%

Return on investment for vinyl siding

Source: *Remodeling* magazine 2020 Cost vs. Value Report

Invest in quality for a lifetime.

Not all vinyl siding is the same. A building industry leader for over 100 years, CertainTeed offers a lifetime limited warranty based on Monogram's many industry firsts – RigidForm™ technology for reinforced performance, PermaColor™ for lifetime fade protection, TrueTexture™ for natural woodgrain finish and STUDfinder™ for precision installation.



ifetime Limited Warranty



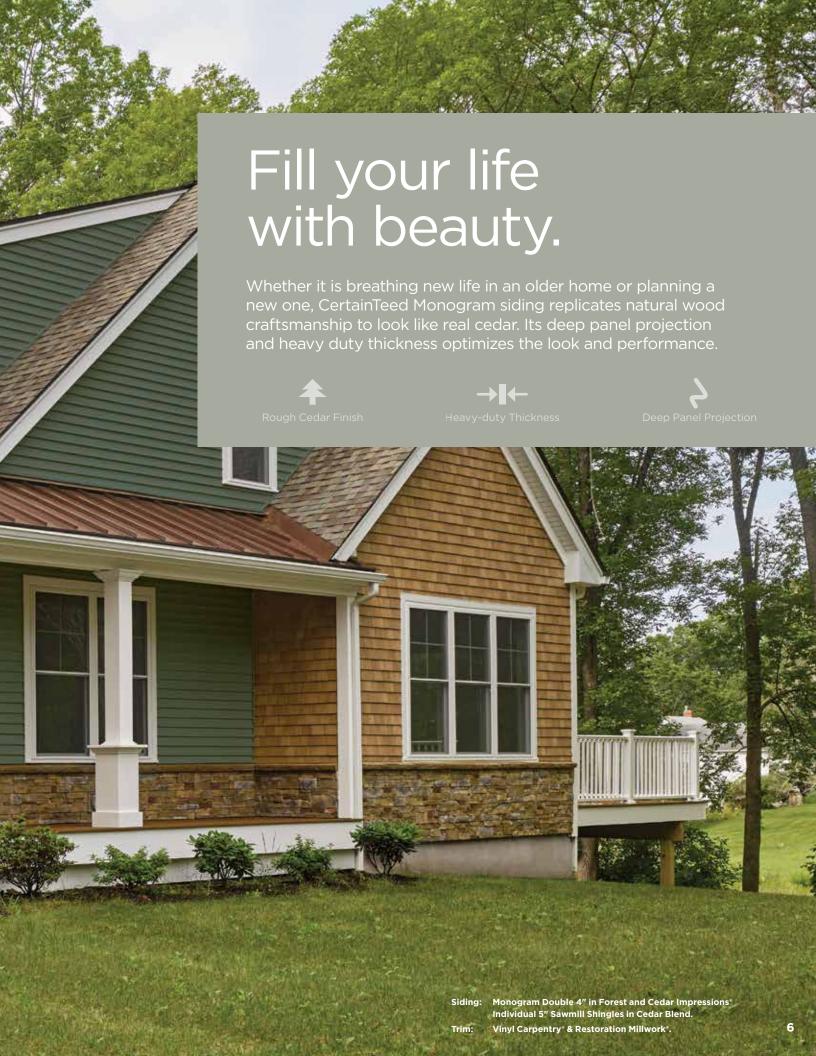
RiaidForm™ Technoloay

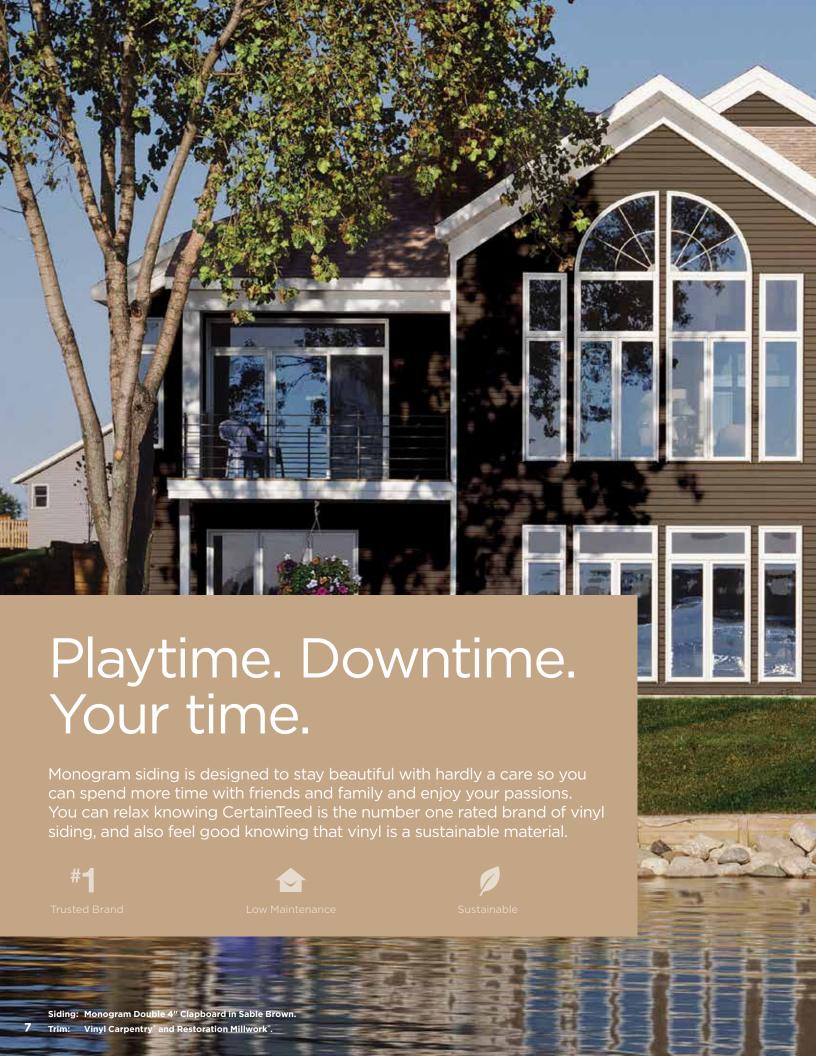


PermaColor™ Protection













40 Colors.

With CertainTeed's color leadership, Monogram has the widest color spectrum in the vinyl siding industry. Choose from subtle tones, deep shades or rich blends, all of them with the highest color fade protection available anywhere. Color it your way. If you need help, check out page 15 for color tools to guide your decision making.





CertainTeed Monogram Colors

33

7

39

Weathered Wood

solids

blends

coordinating trim colors

The Power of Color

Approximately 80% of what we absorb through the senses is visual, and color has the ability to distinctly influence our feelings and emotions in a unique way.

Interior color decisions are far easier than exterior color decisions

60%

consumers are highly confident in picking interior colors

40%

consumers are highly confident in picking exterior colors

When making exterior color decisions...

50% say "I trust my own visual instincts, my #1 influence."

40% say "Magazines, TV shows and design websites are one of my biggest influences."

10% say "Neighbors, contractors, architects and other sources are influences."

Today's intelligent homeowners

- Understand that colors must work with neighborhood style and architectural style of the home
- Want small "pops" of color to lend personality and exhibit their style
- Want color coordination with hardscapes and landscapes
- Want to stand out "tastefully"
- Seek a "cohesive character" for their home, but are often perplexed on how to achieve it

Source: Brushfire Consumer Panel Survey, 12/11

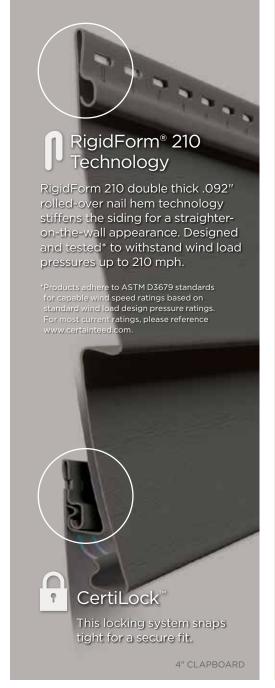
Choosing your color should be fun,

not intimidating.

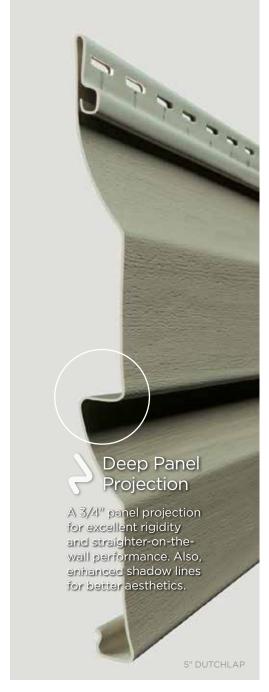
Olive Grove

See pages 15-16 for helpful guidelines.

Note: Colors throughout this brochure are simulated. Consult product samples before making final selection.





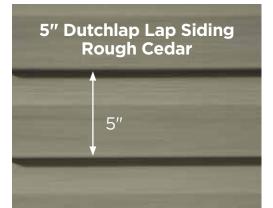


3 Styles. Many great features.

Monogram consists of traditional styles with European roots: Clapboard and Dutchlap. The Clapboard style is the most traditional and found in all parts of the United States. The Dutchlap style provides strong shadow lines and is highly popular in the Mid-Atlantic region.







TrueTexture[™]



Monogram was the first siding produced utilizing a direct transfer system from real cedar boards for a natural TrueTexture woodgrain finish. Our decorative trim product line offers the look of true wood craftsmanship, too.



Weathered Wood

40 Long-Lasting Colors



PermaCOLOR™ System assures color performance, resistance and durability. Utilizing the newest technology and state-of-the-art formulations, CertainTeed backs their vinyl siding with PermaCOLOR Lifetime Fade Protection.



Midnight Blue

7 Blends

In addition to 33 solid colors, Monogram siding has a great selection of 7 blend colors, with the look of semi-transparent wood stains.

Monogram is better...

...for less seams.

Monogram Extended Length siding comes in 16-, 20- and 25-foot lengths which can significantly reduce seams that

occur with traditional lengths.

Traditional length 12 feet



There can be up to 100% less seams if you use Monogram's 25-foot length on a 25-foot wide wall, 54% less seams if you use Monogram's 20-foot length.

Monogram XL 16 = 16 feet

Monogram XL 20 = 20 feet (Double 4" Clapboard Only)

> Monogram XL 25 = 25 feet (Double 4" Clapboard Only)

...for color availability.



...for safety.

STUDfinder™ is an installation system with letters on the Monogram panel nail hem to ensure proper nailing to wood studs, to protect you from unwanted dangers such as damaged pipes or wires, or exposed nails.







...for protection.

When installed with Monogram siding, CertaWrap™ Weather Resistant Barrier is the added layer of protection against air and moisture damage.

...for peace of mind.



Warranty

Monogram has a lifetime limited warranty.

#1

Trusted Brand

CertainTeed siding is the brand preferred by building professionals and homeowners, from surveys conducted by national trade magazines. CertainTeed is an industry leader for over 100 years.



Sustainable

CertainTeed vinyl siding offers significantly lower environmental impact than other cladding options.⁺

'Based on life cycle assessment studies conducted through the National Institute of Standards and Technology (NIST)

•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
•				•	•	•	•	•		•					•	•			•	•
Pacific Blue*	Wedgewood Blue	Flagstone*	Smoky Gray*	Charcoal Gray*	Castle Stone	Granite Gray	Sterling Gray	Oxford Blue	Seagrass	Cypress	Herringbone	Sandstone Beige	Desert Tan	Weathered Wood	Natural Clay	Savannah Wicker	Light Maple	Buckskin	Heritage Cream	Colonial White

DESIGN TOOLS Color and Design Tools www.certainteed.com/colortools

We can help

What is your color and design comfort level?

NOVICE

You are not sure about colors and are not sure where to start.

ColorCoach™

Gives you a virtual swatchbook to get started.



Trim-It™

Creates distinction with a wide offering of accent and decorative trim products from both composite and vinyl product lines.



INTERMEDIATE

You understand color and enjoy experimenting with color combinations but aren't exactly sure which color direction you want to go.



Online

Mix and match colors and styles on a wide variety of pre-populated home styles to get ideas.



EXPERT

You already know what colors you want to use, but would like to see how the products available in your color theme will look together on your home.



DIY

Immediately begin designing by uploading a project picture and quickly mix and match products on your own project.



Pro OR

Have a photo of your home professionally masked in a few days so you can



visualize in ColorView tool.

with your decisions.

Want More Ideas?

No Place Like Home Brochure

This brochure helps inspire ideas (pub. no. CTS435).

Go online for the PDF version or call 800-782-8777 for the brochure.



















Trim: Vinyl Carpentry* and Restoration Millwork*.

CertainTeed products are designed to work together and complement each other in color and style to give your home a beautiful finished look.





Specification Sheet



Monogram

Vinyl Siding

General Description: Monogram[™] provides the look of wood siding, but does not require the upkeep common to wood. Monogram siding is manufactured with TrueTexture[™] rough cedar finish molded directly from real cedar boards. Available in a selection of profiles, Monogram offers the industry's widest selection of colors. It is appropriate for use in new construction for single family homes, multi-housing projects and light commercial developments. Monogram is also an ideal product for remodeling.

Styles:

Profile	Finish	Panel Projection (Nominal)	Wall Thickness (Nominal)	Lock Design	Colors	Accessory Pocket
Double 4" Clapboard	Rough Cedar	3/4"	.046"	CertiLock [™] post-formed positive lock	40	3/4"
Double 5" Clapboard	Rough Cedar	3/4"	.046"	CertiLock [™] post-formed positive lock	33	3/4"
Double 5" Dutchlap	Rough Cedar	3/4"	.046"	CertiLock [™] post-formed positive lock	40	3/4"

Colors: Monogram siding profiles are available in the industry's widest selection of colors. All colors are Spectrophotometer controlled and utilize exclusive PermaColorTM color science.

Colonial White (01)	Seagrass (30)	Wedgewood Blue (89)	Hearthstone (19)	Spruce (16)
Smoky Gray (83)	Sterling Gray (33)	Weathered Wood (90)	Melrose (39)	Arbor Blend (57)*
Desert Tan (07)	Buckskin (41)	Autumn Red (23)	Midnight Blue (45)	Cedar Blend (79)*
Heritage Cream (11)	Castle Stone (37)	Brownstone (40)	Olive Grove (84)	Driftwood Blend (80)*
Herringbone (04)	Cypress (42)	Charcoal Gray (46)	Tuxedo (56)	Frontier Blend (51)*
Light Maple (55)	Granite Gray (34)	Espresso (43)	Pacific Blue (27)	Natural Blend (78)*
Sandstone Beige (15)	Natural Clay (60)	Flagstone (97)	Sable Brown (29)	Rustic Blend (82)*
Savannah Wicker (59)	Oxford Blue (32)	Forest (47)	Slate (44)	Weathered Blend (53)*

^{*} Premium Color: Made with an exclusive, highly durable polymer capstock combined with unique heat distortion modifiers that helps ensure long-term weatherability in darker hues that would otherwise quickly fail.

STUDfinderTM: The patented STUDfinder Installation System combines precisely engineered nail slot locations with graphics. Nail slots are positioned 16" on center to allow for alignment with studs. STUDfinder graphics centered at each slot provide a quick and easy guide to help locate studs.

RigidFormTM: Monogram RigidForm 210 technology has a stiff, double-thick .092" nail hem for a straighter-on-the-wall appearance and wind load performance.

Lock: Uniquely designed for ease of installation, Monogram features the CertiLock™ locking system; a post-formed positive lock which provides for self-aligning installation. Properly installed panels will snap together with an audible "click" signaling that they are ready for nailing.

Accessories: CertainTeed manufactures a wide range of siding accessories which are compatible with Monogram

siding styles and colors. Accessory products include installation components, soffit, window and door trim, corner lineals, corner systems and decorative moldings.

Composition: Monogram siding products are produced using PVC resin.

Technical Data: Monogram siding is in compliance with ASTM specification for Rigid Polyvinyl Chloride (PVC) Siding D3679, and the requirements of the 2015, 2018 and 2021 International Residential Code and International Building Code, the 2020 Florida Residential Code and Florida Building Code, the 2019 California Residential Code and California Building Code and the 2020 National Building Code of Canada. Monogram siding meets or exceeds the properties noted in Table 1.

Table 1

ASTM E 84	Meets Class A flame spread requirements as tested according to ASTM E84.
ASTM D 635	Material is self-extinguishing with no measurable extent of burn when tested in accordance with this specification.
NFPA 268	Radiant Heat Test - Ignition Resistance of Exterior Walls - Conclusion that CertainTeed met the conditions for
	allowable use as specified in section 1406 of the International Building Code.

Important Fire Safety Information: When rigid vinyl siding is exposed to significant heat or flame, the vinyl will soften, sag, melt or burn, and may thereby expose material underneath. Care must be exercised when selecting underlayment materials because many underlayment materials are made from organic materials that are combustible. You should ascertain the fire properties of underlayment materials prior to installation. All materials should be installed in accordance with local, state and federal Building Code and fire regulations.

Wind Load Testing: CertainTeed Monogram siding has been tested per ASTM D 5206 standard test method for wind load resistance to withstand negative wind load pressures and their mph equivalents as shown in the chart below. All products exceed industry standards for wind load performance. Check with your local building inspector for wind load requirements in your area for the type of structure you are building.

Table 2

			2015/201	8 IBC/IRC	2021 IBC/IRC			
Product	Fastener Spacing		Standard Design Pressure	Maximum Windspeed (mph)		Standard Design Pressure	Maximum Windspeed (mph)	
			Rating	ASD	ULT	Rating	ASD	ULT
Double 4" Clapboard	Nails	16" o.c.	160.6	258	333	115.6	219	283
Double 5" Clapboard	Nails	16" o.c.	92.6	196	253	66.7	166	215
Double 5" Dutchlap	Nails	16" o.c.	101.9	206	266	73.3	175	225

^{*} Windload calculations based on ASTM D3679, ASCE 7-16, 30ft High, Exposure B

Documents: CertainTeed Vinyl Siding meets the requirements of one or more of the following specifications.

VSI/Intertek PCL-0504

Texas Department of Insurance Product Evaluation EC-11

Conforms to ASTM Specification D3679

ICC-ES Evaluation Report ESR-1066

ICC-ES Evaluation Listing ESL-1462 (Canada)

Florida BCIS Approval FL1573 & FL12483

For specific product evaluation/approval information, call 800-233-8990.

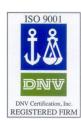
Installation: Prior to commencing work, verify governing dimensions of building, examine, clean and repair, if necessary, any adjoining work on which the siding is in any way dependent for its proper installation. Sheathing materials must have an acceptable working surface. Siding, soffit and accessories shall be installed in accordance with the latest editions of CertainTeed installation manuals on siding and soffit. Installation manuals are available from CertainTeed and its distributors.

Warranty: CertainTeed supports Monogram siding products with a Lifetime Limited Warranty including PermaColor Lifetime Fade Protection to the original homeowner. The warranty is transferable if the home is sold.

Technical Services: CertainTeed maintains an Architectural Services staff to assist building professionals with questions regarding CertainTeed siding products. Call 800-233-8990 for samples and answers to technical or installation questions.

Sample Short Form Specification: Siding as shown on drawings or specified herein shall be Monogram Vinyl Siding as manufactured by CertainTeed LLC, Malvern, PA. The siding shall have a .092" thick nail hem. Installation shall be in accordance with manufacturer's instructions.

Three-part Format Specifications: Long form specifications in three-part format are available from CertainTeed by calling our Architectural Services Staff at 800-233-8990. These specifications are also available on our website at <u>certainteed.com</u>.





SERIES 100 DOUBLE HUNG WINDOW

TEST SIZE W x H	AAMA RATING	AIR INFILTRATION	DESIGN PRESSURE	WATER RESISTANCE	U-VALUE	SHGC	VT
39.5" x 63"	R-PG20	≤0.30 cfm/ft ²	20 psf	3.0 psf	0.24-0.47	0.18-0.59	0.35-0.62

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 SECTION DETAILS -P2
 MULLION -P3-P4

FEATURES

- \circ 3-1/4" FRAME DEPTH
- o 7/8" INSULATED GLASS
- o SINGLE STRENGTH GLASS
- MEETING RAIL LOCK
- o DUAL VENT LOCKS
- o TILT SASH WITH TILT LATCH
- o CONTINUOUS LIFT HANDLE ON BOTTOM SASH
- o SLOPED SILL
- o CONSTANT FORCE COIL BALANCE
- o JAMB ADJUSTER
- o PERIMETER FOAM WRAP

OPTIONAL SELECTIONS

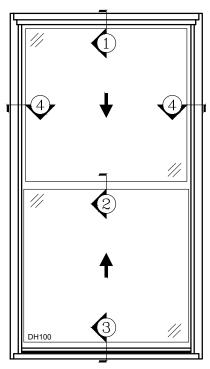
- LOW-E COATING & ARGON FILLED IGU
- CUSTOM FINISH AND CUSTOM COLORS
- o SPIRAL BALANCE
- HALF OR FULL SCREEN
- o LIMIT STOPS
- o INSTALLATION SCREWS
- o GRIDS
- **OTHER OPTIONAL ACCESSORIES**



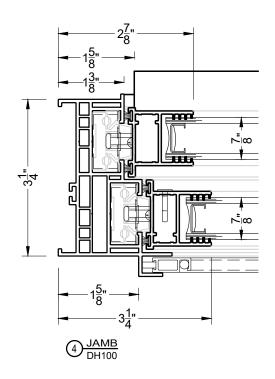
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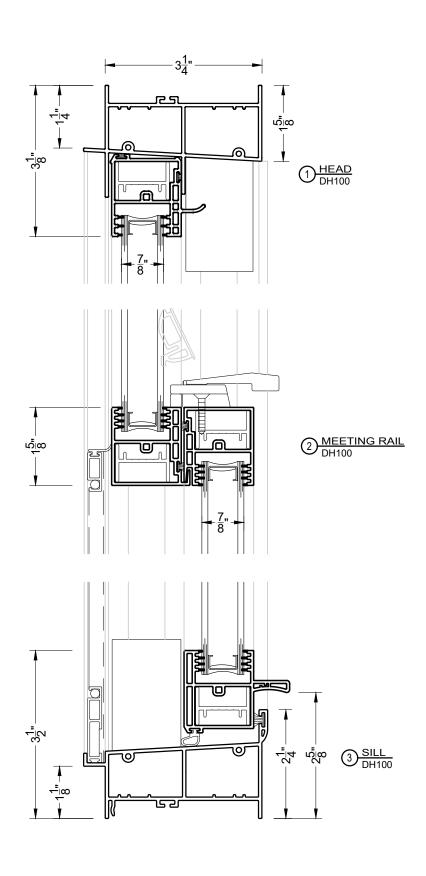
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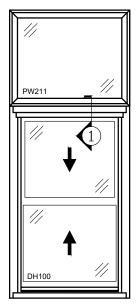


100 DOUBLE HUNG

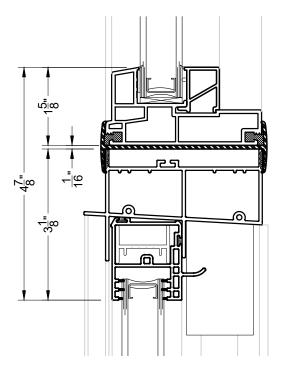




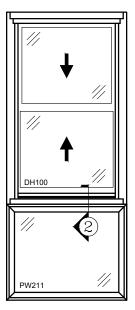




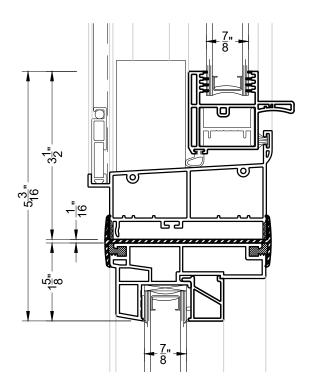
PW211 OVER DH100



H-MULLION
PW211 OVER DH100



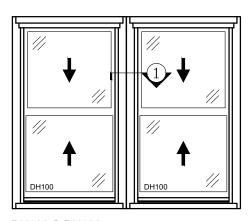
DH100 OVER PW211



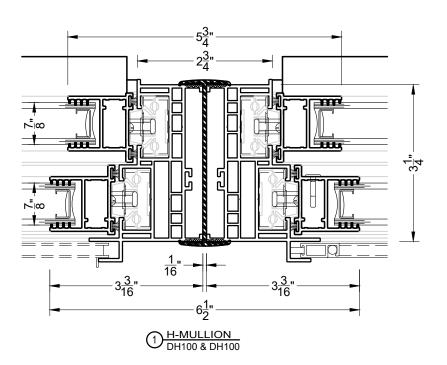
2 H-MULLION DH100 OVER PW211

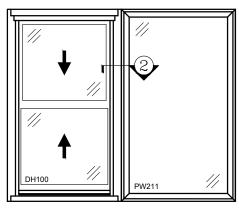




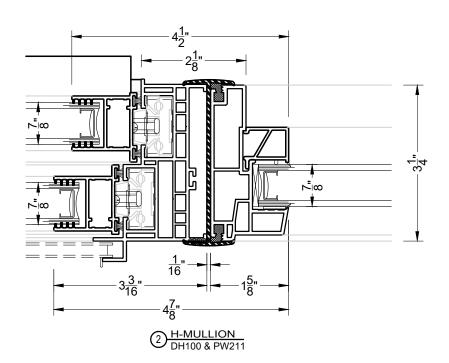


DH100 & DH100





DH100 & PW211





SERIES 400 DOUBLE HUNG WINDOW

TEST SIZE W x H	AAMA RATING	AIR INFILTRATION	DESIGN PRESSURE	WATER RESISTANCE	U-VALUE	SHGC	VT	
39.5" x 63"	R-PG20	≤0.30 cfm/ft²	20 psf	3.0 psf	0.23-0.48	0.19-0.61	0.36-0.64	
44" x 75"	LC-PG30	≤0.30 cfm/ft²	30 psf	4.5 psf	0.23-0.46	0.19-0.61	0.36-0.64	



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FEATURES

- o 2-7/8" FRAME DEPTH
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- o CONTINUOUS LIFT HANDLE ON BOTTOM SASH
- o SLOPED SILL
- o CONSTANT FORCE COIL BALANCE
- o DOUBLE-SEAL WEATHERSTRIPPING
- o INTEGRAL NAILING FIN
- o INTEGRAL J-CHANNEL



OPTIONAL SELECTIONS

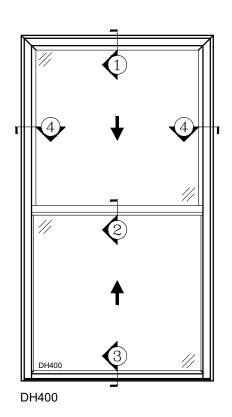
- LOW-E COATING & ARGON FILLED IGU
- o CUSTOM FINISH AND CUSTOM COLORS
- o SPIRAL OR BLOCK & TACKLE BALANCE
- HALF OR FULL SCREEN
- o LIMIT STOPS
- o INSTALLATION SCREWS
- o GRIDS
- **OTHER OPTIONAL ACCESSORIES**

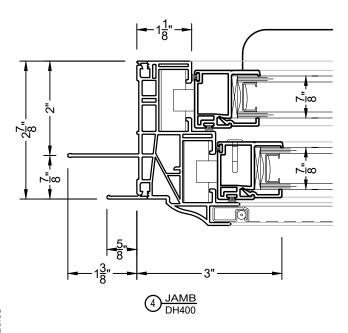


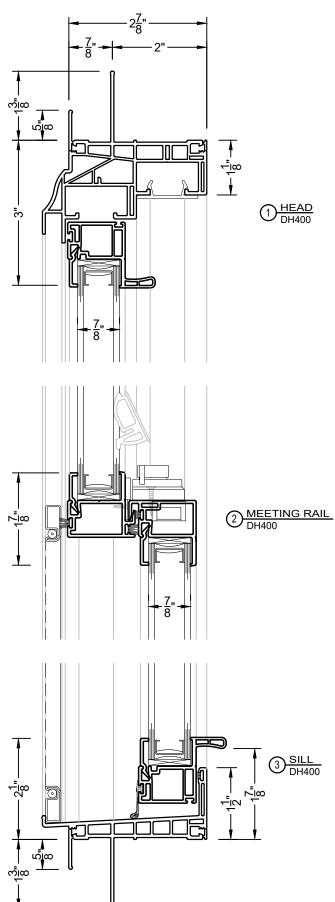
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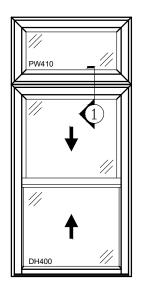




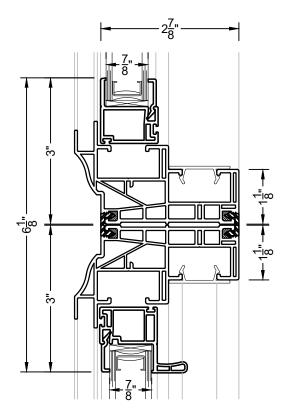




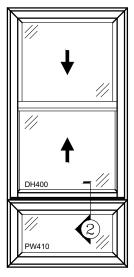




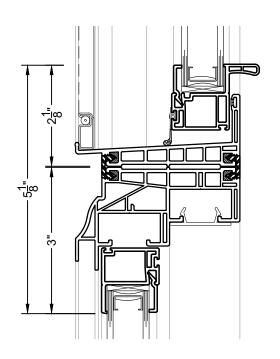
PW410 OVER DH400



0 DEGREE MULLION PW410 OVER DH400



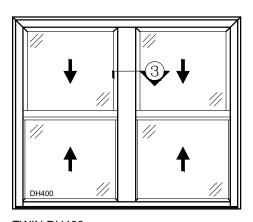
DH400 OVER PW410



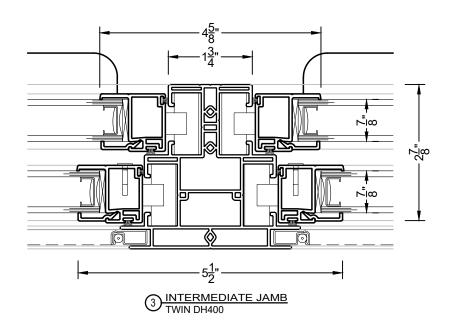
2 0 DEGREE MULLION DH400 OVER PW410

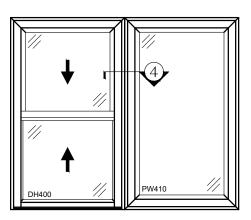




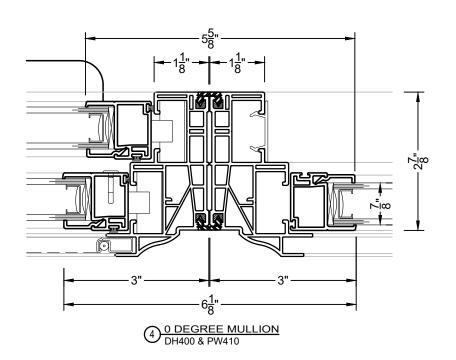


TWIN DH400





DH400 & PW410



EXPANDED POLYSTYRENE INSULATION

MOLDED, CLOSED-CELL FOAM PLASTIC INSULATION LONG-TERM STABLE R-VALUE



Expanded polystyrene (EPS) is an innovative, high-performance building material engineered to deliver long-term, reliable energy efficiency. EPS insulation is an ideal choice for green building design, offering numerous environmental advantages, including reduced energy consumption, recycled content, localized distribution and improved indoor air quality.









This EPD complies with the Building Envelope Thermal Insulation Product Category Rule (PCR), version 1.4 by Underwriters Laboratory (UL).



The EPS Industry Alliance (EPS-IA), which represents manufacturers and distributors of expanded polystyrene (EPS) products throughout North America, facilitates educational outreach on the technical, environmental and performance advancements of EPS.

The EPS industry is committed to sustainability through innovation. We demonstrate this dedication through lean manufacturing processes, a comprehensive recycling system and by harnessing new technologies to conserve raw materials and reduce waste. The EPS industry is continuously seeking to further market applications, reduce impacts and raise performance.

EPS-IA has invested significant time and resources in life-cycle analysis. This Environmental Product Declaration is part of our goal to provide life-cycle information on all EPS insulation applications.

www.epsindustry.org





EPS INSULATION According to ISO 14025

This declaration is an environmental product declaration (EPD) in accordance with ISO 14025. EPDs rely on Life Cycle Assessment (LCA) to provide information on a number of environmental impacts of products over their life cycle. Exclusions: EPDs do not indicate that any environmental or social performance benchmarks are met, and there may be impacts that they do not encompass. LCAs do not typically address the site-specific environmental impacts of raw material extraction, nor are they meant to assess human health toxicity. EPDs can complement but cannot replace tools and certifications that are designed to address these impacts and/or set performance thresholds – e.g. Type 1 certifications, health assessments and declarations, environmental impact assessments, etc. Accuracy of Results: EPDs regularly rely on estimations of impacts, and the level of accuracy in estimation of effect differs for any particular product line and reported impact. Comparability: EPDs are not comparative assertions and are either not comparable or have limited comparability when they cover different life cycle stages, are based on different product category rules or are missing relevant environmental impacts. EPDs from different programs may not be comparable.

PROGRAM OPERATOR	UL Environment						
DECLARATION HOLDER	EPS Industry Alliance						
DECLARATION NUMBER	4787238561.101.1	787238561.101.1					
DECLARED PRODUCT	EPS Insulation						
REFERENCE PCR	UL PCR: Building Envelope Thermal and	Mechanical Insulation v1.4 2016					
DATE OF ISSUE	8/10/2017						
PERIOD OF VALIDITY	5 Years	5 Years					
CONTENTS OF THE DECLARATION	Product definition and information about building physics Information about basic material and the material's origin Indication of product processing Information about the in-use conditions Life cycle assessment results Testing results and verifications						
		UL Environment					
The PCR review was conduc	eted by:	Peer Review Panel					
		epd@ul.com					
This declaration was indeper 14025 by Underwriters Labor	ndently verified in accordance with ISO ratories	uls					
□ INTERNAL		Wade Stout, UL Environment					
This life cycle assessment was accordance with ISO 14044 a		Thomas Sprin					
accordance with 100 14044 (Thomas Gloria, Industrial Ecology Consultants					



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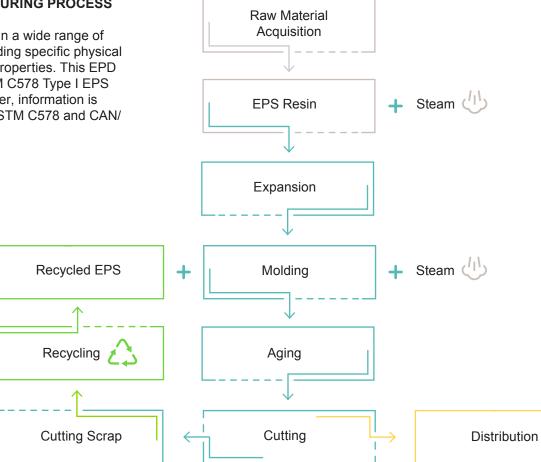
PRODUCT DESCRIPTION

Expanded polystyrene (EPS) insulation is a closed-cell foam plastic that is 98% air. EPS insulation is foam plastic and has never contained chlorofluorocarbon (CFCs), hydrofluorocarbons (HFCs) or hydrochlorofluorocarbon (HCFCs) blowing agents. EPS is easily recyclable and re-incorporated into the manufacturing process.

EPS is created in a two-stage process. First, EPS resin is loaded into an expander and exposed to steam, which causes it to expand. The expanded material is transferred into a block mold where, once again, steam is used to further expand and fuse the material into a solid, homogenous block. Recycled EPS is typically incorporated to produce a recycled content product. Following a short aging process, the EPS block is cut into sheets or various shapes to suit all insulation applications. Cutting scrap is recycled in-house and reused in the production cycle. The basic EPS product is white, although it can be colored.

EPS MANUFACTURING PROCESS

EPS is produced in a wide range of types, each providing specific physical and mechanical properties. This EPD is based on ASTM C578 Type I EPS insulation. However, information is available for all ASTM C578 and CAN/ ULC S701 Types.



Environment





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MANUFACTURING LOCATIONS

Individual EPS manufacturers can be found across the U.S., Canada, and Mexio. With hundreds of North American locations, EPS can help meet other green building goals via localized manufacturing, which reduces the impacts of transportation.



You can find an EPS manufacturer on the EPS-IA website.

APPLICATIONS

Foundations

EPS insulation provides dependable, long-term performance for interior and exterior foundation applications. Its closed-cell structure results in minimal water absorption and moderate vapor permanence. Density, strength and thickness can be specified to meet compressive loading forces as well as thermal resistance requirements.

- Sub-Slab Insulation
- · Exterior Perimeter Foundation Walls
- Interior Foundation Walls

Walls/Ceilings/Floors

Versatility, lasting value, and performance make EPS insulation ideal for a variety of wall, ceiling, and floor applications that substantially increase the thermal efficiency of the building structure.

- Walls & Ceilings
- Exterior Insulation Finish Systems (EIFS)
- · Exterior Sheathing/Underlayment

TESTING & STANDARDS

EPS products have been the subject of extensive research and evaluation for more than 50 years.

ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

CAN/ULC-S701 Standard for Thermal Insulation, Polystyrene, Boards & Pipe Covering.

ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials.

CAN/ULC-S102.2 Standard Method of Test for Surface Burning Characteristics of Building Materials & Assemblies.

ASTM C1512 Standard Test Method for Characterizing the Effect of Exposure to Environmental Cycling on Thermal Performance of Insulation Products.

ASHRAE 90.1 Energy Standard for Buildings Except Low-Rise Residential Buildings.

NFPA 285 Standard Fire Test Method for Evaluating Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies Containing Combustible Components.

Roofing

Roofing systems using EPS can meet the needs of the most demanding building requirements. EPS insulation is compatible with all commercial roofing systems, including but not limited to, built-up roofing and modified bitumen systems and single-ply membrane systems that are either ballasted, mechanically fastened or fully adhered.

- Flat, Tapered, Composite, & Flute Fill
- Built-Up & Modified Bitumen Membrane Systems
- Single-Ply Membrane Systems

Environment





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PERFORMANCE PROPERTIES

STABLE THERMAL RESISTANCE

The FTC R-value Rule recognizes the thermal performance of some insulation materials changes as they age (i.e., off-gassing) or settle, which affects the insulation's Long-Term Thermal Resistance (LTTR). However, the five-year and 50-year thermal resistance (RSI/R-values) for EPS insulation are the same as the initial RSI/R-values since the closed cell structure of EPS contains atmospheric air. The minimum RSI/R-value of EPS insulation provided for each product type may be used as a design value without any adjustment for age. Whether used as a stand-alone component or part of a highly engineered building system, EPS' insulating provides a permanent, lifetime R-value that delivers maximum energy efficiency.

The amount of insulation required will vary depending on the building design, climate, and energy costs, making it important to choose the most cost-effective R-value per inch (RSI per 25mm). The R-value of EPS insulation ranges from 3.1 to 4.3 per inch and the RSI ranges from 0.55 to 0.76 per 25mm.

Material Property	Units	ASTM C578 Types EPS Insulation Thermal Performance							
		XI	- 1	VIII	П	IX	XIV	XV	
Thermal Resistance	R-value per inch, minimum, ft²•hr•°F/BTU	3.1	3.6	3.8	4.0	4.2	4.2	4.3	
(R-value/RSI) @ 75°F/24°C	RSI per 25.4 mm, minimum, m²•°C/W	0.55	0.63	0.67	0.70	0.74	0.74	0.76	

Material Property	Units	CAN/ULC-S701 Types EPS Insulation Thermal Performance				
Material Property	Onits	1	2	3		
Thermal Resistance (RSI/R-value)	RSI per 25 mm, minimum, m²•°C/W	0.65	0.70	0.74		
@ 24°C/75°F	R-value per inch, minimum, ft²•hr•°F/BTU	3.75	4.04	4.27		



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COMPRESSIVE RESISTANCE

Due to its high resiliency and compressive resistance, EPS is an excellent choice for the repetitive loading of roof insulation (walkability), sub-pavement flooring, road building, and as a general load-bearing insulation. With its flexible production process, the mechanical properties of EPS can be adjusted to suit every specified application.

Material Property	Units	ASTM C578 Types EPS Insulation Compressive Resistance							
		ΧI	- 1	VIII	Ш	IX	XIV	XV	
Compressive Resistance	@ 10% Deformation minimum, psi	5	10	13	15	25	40	60	
Compressive Resistance	@ 10% Deformation minimum, kPa	2 10% Deformation 35 69 90	90	104	173	276	414		

Material Property	Units	CAN/ULC-S701 Types EPS Insulation Compressive Resistance				
		1	2	3		
	@ 10% Deformation minimum, kPa	70	110	140		
Compressive Resistance	@ 10% Deformation minimum, psi	10	16	20		

MOISTURE PROTECTION

EPS is hydrophobic and has a low equilibrium moisture content meaning it does not readily absorb moisture from the atmosphere – its closed-cell structure reduces the absorption and/or migration of moisture. EPS insulation is proven to retain its specified thermal and mechanical properties due to in-situ freeze-thaw cycling. When exposed to the extreme conditions of the ASTM C1512 test, EPS insulation exhibited drying potential under severe exposure conditions, which is critical for maintaining thermal resistance (RSI/R-value) under severe long-term exposure conditions.







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INSTALLATION

Specifying the appropriate product for a building application and installing it properly have a critical impact on the long-term performance of a building assembly. There are various building codes and industry standards – both at national and regional levels – that establish best practices for product specification and installation. To provide high-performance, long-lasting buildings, it is imperative for building and design professionals to be well informed about all applicable building codes and product standards, as well as manufacturer recommendations Strict adherence to proper installation requirements ensures all insulation products serve as effective design solutions that complement one another and ensure greater comfort, safety and lower maintenance while leaving a smaller footprint on the environment.

END-OF-LIFE MANAGEMENT & RECYCLING

Recycling has always been an integral part of operations at EPS processing plants. Cutting scrap is recycled and incorporated into the production cycle to make new EPS insulation. Recycled EPS can also be processed into new products such as plastic lumber.

INDOOR AIR QUALITY

EPS insulation products have a low volatile nature and are interior friendly. EPS has never incorporated CFCs, HFCs and HCFCs in its production process. Intertek Testing has verified EPS insulation VOC emissions through the standard methods of California Specification 01350: Standard Method for the Testing and Evaluation of Volatile Organic Chemical Emissions from Indoor Sources Using Environmental Chambers.

Many EPS manufacturers are certified for indoor air quality as low emitting products by UL GREENGUARD. You can view individual company UL GREENGUARD listings on SPOT.

LIFE-CYCLE ASSESSMENT RESULTS & ANALYSIS

PRODUCT SYSTEM BOUNDARIES

The Life -Cycle Assessment for EPS insulation quantifies energy and resource use, solid waste and environmental impacts for the following phases in the life cycle:

- Raw material acquisition (e.g., feedstocks for plastic resin), and intermediate steps to convert the feedstocks into EPS resin.
- Transportation of virgin EPS resin and recycled EPS to EPS insulation manufacturers.
- Manufacturing of EPS insulation.
- Packaging for incoming materials to the insulation manufacturer, as well as packaging for the shipment of EPS insulation.
- Transporting EPS insulation to customers or a distribution center.
- Installation and maintenance of the insulation are included in the study. Installing the insulation is performed manually and maintaining the product does not require additional energy or resources.
- End-of-life management of insulation and secondary packaging (including disposal, incineration, or recycling).

Environment

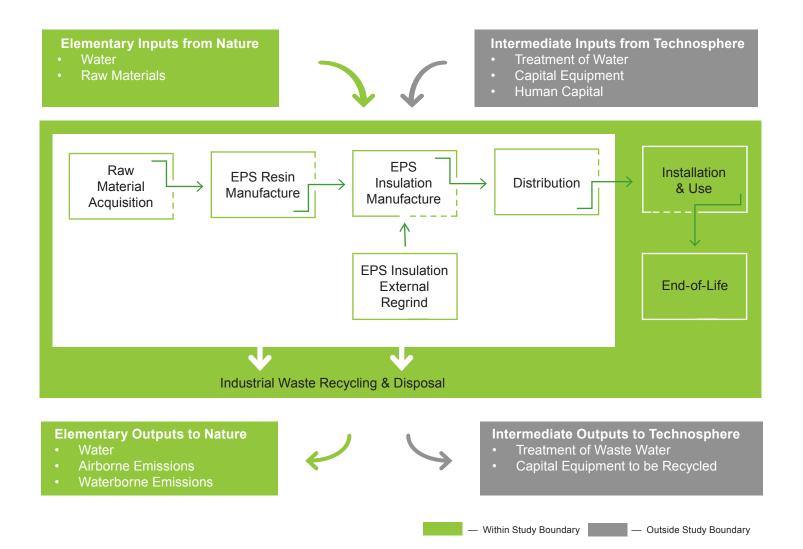




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The principal purpose of the LCA is to provide updated environmental impacts associated with EPS insulation from cradle to grave. The illustration below details EPS insulation production and subsequent life cycle stages.

EPS INSULATION SYSTEM BOUNDARIES



Environment





EPS INSULATION According to ISO 14025

USE OF MATERIAL & ENERGY RESOURCES

Table 1 shows the primary energy demands per functional unit. Energy resource consumption is broken down by type and by resources. Figures 1 and 2 illustrate the results graphically.

Basis: 1 m ² with a thermal resistance RSI = 1 m ² K/W and service life of 60 years
Total Primary Energy
MJ

NON-RENEWABLE RESOURCES						
Fossil Oil	26.50					
Coal	3.80					
Natural Gas	37.60					
Uranium	1.72					
RENEWABLE RESOURCE	ES .					
Hydropower	0.18					
Landfill Gas	1.15					
Wind	0.06					
Biomass	0.33					
Geothermal	0.01					
Solar	0.01					
TOTAL	71.4					



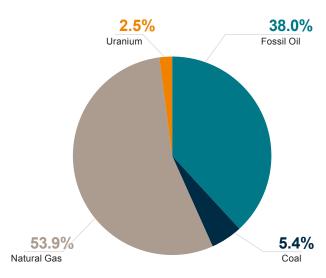


Figure 1: Non-Renewable Primary Energy Resources

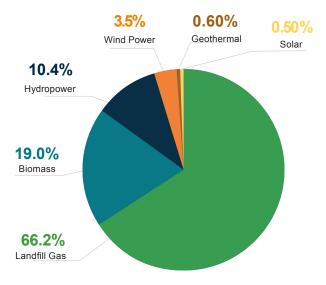


Figure 2: Renewable Primary Energy Resources





EPS INSULATION According to ISO 14025

FUNCTIONAL UNIT

The functional unit used for this study is 1 m² (10.765 ft²) of insulation material with a thickness that gives an average thermal resistance RSI = 1 m²•K/W (R-value 5.68 ft²•hr•°F/BTU) and with a building service life of 60 years. The thickness of the ASTM C578 Type I EPS insulation required for the functional unit is 4.01 centimeters (1.58 in).

Note: The EPD data is derived from the LCA of EPS Insulation and Cradle-to-Gate LCA of EPS Resin reports by ERG/Franklin Associates. Percentages have been rounded and may not total to 100%.

GEOGRAPHIC ANALYSIS

The geographic scope of the analysis is insulation manufactured, used, and disposed of in North America. End-of-life management of insulation was modeled based on all insulation being taken to a construction and demolition (C&D) landfill. This included transport and landfill machinery. The insulation was modeled as inert within the landfill.

INVENTORY & IMPACT ASSESSMENT

The LCA study addresses global, regional, and local environmental impact categories. For most of the impact categories examined, the TRACI 2.1 methodology, developed by the United States Environmental Protection Agency (EPA) specific to U.S./Canadian conditions and updated in 2012, is employed.

For the category of acidification, units of TRACI 2.04 were used in accordance with the Product Category Rule. For the category of Global Warming Potential (GWP), contributing elementary flows are characterized using factors reported by the Intergovernmental Panel on Climate Change (IPCC) in 2013 with a 100 year time horizon.

DATA QUALITY ASSESSMENT

Primary data was collected from three EPS resin manufacturers in North America – one in Canada, one in the U.S., and one in Mexico. Data was provided by one plant for each manufacturer. A straight average of these three resin data sets was used for the average EPS resin data set.

Primary data was collected from a total of 29 insulation manufacturing plants (23 in the U.S. and six in Canada). The following companies provided data for this assessment: ACH Foam Technologies, Inc., Atlas EPS, Insulation Technology, Inc., Insulfoam, NOVA Chemicals Inc., Plasti-Fab Ltd., VersaTech, Inc., Styropek. All insulation data sets were weighted using production amounts provided by each plant.

The data quality goals were to use data that are (1) geographically representative for each insulation system based on the locations where material sourcing and resin manufacturing operations, insulation manufacturing, distribution, and end-of-life management take place, and (2) representative of current industry practices in these regions. EPS-IA provided current, geographically representative data for both the EPS resin and the EPS insulation system. Those data sets used in the models that were not collected for this analysis were drawn largely from reliable published databases (U.S. LCI Database) or from the ERG/Franklin Associates confidential database of primary North American unit process data. The data sets used were the most current and most geographically and technologically relevant data sets available during the data collection phase of the project.

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METHODOLOGY

The LCA has been conducted following internationally accepted standards for LCA methodology as outlined in the ISO 14040 and 14044 standards, which provide guidance and requirements for conducting life cycle assessments. However, for some specific aspects of life cycle assessment, the ISO standards have some flexibility and allow for methodological choices to be made. These include the method used to allocate energy requirements and environmental releases among more than one useful product produced by a process, the methodology used to allocate environmental burdens for recycled content, and the methodology used for end of life management. The following sections describe the approach to each issue used in this study.

ENERGY DEMAND

Figure 3 shows total energy demand for the life cycle of the insulation system. The production of raw materials makes the largest contribution (81.8 percent) of the total energy demand for the EPS insulation. Insulation manufacturing also makes a significant contribution at 12 percent of the total. The manufacturing process for EPS insulation includes expansion of the resin, regrinding and converting scrap for reuse in the process, and, at some plants, combustion of captured blowing agent emissions. Transportation steps make up almost five percent of the total energy. A little more than two percent of that energy comes from distributing the insulation to the distribution centers and users. Packaging the resin and insulation requires very little energy. The insulation is installed manually, so no energy is required to complete that process. The use of the insulation also requires no energy. One percent of the total energy is required to dispose of the insulation, which includes transport to the C&D (construction and demolition) landfill, as well as for landfill equipment.

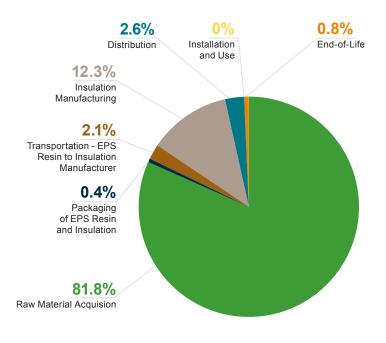


Figure 3: Total energy Demand for EPS Insulation





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Table 2 displays the percent of total energy required as feedstock as well as the energy required for process and fuel-related energy. A little less than half (46 percent) of the total energy is used to create the plastic material used in the EPS insulation. If only the process and fuel-related energy is examined, two-thirds of the energy still comes from material acquisition and almost a quarter is used by the insulation production.

	Basis: 1 m² with a thermal resistance RSI=1 m²K/W and service life of 60 years					
	Cumulative Energy	Non-Renewable Energy	Renewable Energy			
	MJ	MJ	MJ			
Raw Material Acquisition	58.4	57.1	1.32			
Packaging of EPS Resin and Insulation	0.27	0.22	0.05			
Transportation-Resin to Insulation	1.50	1.50	0.0023			
Insulation Manufacturing	8.81	8.49	0.32			
Distribution	1.85	1.85	0.0029			
Installation and Use	0	0	0			
End-of-Life	0.55	0.55	8.6E-04			
TOTAL	71.4	69.7	1.70			
		Percentage				
	Cumulative Energy	Percentage Non-Renewable Energy	Renewable Energy			
	Cumulative Energy	Non-Renewable	Renewable Energy			
Raw Material Acquisition	3.	Non-Renewable Energy				
Raw Material Acquisition Packaging of EPS Resin and Insulation	%	Non-Renewable Energy %	%			
· · · · · · · · · · · · · · · · · · ·	% 81.8%	Non-Renewable Energy % 80.0%	% 1.9%			
Packaging of EPS Resin and Insulation	% 81.8% 0.4%	Non-Renewable Energy % 80.0% 0.3%	% 1.9% 0.1%			
Packaging of EPS Resin and Insulation Transportation-Resin to Insulation	% 81.8% 0.4% 2.1%	Non-Renewable Energy % 80.0% 0.3% 2.1%	% 1.9% 0.1% 0.0%			
Packaging of EPS Resin and Insulation Transportation-Resin to Insulation Insulation Manufacturing	% 81.8% 0.4% 2.1% 12.3%	Non-Renewable Energy % 80.0% 0.3% 2.1% 11.9%	% 1.9% 0.1% 0.0% 0.4%			
Packaging of EPS Resin and Insulation Transportation-Resin to Insulation Insulation Manufacturing Distribution	% 81.8% 0.4% 2.1% 12.3% 2.6%	Non-Renewable Energy % 80.0% 0.3% 2.1% 11.9% 2.6%	% 1.9% 0.1% 0.0% 0.4% 0.0%			

 ${\it Table 2: Cumulative, Non-Renewable, and Renewable Energy Demand for EPS Insulation}$





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GLOBAL WARMING POTENTIAL

Table 3 and Figure 4 show life cycle GWP results for the insulation systems. The raw material production of the insulation system accounts for the largest share of GWP (70 percent), followed by insulation manufacturing at 20 percent. The GWP emissions from the raw material stage are mainly associated with fossil fuel resources used as fuel and as feedstocks for the plastic resin and blowing agent. GWP from insulation manufacturing includes emissions from combustion of fuels used in the insulation manufacturing process, emissions from operation of a thermal oxidizer used to destroy blowing agent emissions at the manufacturing plant (including carbon dioxide from combustion of both the fuel and pentane burned in the thermal oxidizer), as well as emissions associated with production of the electricity used in the insulation manufacturing processes. More than 8 percent comes from combustion of the fuels used to transport the resin, as well as the transportation during distribution. End-oflife management of disposed EPS insulation contributes a little more than 1% of the total GWP for the insulation system: this is largely carbon dioxide е tr

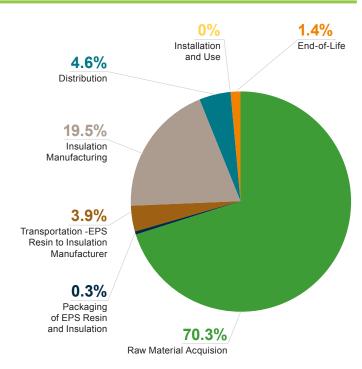


Figure 4: Global Warming Potential Results for EPS Insulation

the insulation system; this is largely carbon dioxide emissions from the combustion of the fuels used to transport and distribute the insulation during landfilling.	Basis: 1 m ² with a thermal resistance RSI = 1 m ² K/W and service life of 60 years					
	Global Warming Potential	Percentage of Total				
	kg CO ₂ eq	%				
Raw Material Acquisition	1.96	70%				
Packaging of EPS Resin and Insulation	0.0074	0.3%				
Transportation-Resin to Insulation	0.11	3.9%				
Insulation Manufacturing	0.55	20%				
Distribution	0.13	4.6%				
Installation and Use	0	0.0%				
End-of-Life	0.038	1.4%				
TOTAL	2.79	100%				

Table 3: Global Warming Potential Results for EPS Insulation





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WATER CONSUMPTION

Consumptive use of water in this study includes freshwater that is withdrawn from a water source or watershed and not returned to that source. Consumptive water use includes water consumed in chemical reactions, water that is incorporated into a product or waste stream, water that becomes evaporative loss, and water that is discharged to a different watershed or water body than the one from which it was withdrawn. Water consumption results shown for each life cycle stage include process water consumption as well as water consumption associated with production of the electricity and fuels used in that stage. Electricity-related water consumption includes evaporative losses associated with thermal generation of electricity from fossil and nuclear fuels, as well as evaporative losses due to establishment of dams for hydropower.

Water consumption results are shown in Figure 5. Process water consumption for EPS insulation manufacturing is associated with generation of electricity used in the processes, as well as extraction of oil and gas for material and fuel uses. These account for almost half of the consumed water. The insulation manufacturing itself accounts for 29 percent of the water consumed, due to steam production and cooling water makeup.

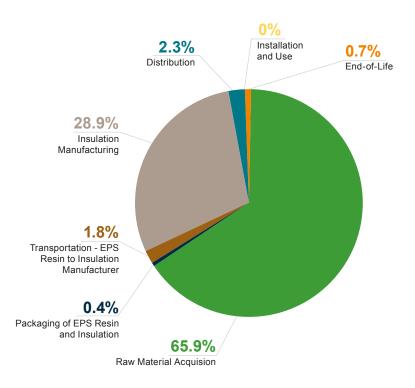


Figure 5: Consumptive Water Use for EPS Insulation



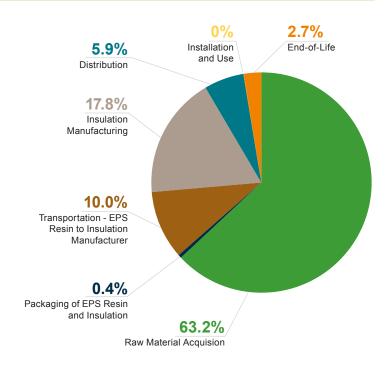


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ACIDIFICATION

For the EPS insulation system, raw material production accounts for almost two-thirds of the total acidification potential, followed by insulation manufacturing (17.8 percent) and the transportation of resin and distribution, which together account for over 15 percent. The combustion of natural gas, coal and oil is the largest contributor to the acidification potential.

Figure 6: Acidification Potential Results for EPS Insulation



SOLID WASTE

Solid waste results include the following types of wastes:

- Process wastes that are generated by the various processes from raw material acquisition through production of insulation (e.g., sludges and residues from chemical reactions and material processing steps)
- Fuel-related wastes from the production and combustion of fuels used for process energy and transportation energy (e.g., refinery wastes, coal combustion ash)
- Postconsumer wastes that include the landfilling of the insulation and packaging included, plus ash from the 18% of the packaging that are managed by WTE combustion.

Results for solid waste by weight are shown in Table 4. The largest share of solid waste for all insulation systems is post-consumer solid waste (insulation disposed at the end of its useful life). The next largest contributor is raw material production, which accounts for 10% of the waste for the EPS insulation. Raw material solid wastes are largely associated with production and combustion of fuels (particularly coal used to generate electricity used in raw material production processes) and the production of crude oil and natural gas used as feedstocks for the EPS resin and blowing agent. The insulation manufacture creates approximately 5 percent of the total solid wastes, which include some off-spec resin sent to landfill, as well as solid wastes from emissions control devices. The small amounts of packaging used does not make a large contribution (1 percent) to solid waste results.

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The total solid waste is also separated by hazardous and non-hazardous wastes, as well as by the fate of the solid waste. Hazardous waste accounts for only 0.03 percent of the total solid waste for the EPS insulation, while non-hazardous makes up the remaining. More than 99 percent of the solid waste is landfilled, with only 0.02 percent being incineration and less than 0.01 percent used for waste-to-energy.

		Basis: 1 m ² with a thermal resistance RSI = 1 m ² K/W and service life of 60 years							
			Hazardou	s Wastes		Non-Hazardous Wastes			
	Total Solid Waste	Waste-to- Energy	Incineration	Landfill	Hazardous Waste Total	Waste-to- Energy	Incineration	Landfill	Non-Hazardous Waste Total
	kg	kg	kg	kg	kg	kg	kg	kg	kg
Raw Material Acquisition	0.081	1.0E-05	1.5E-04	2.3E-05	1.9E-04	1.1E-06	0.0021	0.079	0.081
Packaging of EPS Resin and Insulation	0.011	5.2E-08	3.9E-06	1.2E-07	4.1E-06	1.2E-07	5.3E-05	0.011	0.011
Transportation-Resin to Insulation	0.0015	0	0	0	0	0	0	0.0015	0.0015
Insulation Manufacturing	0.037	0	0	0	0	0	0	0.037	0.037
Distribution	0.0019	0	0	0	0	0	0	0.0019	0.0019
Installation and Use	0	0	0	0	0	0	0	0	0
End-of-Life	0.61	0	0	0	0	0	0	0.61	0.61
TOTAL	0.75	1.0E-05	1.6E-04	2.3E-05	1.9E-04	1.3E-06	0.0021	0.74	0.75

		Percentage of Total							
			Hazardou	s Wastes		Non-Hazardous Wastes			
	Total Solid Waste	Waste-to- Energy	Incineration	Landfill	Hazardous Waste Total	Waste-to- Energy	Incineration	Landfill	Non-Hazardous Waste Total
	%	%	%	%	%	%	%	%	%
Raw Material Acquisition	10.9%	0%	0.02%	0%	0.03%	0%	0.28%	10.6%	10.8%
Packaging of EPS Resin and Insulation	1.4%	0%	0%	0%	0%	0%	0.01%	1.43%	1.45%
Transportation-Resin to Insulation	0.2%	0%	0%	0%	0%	0%	0%	0.20%	0.20%
Insulation Manufacturing	4.9%	0%	0%	0%	0%	0%	0%	4.92%	4.92%
Distribution	0.3%	0%	0%	0%	0%	0%	0%	0.25%	0.25%
Installation and Use	0%	0%	0%	0%	0%	0%	0%	0%	0%
End-of-Life	82.3%	0%	0%	0%	0%	0%	0%	82.3%	82.3%
TOTAL	100%	0.00%	0.02%	0.00%	0.03%	0.00%	0.29%	99.7%	99.97%





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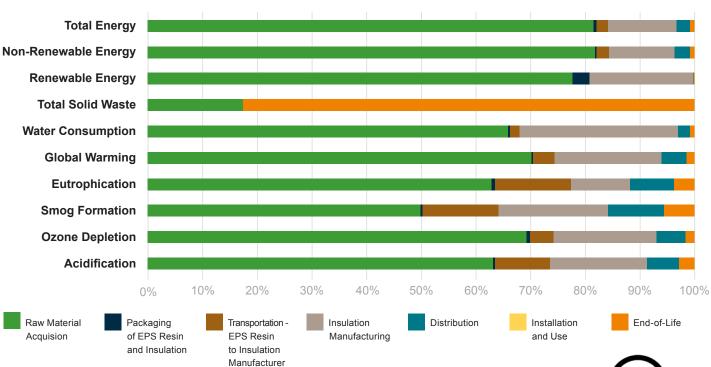
RESULTS SUMMARY

A summary table including result totals in each category for EPS insulation is displayed in Table 5. Normalized results for EPS insulation for all results categories are presented in Figure 7. For each results category, the values are displayed on a percentage basis, with each phase of the LCA shown based on its percent of the total amount (100%) for that category.

ASTM C578 TYPE I EPS INSULATION

IMPACT CATEGORY/ENVIRONMENTAL INDICATOR	UNITS	TOTAL
Total Energy	MJ	71.4
Non-Renewable Energy	MJ	69.7
Renewable Energy	MJ	1.74
Total Solid Waste	kg	0.75
Water Consumption	L	9.94
Global Warming	kg CO ₂ eq	2.79
Eutrophication	kg N eq	3.6E-04
Smog Formation	kg O ₃ eq	0.20
Ozone Depletion	kg CFC-11 eq	1.6E-08
Acidification	mol H+ eq	0.46

Table 5: Results Summary



Environment

Figure 7: Normalized Results for EPS Insulation





EPS INSULATION According to ISO 14025

RESULTS SUMMARY

The LCA is based on a functional unit of 1 m² (10.765 ft²) of ASTM C578 Type I EPS insulation with a thickness that gives an average thermal resistance RSI = 1 m²K/W (R-value 5.68 ft²•hr•°F/BTU) and with a building service life of 60 years. For this functional unit, the ASTM C578 Type I EPS insulation thickness would be 4.01 centimeters (1.57 inches).

Table 6 provides the EPS LCA results for ASTM C578 and CAN/ULC S701 EPS Types based on a functional unit of 1 m² (10.765 ft²) of insulation that gives a thermal resistance of RSI=1 m²K/W (R-value 5.68 ft²•hr•°F/BTU) and with a building service life of 60 years.

LCA RESULTS FOR ASTM C578 & CAN/ULC-S701 EPS TYPES

IMPACT CATEGORY/				ASTI	/I C578				CA	N/ULC S	701
ENVIRONMENTAL INDICATOR	UNITS	Type XI	Type I	Type VIII	Type II	Type IX	Type XIV	Type XV	1	2	3
Total Energy	MJ	64.3	71.4	86.4	96.4	122	163	199	68.5	95.7	121
Non-Renewable Energy	MJ	62.7	69.7	84.3	94.1	119	160	194	66.9	93.4	118
Renewable Energy	MJ	1.53	1.74	2.06	2.30	2.90	3.89	4.74	1.63	2.28	2.87
Total Solid Waste	kg	0.66	0.75	0.91	1.01	1.28	1.72	2.09	0.72	1.01	1.27
Water Consumption	L	8.95	9.94	12.0	13.4	17.0	22.8	27.7	9.54	13.3	16.8
Global Warming	kg CO ₂ eq	2.51	2.79	3.38	3.77	4.77	6.39	7.78	2.68	3.74	4.72
Eutrophication	kg N eq	3.2E-04	3.6E-04	4.4E-04	4.9E-04	6.2E-04	8.2E-04	10E-04	3.5E-04	4.8E-04	6.1E-04
Smog Formation	kg O ₃ eq	0.18	0.20	0.24	0.27	0.34	0.46	0.56	0.19	0.27	0.34
Ozone Depletion	kg CFC-11 eq	1.4E-08	1.6E-08	1.9E-08	2.2E-08	2.7E-08	3.7E-08	4.4E-08	1.5E-08	2.1E-08	2.7E-08
Acidification	mol H+ eq	0.41	0.46	0.56	0.62	0.79	1.05	1.28	0.44	0.62	0.78

Table 6: EPS LCA Results for ASTM C578 & CAN/ULC-S701 EPS Types

REFERENCES

- Product Category Rules for Preparing an Environmental Product Declaration (EPD) for Product Group: Building Envelope Thermal Insulation, Version 1.4, 23 September 2011
- Life Cycle Assessment of Expanded Polystyrene Insulation, Franklin Associates/ERG, 2017
- Cradle-to-Gate Life Cycle Analysis of Expanded Polystyrene Resin, Franklin Associates/ERG, 2017
- ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- CAN/ULC S701 Standard for Thermal Insulation, Polystyrene, Boards & Pipe Coverings

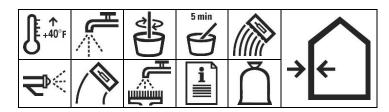
Environment





Sto Primer/Adhesive-B

80101 Sto Primer/Adhesive-B



Technical Data			
REPORT	TEST METHOD	TEST CRITERIA	TEST RESULTS
Surface Burning	ASTM E-84	< 25 Flame Spread < 450 Smoke Developed	0 5
Adhesion (psi)	ASTM C-297 Modified	28 days	> 20 Gypsum Sheathing* > 15 EPS Board* > 80 Concrete Block* > 35 Dens-Glass® Gold**
Impact Strength	EIMA 101.86	Standard Impact Classification	Pass
* [-1] f			

Failure of substrate

^{**} Dens-Glass Gold is a registered trademark of G-P Gypsum Corp.

Fe	atures	Benefits	
1	One-component	Ready to use; easily mixed with water on the job site	
2	Polymer-modified	Excellent adhesion; increases durability and freeze/thaw resistance	
3	Creamy smooth consistency	Trowels on easily; increases productivity	
4	Vapor permeable	Allows substrate to breathe naturally; resists blisters caused by trapped vapor	
5	Factory blended Portland cement	Assures performance mix ratio	
6	Low cement ratio	Less alkalinity, less free lime, less efflorescence	
7	Bagged powder product	Less solid waste than pails; freezing protection not required	

Surface Preparation

As an adhesive

StoGuard® Air/Moisture Barrier: ensure surface is clean, dry and free of surface contamination. Install StoTherm ci insulation board with adhesive within 30 days of the application of Sto Gold Coat, or clean the surface and recoat with Sto Gold Coat.

Concrete or Masonry: surfaces must be clean, dry and free of frost, damage and all bond-inhibiting materials, including dirt, efflorescence, laitance, form oil and other foreign matter. Loose or damaged material must be removed by water blasting, sandblasting or mechanical wire brushing and repaired.

Avoid application over irregular surfaces. Resurface, patch or level surfaces to required tolerance and smoothness with appropriate Sto leveling materials. Refer to ASTM D-4258 and ASTM D-4261 for complete details on preparing cementitious substrates for coatings.

Glass Mat Gypsum Sheathing in Compliance with ASTM C 1177: ensure surface is clean, dry and free of surface contamination. Sheathing must be installed and protected in accordance with manufacturer's and building code requirements. Remove and replace weather-damaged sheathing. Avoid application over irregular, out of plane surfaces. Install StoTherm ci insulation board with adhesive within 30 days of installation of the sheathing.

Sto Primer/Adhesive-B is a onecomponent, polymer-modified, cement based, dry powder material used as an adhesive and base coat in the StoTherm[®] ci Essence System.

Coverage

"Through the wall": 55-70 ft² (5.1-6.5 m²) per bag (when used for both adhesive and base coat applications).

As an adhesive over sheathing and smooth masonry:
90-125 ft² (8.4-11.6 m²) per bag, applied with a 1/2" x 1/2" (13 mm x 13 mm) U-notched trowel having 2" (51 mm) spread between notches.

As an adhesive over rough or uneven masonry:

30-45 ft² (2.8-4.2 m²) per bag, applied with a 5/8" x 5/8" (16 mm x 16 mm) square-notched trowel, having 5/8" (16 mm) spread between notches.

As a base coat: 75-115 ft² _ (7-10.7 m²) per bag. As a skim coat: 90-135 ft² _ (8.4-12.5 m²) per bag.

Coverages may vary depending on application technique and surface conditions.

Packaging

50 lb. bag (23 kg).

Shelf Life

12 months, if properly stored and protected from moisture.

Storage

Store off the ground in a dry area. Protect from extreme heat [90°F (32°C)], moisture and direct sunlight.



Sto Primer/Adhesive-B

Surface Preparation cont.

As a base coat

StoTherm ci Insulation Board: insulation must be rasped and free of all bond inhibiting materials.

Concrete or Masonry: surfaces must be clean, dry and free of frost, damage and all bondinhibiting materials, including dirt, efflorescence, laitance, form oil and other foreign matter. Loose or damaged material must be removed by water blasting, sandblasting or mechanical wire brushing and repaired.

Mixing

Use 5-6.5 quarts (4.7-6.2 L) of water per 50 lb. bag (23 kg). Mix automatically using Sto's Continuous Mixer, or mix manually by adding one 50 lb. (23 kg) bag of Sto Primer/Adhesive-B to 5-6.5 guarts (4.7-6.2 L) of clean, potable water in a clean mixing pail. Mix with a clean, rust-free electric drill and paddle.

Allow to set approximately five minutes, adjust mix if necessary by adding up to 12 fl.oz. (0.35 L) of water per bag, remix to a uniform consistency. Avoid re-tempering after mixing of product. Do not exceed maximum amount of water in mix ratio.

Application

Apply only to sound and clean, dry, properly prepared, frost-free surfaces.

As an adhesive: Apply to the back of the insulation board with the appropriate size notched trowel. When using Sto's M-8 Spray pump apply directly onto the substrate. Form uniform ribbons of adhesive parallel to the short dimension of the board so the ribbons are oriented vertically in relation to the plane of the wall. Immediately install the board horizontally with staggered joints and apply firm uniform pressure over the entire board surface. Do not delay installation once adhesive is applied.

As a base coat: Apply with spray equipment such as Sto's M-8 Spray Pump or apply manually with a stainless steel trowel to an approximate thickness of 1/8" (3 mm). Work horizontally or vertically in strips of 40" (1 m) and immediately embed Sto Mesh in the wet Sto Primer/Adhesive-B by troweling from the center to the edges of the mesh. Avoid wrinkles in the mesh and smooth the base coat to eliminate trowel marks.

Minimum recommended dry thickness of the reinforced base coat is 1/16" (1.6 mm) when dry. Reapply additional base coat if necessary to achieve minimum thickness as soon as the first application is dry.

As a skim coat: Apply in one application to a maximum thickness of 1/16" (1.6 mm) to the prepared surface and smooth the surface.

Curing/Drying

Dries within 24 hours under normal drving conditions [70°F (21°C), 50% RH]. Allow additional drying time during cold, humid, or wet weather until insulation board is fully adhered before rasping, and before application of primer or finish to hardened Sto Primer/Adhesive-B. Protect from rain, freezing and continuous high humidity until completely dry. Sto recommends priming using the appropriate Sto Primer prior to application of finish.

Clean Up

Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically

Limitations

- Use Sto Primer/Adhesive-B only when surface and ambient temperatures are above 40°F (4°C) during application and drying period.
- Sloped surfaces: Refer to Sto details.
- Sto Primer/Adhesive-B should not be used on weather-exposed horizontal or below grade surfaces or where immersion in water may occur.
- Prevent rapid loss of moisture from exposure to direct sun, wind and high temperatures.
- Sto Primer/Adhesive-B should not be used as a finish coating.
- It should not be used over wood surfaces except for wood sheathing surfaces protected by StoGuard®.

Health And Safety

Health Precaution

Contains Portland cement and crystalline silica. Avoid breathing dust. As with any chemical construction product, exercise care when handling. DANGER!

Causes serious eye damage and/or skin irritation. May cause an allergic skin reaction, respiratory irritation, drowsiness or dizziness.

Safety Precaution

Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

First Aid: EYE CONTACT: Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eye lids with fingers. Get immediate medical attention. SKIN CONTACT: Immediately wash skin with plenty of soap and water for at least 15 to 20 minutes, while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists. INHALATION: If inhaled, remove to fresh air. If not breathing give artificial respiration or give oxygen by trained personnel. Seek medical attention immediately. INGESTION: If swallowed, do NOT induce vomiting. Call a physician or a poison control center immediately. Never give anything by mouth to an unconscious person.

Spills

Collect in an appropriate container. Uncured material may be removed

Disposal

Dispose of in accordance with local state or federal regulations.

Warning

KEEP CONTAINER CLOSED WHEN NOT IN USE. KEEP OUT OF THE REACH OF CHILDREN. NOT FOR INTERNAL CONSUMPTION. FOR INDUSTRIAL USE ONLY. Consult the Safety Data Sheet (SDS) for further health and safety information.

LIMITED WARRANTY

This product is subject to a written limited warranty which can be obtained free of charge from Sto Corp. Refer to Sto Specifications for more complete information on proper use and handling of this product.

Sto Corp.

3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331

Tel: 404-346-3666 Toll Free: 1-800-221-2397

Fax: 404 346-3119

S155-80101

Revision: A3.1 Date: 04/2018

Attention

This product is intended for use by qualified professional contractors, not consumers, as a component of a larger construction This product is intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. It should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its product applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of this product or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. STO CORP ISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME. For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com.

www.stocorp.com



PRODUCT BULLETIN

Sto Gold Fill®

Product Number: 80266

PRODUCT DESCRIPTION

Sto Gold Fill is a ready- mixed, flexible, trowel-applied air barrier for use over prepared vertical above-grade concrete, concrete masonry, brick masonry, wood sheathing, glass mat gypsum sheathing, and cementitious sheathing substrates, as part of a StoGuard® air and water-resistive barrier system. It is used with StoGuard Mesh® to seal joints and seams and to protect rough openings in Sto proprietary wall systems and beneath multiple cladding types.

FEATURES	BENEFITS
Air Barrier	Reduces risk of condensation caused by
	air leaks through the wall construction;
	reduces energy costs by reducing
	heating/cooling loads
Vapor permeable	Minimizes risk of condensation in walls
Structural and	Rigid and stable under air pressure loads;
durable	does not tear or blow off the wall with
	wind
Seamless	No tears, holes, or mis-lapped joints that
	can compromise performance in service
Water-based and low	Safe, non-toxic, VOC compliant, easy
VOC	clean-up

Coverage (per pail): 175-250 linear feet (53-76m) of sheathing joints and rough openings.

Coverage may vary depending on substrate, application technique, waste factor, and other variables that may exist. CMU substrates will generally be on the lower end of the coverage range. Construct a mock-up under actual conditions of use to verify proper surface preparation, coverage, and method of application for approval by the appropriate authority.

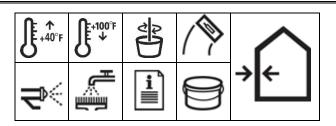
Packaging: 5 gallon (19L) pail

Color: Yellow

Shelf Life: 18 months in original, unopened, properly stored

container.

Storage: Protect from extreme heat [90°F (32°C)], freezing and direct sunlight.



SURFACE PREPARATION

Sto Proprietary Wall Systems: StoTherm® ci, StoVentec®, StoPowerwall®, StoQuik® Silver, StoPanel®, and StoLite® systems. Refer to applicable Sto Specification.

Surfaces must be fully cured, structurally sound, clean, dry, and free of frost, damage, and all bond-inhibiting materials, including dirt, dust, efflorescence, form oil and other foreign matter. Sheathing must be Exterior Grade or Exposure 1 wood-based sheathing, glass mat gypsum sheathing in compliance with ASTM C1177, or cementitious sheathing in compliance with ASTMC1325 Type A. Sheathing must be installed in compliance with the building code and manufacturer's recommendations. Treat sheathing joints, inside and outside corners, rough openings, and transition details with Sto Gold Fill applied over StoGuard Mesh. Refer to Sto Details. Pre-treat defects such as knots in wood-based sheathing, vacant fastener holes, and minor cracks (up to 1/16 inch [1.6 mm] wide) in concrete and CMU with Sto Gold Fill. If cracks are structural consult an engineer.

MIXING

Mix to a uniform consistency with an electric drill and clean, rust-free paddle. Do not thin or dilute with water.

APPLICATION

Apply only to sound and clean, dry, properly prepared, frost-free surfaces.

Installation over Sheathing

Place minimum 4 inch (101 mm) wide StoGuard Mesh centered over sheathing joints and minimum 9 inch (152 mm) wide StoGuard Mesh centered and folded around inside and outside corners. Apply Sto Gold Fill over the mesh to a uniform thickness of 1/16 inch (1.6mm) and trowel smooth to completely cover the mesh. Protect from rain and freezing until dry. Spot vacant fastener holes or over-driven fasteners, knots, or other voids in sheathing surfaces with Sto Gold Fill.

Installation over Concrete or Concrete Masonry

Reinforce static cracks up to 1/8 inch wide with StoGuard Mesh centered over the crack. Apply Sto Gold Fill to a uniform thickness of 1/16 inch (1.6mm) and trowel smooth.



PRODUCT BULLETIN

Sto Gold Fill®

Product Number: 80266

APPLICATION (continued)

IMPORTANT: top coat all installations with Sto Gold Coat or other Sto air and water-resistive barrier coating. Refer to StoGuard Detail Booklets for rough opening protection, penetrations, and other installation details.

Clean Up

Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

Drying

Product dries within 24 hours under normal drying conditions [70°F (21°C), 50% RH)]. Final dry time varies depending on temperature/humidity, thickness of application, and surface conditions. Cold weather and/or damp conditions delay drying. Protect from rain, high humidity, and temperatures less than 40°F (4°C) until completely dry. IMPORTANT: IF TEMPORARY HEATERS ARE USED, VENTILATE TO THE EXTERIOR TO PREVENT WATER VAPOR FROM CONDENSING ON OR WITHIN THE WALL ASSEMBLY COMPONENTS.

LIMITATIONS

- Ambient and surface temperatures must be between 40° and 100°F (4° and 38°C) during application and drying period.
- Do not apply if the surface temperature is less than 4°F (2.8°C) above the ambient dew point temperature.
- Do not use on damp surfaces, below grade or on surfaces subject to in-service water immersion.
- Allowable weather exposure: 90 days.
- Not recommended for spanning sheathing joints or holes in excess of 1/8" (3 mm) wide.
- Must be top coated with Sto Gold Coat or other Sto air and water-resistive barrier coating
- Fire-retardant or pressure treated plywood must be dry with surface free of salts or other chemicals migrating from within the wood. Test adhesion to be sure of desired results.

LIMITATIONS (continued)

- Exercise care when mechanically attaching wall assembly components through Sto Gold Fill so that fasteners go into (not between) framing supports. Do not use powder actuated or other fastening devices that can damage the substrate. Seal all penetrations through the wall to make them watertight. Test assemblies when necessary to make them watertight.
- Use a slip sheet, typically one layer of building paper (or Sto DrainScreen[®] and building paper), between Sto Gold Coat and stucco or adhered masonry veneer over metal lath.

LIMITED WARRANTY

This product is subject to a written limited warranty which can be obtained free of charge from Sto Corp.

HEALTH & SAFETY

Health Precautions: Product is water-based. As with any chemical construction product, exercise care when handling.

WARNING: Causes eye and skin irritation.

Precautionary Statement: Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye protection/face protection.

FIRST AID MEASURES: Eye Contact: Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention.

Skin Contact: Immediately wash skin with plenty of soap and water for 15 to 20 minutes, while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention.

Ingestion: If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious person. Store locked up.

Spills: Collect with suitable absorbent material such as cotton rags.

Disposal: Dispose of in accordance with local, state or federal regulations.

Warning: KEEP CONTAINER CLOSED WHEN NOT IN USE. KEEP OUT OF THE REACH OF CHILDREN. NOT FOR INTERNAL CONSUMPTION. FOR INDUSTRIAL USE ONLY. Consult the Safety Data Sheet (SDS) on www.stocorp.com for further health and safety information.



PRODUCT BULLETIN

Sto Gold Fill®

Product Number: 80266

TECHNICAL DATA

REPORT	TEST METHOD	TEST CRITERIA	TEST RESULT
Air Leakage Resistance	ASTM E2178	< 0.02 L/s • m²·s @ 75 Pa (<0.004 cfm/ft² @ 1.57 psf	Pass
Air Leakage of Air Barrier Assembly	ASTM E2357	< 0.2 L/s•m2 @ 75 Pa (< 0.04 cfm/ft2 @ 1.57 psf)	Pass
Accelerated Weathering/ Hydro-static Pressure ¹	ICC-ES AC212	No water penetration on the plane of the exterior facing side of the substrate after weathering and 5 hours hydrostatic pressure at 21.6 in (55cm)	No water penetration
Adhesion to Substrates	ICC-ES AC24 / AC212	> 15 psi (103 kPa)	> 15 psi (105 kPa) over glass mat gypsum sheathing
			> 50 psi (345 kPa) over OSB & plywood sheathing
Freeze-Thaw Resistance ¹	ICC-ES AC24 / AC212	No deleterious effects after 10 cycles when viewed under 5X magnification	No deleterious effects ²
Surface Burning	ASTM E84	Flame Spread: ≤ 25 Smoke Developed: ≤ 450	Flame Spread: 5 Smoke Developed: 10
Fire Propagation ¹	NFPA 285	Comply with acceptance criteria for vertical and lateral flame propagation and thermocouple temperature limits	Complies in multiple wall assemblies (refer to ICC-ESR 1233)
Structural, Racking, and Restrained Environmental Conditioning ¹	ICC-ES AC212	No cracking in the field of the panel, at substrate joints and no visible water penetration after racking and environmental cycling (water spray with applied pressure at 2.86 psf [137 Pa] for 15 minutes)	No cracking or water penetration (water spray with applied pressure at 2.86 psf [137 Pa] for 15 minutes and repeated at 6.24 psf [299 Pa] for 2-hours)
Water Resistance ¹	ASTM D2247	No deleterious effects after 14-day water exposure	No deleterious effects ²
Water Vapor Permeance	ASTM E96 Method B	Measure	8.40 perms (480 ng/Pa●s●m²)
Building Code Compliance (refer to ICC ESR-1233)	 StoTherm[®] ci, StoVente 	n noncombustible construction as a component of: c®, StoPowerwall®, StoQuik® Silver, StoPanel®, and Sto e, concrete masonry, and portland cement stucco wall a	
VOC (g/L)	This product complies with US Envelope Coatings. VOC less t	EPA (40 CFR 59) and South Coast AQMD (Rule 1113) han 50 g/L.	VOC emission standards for Building

Results are based on lab testing under controlled conditions. Results can vary between labs or from field tests.

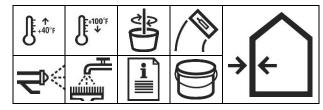
1. Test specimens top coated with Sto Gold Coat over Sto Gold Fill

- 2. No deleterious effects: no cracking, checking, crazing, erosion, or other characteristics that might affect performance as a wall cladding. No delamination.

Sto Corp. 3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331 Tel: 404-346-3666 Toll Free: 1-800-221-2397 Fax: 404 346-3119 www.stocorp.com	Revision Number: 007 Date: 11/2022	ATTENTION This product is intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. It should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of this product or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. STO CORP. DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME. For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com
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80306 Sto Medium Sand Finish 80307 Sto Swirl Finish 80310 Sto Fine Sand Finish



REPORT	TEST METHOD	TEST CRITERIA	TEST RESULTS
Surface Burning	ASTM E-84	< 25 Flame Spread < 450 Smoke Developed	0 5
Flexibility	ASTM D-522	4" mandrel bend	Pass
Water Vapor Transmission (U.S. perms)	ASTM E-96 Method B	28 days	34
Accelerated Weathering	ASTM G-154	2000 hours	No deleterious effects @ 5000 hrs
Chalk Rating	ASTM D-4214	5000 hours	8 (10 = best on scale 1-10)
Yellowness Index	ASTM E-313	5000 hours	0.58 (0 = no change; 2 = barely discernable change)
Freeze-thaw Resistance	ASTM 2485	60 cycles	No deleterious effects @ 90 cycles
Mildew Resistance	ASTM D-3273	No growth @ 28 days	No growth @ 60 days
Salt Spray Resistance	ASTM B-117	300 hours	No deleterious effects @ 1000 hrs
Wind Driven Rain	Fed TT-C-555B	24 hour driving rain	No water penetration
Water Resistance	ASTM D-2247	14 days	No deleterious effects @ 42 days
Abrasion Resistance	ASTM D-968	528 qts. sand	No cracking, checking or loss of film integrity @ 528 qts.
Tensile Adhesion (psi)	EIMA 101.03	No failure in the EIFS adhesive, basecoat or finish; minimum 5 psi	Pass
Adhesion	ASTM C-297	28 days	> 80 to concrete
Fire Resistance	ASTM E-119	No effect on fire resistance rating of existing rated assembly	Pass
VOC (g/L)		olies with US EPA (40 CFR 59 emission standards for archite	

A ready-mixed, acrylic-based exterior or interior textured coating used as a decorative and protective wall finish over prepared concrete, masonry and plaster substrates and in StoTherm® ci Essence.

Coverage

Sto Medium Sand Finish: 110-130 ft² (10.2-12.1 m²) per pail. Sto Swirl Finish: 120-140 ft² (11.1-13.0 m²) per pail. Sto Fine Sand Finish: 140-160 ft² (13.0-14.9 m²) per pail.

Coverages may vary depending on application technique and surface conditions.

Packaging 5 gallon pail (19 L).

Shelf Life

18 months, if properly stored and sealed.

Storage

Protect from extreme heat [90°F (32°C)], freezing, direct sunlight.

Fe	atures	Benefits
1	Vapor Permeable	Allows substrate to breathe naturally; resists blisters caused by trapped vapor
2	2 Moisture Resistant Repels water; resists wind driven rain	
3	Water-based	Safe, non-toxic; cleans up with water
4	Dirt pick-up resistant	Resists mildew and algae growth; low maintenance
5	Low VOC	Meets South Coast Air Quality Management District Requirements



Surface Preparation

Concrete and masonry surfaces: Surfaces must be clean, dry, and free of frost, damage, and all bond-inhibiting materials, including dirt, efflorescence, form oil and other foreign matter. Loose or damaged material must be removed by water blasting, sandblasting or mechanical wire brushing and repaired. Avoid application over irregular surfaces. Resurface, patch or level surfaces to required tolerance and smoothness with appropriate Sto leveling materials. Refer to ASTM D-4258 and ASTM D-4261 for complete details on methods of preparing cementitious substrates for coatings.

StoTherm® Exterior Insulation and Finish Systems (EIFS): Surface must be free of all bondinhibiting materials.

Gypsum wallboard surfaces: Wallboard must be taped and fasteners spotted with joint compound. Refer to ASTM C-840 and gypsum wallboard manufacturer's literature.

Surface must be free of dust, dirt and other bondinhibiting materials. Surface must be primed with appropriate Sto Primer.

Autoclaved Aerated Concrete (AAC): Base coat must be fully dry and smooth. Base coat surface must be free of all bond-inhibiting materials.

Sto recommends priming cementitious substrates using the appropriate Sto primer prior to application of finish.

Mixing

Mix with a clean, rust-free electric drill and paddle to a uniform consistency. A small amount of clean water may be added to aid workability

Limit addition of water to amount needed to achieve the finish texture.

Application

Apply only to sound and clean, dry, properly prepared, frost-free surfaces. Trowel: Apply Sto Essence Finishes with a clean

stainless steel trowel to a rough thickness slightly more than the largest aggregate size. Use the trowel to scrape the material down to a uniform thickness no greater than the largest aggregate size. Achieve final texture by floating with the appropriate trowel in a figure eight motion; stainless steel trowel for Sto Medium Sand and Sto Fine Sand (pebbled texture finish) and plastic float for Sto Swirl Finish (rilled texture). Once applied, the working time is up to 20 minutes depending upon material, ambient temperatures and surface

Spray: Apply Sto Essence Finishes with a handheld gravity-feed hopper-type sprayer, texture spray pump machine, or other appropriate equipment such as the StoSilo system or Sto's M-8 Spray Pump. Apply an even coat to ensure full coverage of the surface. (Spray application is not recommended for Sto Swirl Finish.)

IMPORTANT: ALWAYS check color for proper match. If color does not match, STOP-call your Sto representative. For best results always prime

cementitious substrates. Apply coating in a continuous application, always working from a wet edge or architectural break to eliminate cold joints. Minor shade variations may occur from batch to batch (refer to batch no. on pail). Avoid installing separate batches side-by-side and avoid application in direct sunlight. Avoid installing new finish adjacent to weathered or aged finish. Sto Corp. will not be responsible for shade or color variation from batch to batch, variation caused by application or substrate deficiencies, or fading resulting from natural causes such as weather. See Tech Hotline Nos. 0694-C, 0893-EC and 1202-CF for helpful tips on prevention of color problems.

Protect installed product from rain, freezing, and continuous high humidity until completely dry.

Curing/Drying

Sto Essence Finishes dry within 24 hours under normal conditions [70°F (21°C), 50% RH]. Drying time varies with temperature/humidity and surface conditions.

Clean Up

Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

Limitations

- Use Sto Essence Finishes only when surface and ambient temperatures are above 40°F (4°C) and below 100°F (38°C) during application and drying period.
- Sloped surfaces: Refer to Sto details.
- Sto Essence Finishes should not be used on weather-exposed horizontal, below grade or water immersed surfaces.
- For Exterior Insulation and Finish Systems (EIFS), select finish colors with a lightness value of 20 or greater.

Health And Safety

Health Precautions

Product is water-based. As with any chemical construction product. exercise care when handling.

WARNING!

Causes eye and skin irritation.

Precautionary Statement Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye

protection/face protection. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention. Skin Contact: Immediately wash skin with plenty of soap and water for 15 to 20 minutes, while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists. Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention. Ingestion: If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious

Spills

Collect with suitable absorbent material such as cotton rags.

Disposal

Dispose of in accordance with local, state or federal regulations.

Warning

KEEP CONTAINER CLOSED WHEN NOT IN USE. KEEP OUT OF THE REACH OF CHILDREN. NOT FOR INTERNAL CONSUMPTION. FOR INDUSTRIAL USE ONLY. Consult the Material Safety Data Sheet for further health and safety information

LIMITED WARRANTY

This product is subject to a written limited warranty which can be obtained free of charge from Sto

Refer to Sto Specifications for more complete information on proper use and handling of this product.

Sto Corp.

3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331

Tel: 404-346-3666 Toll Free: 1-800-221-2397 Fax: 404 346-3119

S155-80306, 80307, 80310 Revision: A3.0 Date: 06/2016

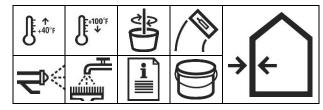
Attention

This product is intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. It should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of this product or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. STO CORP. DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME. For the fullest, most current information on propose anoticition, clean-sup, mixing and other specifications, and warranties, cautions and disclaimers, clease refer to the information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the

www.stocorp.com



80306 Sto Medium Sand Finish 80307 Sto Swirl Finish 80310 Sto Fine Sand Finish



REPORT	TEST METHOD	TEST CRITERIA	TEST RESULTS
Surface Burning	ASTM E-84	< 25 Flame Spread < 450 Smoke Developed	0 5
Flexibility	ASTM D-522	4" mandrel bend	Pass
Water Vapor Transmission (U.S. perms)	ASTM E-96 Method B	28 days	34
Accelerated Weathering	ASTM G-154	2000 hours	No deleterious effects @ 5000 hrs
Chalk Rating	ASTM D-4214	5000 hours	8 (10 = best on scale 1-10)
Yellowness Index	ASTM E-313	5000 hours	0.58 (0 = no change; 2 = barely discernable change)
Freeze-thaw Resistance	ASTM 2485	60 cycles	No deleterious effects @ 90 cycles
Mildew Resistance	ASTM D-3273	No growth @ 28 days	No growth @ 60 days
Salt Spray Resistance	ASTM B-117	300 hours	No deleterious effects @ 1000 hrs
Wind Driven Rain	Fed TT-C-555B	24 hour driving rain	No water penetration
Water Resistance	ASTM D-2247	14 days	No deleterious effects @ 42 days
Abrasion Resistance	ASTM D-968	528 qts. sand	No cracking, checking or loss of film integrity @ 528 qts.
Tensile Adhesion (psi)	EIMA 101.03	No failure in the EIFS adhesive, basecoat or finish; minimum 5 psi	Pass
Adhesion	ASTM C-297	28 days	> 80 to concrete
Fire Resistance	ASTM E-119	No effect on fire resistance rating of existing rated assembly	Pass
VOC (g/L)		olies with US EPA (40 CFR 59 emission standards for archite	

A ready-mixed, acrylic-based exterior or interior textured coating used as a decorative and protective wall finish over prepared concrete, masonry and plaster substrates and in StoTherm® ci Essence.

Coverage

Sto Medium Sand Finish: 110-130 ft² (10.2-12.1 m²) per pail. Sto Swirl Finish: 120-140 ft² (11.1-13.0 m²) per pail. Sto Fine Sand Finish: 140-160 ft² (13.0-14.9 m²) per pail.

Coverages may vary depending on application technique and surface conditions.

Packaging 5 gallon pail (19 L).

Shelf Life

18 months, if properly stored and sealed.

Storage

Protect from extreme heat [90°F (32°C)], freezing, direct sunlight.

Fe	atures	Benefits
1	Vapor Permeable	Allows substrate to breathe naturally; resists blisters caused by trapped vapor
2	2 Moisture Resistant Repels water; resists wind driven rain	
3	Water-based	Safe, non-toxic; cleans up with water
4	Dirt pick-up resistant	Resists mildew and algae growth; low maintenance
5	Low VOC	Meets South Coast Air Quality Management District Requirements



Surface Preparation

Concrete and masonry surfaces: Surfaces must be clean, dry, and free of frost, damage, and all bond-inhibiting materials, including dirt, efflorescence, form oil and other foreign matter. Loose or damaged material must be removed by water blasting, sandblasting or mechanical wire brushing and repaired. Avoid application over irregular surfaces. Resurface, patch or level surfaces to required tolerance and smoothness with appropriate Sto leveling materials. Refer to ASTM D-4258 and ASTM D-4261 for complete details on methods of preparing cementitious substrates for coatings.

StoTherm® Exterior Insulation and Finish Systems (EIFS): Surface must be free of all bondinhibiting materials.

Gypsum wallboard surfaces: Wallboard must be taped and fasteners spotted with joint compound. Refer to ASTM C-840 and gypsum wallboard manufacturer's literature.

Surface must be free of dust, dirt and other bondinhibiting materials. Surface must be primed with appropriate Sto Primer.

Autoclaved Aerated Concrete (AAC): Base coat must be fully dry and smooth. Base coat surface must be free of all bond-inhibiting materials.

Sto recommends priming cementitious substrates using the appropriate Sto primer prior to application of finish.

Mixing

Mix with a clean, rust-free electric drill and paddle to a uniform consistency. A small amount of clean water may be added to aid workability

Limit addition of water to amount needed to achieve the finish texture.

Application

Apply only to sound and clean, dry, properly prepared, frost-free surfaces. Trowel: Apply Sto Essence Finishes with a clean

stainless steel trowel to a rough thickness slightly more than the largest aggregate size. Use the trowel to scrape the material down to a uniform thickness no greater than the largest aggregate size. Achieve final texture by floating with the appropriate trowel in a figure eight motion; stainless steel trowel for Sto Medium Sand and Sto Fine Sand (pebbled texture finish) and plastic float for Sto Swirl Finish (rilled texture). Once applied, the working time is up to 20 minutes depending upon material, ambient temperatures and surface

Spray: Apply Sto Essence Finishes with a handheld gravity-feed hopper-type sprayer, texture spray pump machine, or other appropriate equipment such as the StoSilo system or Sto's M-8 Spray Pump. Apply an even coat to ensure full coverage of the surface. (Spray application is not recommended for Sto Swirl Finish.)

IMPORTANT: ALWAYS check color for proper match. If color does not match, STOP-call your Sto representative. For best results always prime

cementitious substrates. Apply coating in a continuous application, always working from a wet edge or architectural break to eliminate cold joints. Minor shade variations may occur from batch to batch (refer to batch no. on pail). Avoid installing separate batches side-by-side and avoid application in direct sunlight. Avoid installing new finish adjacent to weathered or aged finish. Sto Corp. will not be responsible for shade or color variation from batch to batch, variation caused by application or substrate deficiencies, or fading resulting from natural causes such as weather. See Tech Hotline Nos. 0694-C, 0893-EC and 1202-CF for helpful tips on prevention of color problems.

Protect installed product from rain, freezing, and continuous high humidity until completely dry.

Curing/Drying

Sto Essence Finishes dry within 24 hours under normal conditions [70°F (21°C), 50% RH]. Drying time varies with temperature/humidity and surface conditions.

Clean Up

Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

Limitations

- Use Sto Essence Finishes only when surface and ambient temperatures are above 40°F (4°C) and below 100°F (38°C) during application and drying period.
- Sloped surfaces: Refer to Sto details.
- Sto Essence Finishes should not be used on weather-exposed horizontal, below grade or water immersed surfaces.
- For Exterior Insulation and Finish Systems (EIFS), select finish colors with a lightness value of 20 or greater.

Health And Safety

Health Precautions

Product is water-based. As with any chemical construction product. exercise care when handling.

WARNING!

Causes eye and skin irritation.

Precautionary Statement Wash hands thoroughly after handling. Wear protective gloves/protective clothing/eye

protection/face protection. FIRST AID MEASURES

Eye Contact: Immediately flush eyes with plenty of water for at least 15 to 20 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Get immediate medical attention. Skin Contact: Immediately wash skin with plenty of soap and water for 15 to 20 minutes, while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists. Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Seek immediate medical attention. Ingestion: If swallowed, do NOT induce vomiting. Call a physician or poison control center immediately. Never give anything by mouth to an unconscious

Spills

Collect with suitable absorbent material such as cotton rags.

Disposal

Dispose of in accordance with local, state or federal regulations.

Warning

KEEP CONTAINER CLOSED WHEN NOT IN USE. KEEP OUT OF THE REACH OF CHILDREN. NOT FOR INTERNAL CONSUMPTION. FOR INDUSTRIAL USE ONLY. Consult the Material Safety Data Sheet for further health and safety information

LIMITED WARRANTY

This product is subject to a written limited warranty which can be obtained free of charge from Sto

Refer to Sto Specifications for more complete information on proper use and handling of this product.

Sto Corp.

3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331

Tel: 404-346-3666 Toll Free: 1-800-221-2397 Fax: 404 346-3119

S155-80306, 80307, 80310 Revision: A3.0 Date: 06/2016

Attention

This product is intended for use by qualified professional contractors, not consumers, as a component of a larger construction assembly as specified by a qualified design professional, general contractor or builder. It should be installed in accordance with those specifications and Sto's instructions. Sto Corp. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Sto's control. Improper use of this product or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to this product, and to the structure of the building or its components. STO CORP. DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME. For the fullest, most current information on propose anoticition, clean-sup, mixing and other specifications, and warranties, cautions and disclaimers, clease refer to the information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the

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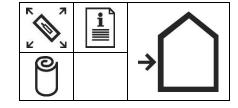


Sto Mesh & Sto Detail Mesh

80919 Sto Detail Mesh 80920/81920 Sto Mesh

Coated Glass Fiber

Variety of Weights



REPORT	TEST METHOD	TEST CRITERIA	TEST RESULTS
Tensile Strength	ASTM D-5035	Product	WARP WEFT (PLI)
		80919 Detail Mesh	150 160
		80920/81920 Mesh	150 160
Strength-Post Alkaline Soak	EIMA 105.01	80919 Detail Mesh	Pass
		80920/81920 Mesh	Pass
Product	NOMINAL Weight/YD ² . +/- 5 %	Width of Roll	Length of Roll
80919 Detail Mesh	4.2 oz.	9.5" (0.24 m)	150' (45.7 m)
80920 Mesh	4.5 oz.	38" (0.97 m)	150' (45.7 m)
81920 Mesh	4.5 oz.	48" (1.22 m)	150' (45.7 m)
Impact Resistance		Impact Classification (inch – lbs)	
StoTherm [®] EIFS with Sto Mesh		Standard (25 – 49)	
With 2 layers Sto Mesh		Medium (50 – 89)	
With Sto Intermediate Mesh		High (90 – 150)	
With Sto Armor Mat and Sto Mesh		Ultra High (over 150)	
Features		Benefits	
1 Flevible		Easily wrapped at corners: r	provides crack resistar

T/- J /0		
4.2 oz.	9.5" (0.24 m)	150' (45.7 m)
4.5 oz.	38" (0.97 m)	150' (45.7 m)
4.5 oz.	48" (1.22 m)	150' (45.7 m)
	Impact Classification (inch – lbs)	
	Standard (25 – 49)	
	Medium (50 – 89)	
	High (90 – 150)	
	Ultra High (over 150)	
	Benefits	
	Easily wrapped at corners; provides crack resistance	
	Minimizes building on overlapped seams	
	4.2 oz. 4.5 oz.	4.2 oz. 9.5" (0.24 m) 4.5 oz. 38" (0.97 m) 4.5 oz. 48" (1.22 m) Impact Classification (inch – Ibs) Standard (25 – 49) Medium (50 – 89) High (90 – 150) Ultra High (over 150) Benefits Easily wrapped at corners;

Durable, long-lasting; provides impact resistance

Meets a variety of requirements

Sto Mesh and Sto Detail Mesh are specially designed coated glass fiber fabrics used to provide reinforcement and impact resistance in Sto Wall Claddings, including StoTherm® ci and StoQuik® Silver Systems. A variety of meshes are provided for design flexibility, maximum performance, and to facilitate application.

Coverage per Roll

80919 Sto Detail Mesh: 118 ft² (11 m²) 80920 Sto Mesh: 38" 475 ft2 (44.1 m²) 81920 Sto Mesh 48" 600 ft² (55.7 m²)

Packaging per carton

80919 Sto Detail Mesh: 16 rolls 80920/81920 Sto Mesh: 4 rolls

Shelf Life

2 years in original, unopened container when properly stored.

Storage

Store in a dry area. Protect from direct sunlight. Store in cartons with cartons on the side (not upright).



Sto Mesh & Sto Detail Mesh

Where to Use

80919 Sto Detail Mesh: lightweight, highly flexible reinforcing fabric specially designed for use to facilitate back-wrapping system terminations, into reveals and for intricate architectural details in StoTherm® and StoTherm® ci, and to bridge sheathing joints and wrap rough openings in StoGuard® applications.

80920/81920 Sto Mesh: for use as standard reinforcing fabric in StoTherm®, StoTherm® ci and StoQuik® Silver systems. Achieves standard impact resistance.

Surface Preparation

Inspect the insulation board surface for planeness, damage or deterioration due to weather or abuse, and repair prior to application of reinforcing mesh. Rasp the insulation board surface.

Application

80920/81920 Sto Mesh: Apply a layer of Sto base coat over previously rasped Sto Insulation Board (or, over cement board sheathing for StoQuik® Systems). Work horizontally or vertically in full width strips and fully embed mesh into wet base coat by troweling from center to the edges of the mesh. Avoid wrinkles in the mesh and smooth the base coat to eliminate trowel marks. Double wrap mesh at all corners and overlap not less than 21/2" (64 mm) at mesh joints

80919 Sto Detail Mesh: Refer to appropriate StoTherm wall claddings specification.

Limitations

Sto Mesh and Sto Detail Mesh should only be used in accordance with appropriate StoTherm® and StoTherm® ci Specification or other published recommendation.

Health And Safety

Health Precautions

Contains fiberglass. As with any chemical construction product, exercise care when handling.

WARNING!

Causes eye irritation. Causes skin irritation

Precautionary Statements:

Wash hands thoroughly after handling. Wear protective gloves/ protective clothing/eye protection/face protection.

FIRST AID MEASURES

Eye Contact: Flush with warm running water for 15 min. Do not rub. If irritation persists, consult a physician. Skin Contact: Wash with mild soap and running water. Use a washcloth to help remove fibers. If irritation persists, consult a physician. Inhalation: Glass fibers may cause mechanical irritation to the mouth, nose and throat. Remove the person to fresh

Ingestion: Unlikely entry route. If symptoms develop consult a physician.

Spills

Collect and dispose of in accordance to local, state or federal regulations.

Disposal

Dispose of in accordance with local, state or federal regulations.

Warning

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LIMITED WARRANTY

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Refer to Sto Specifications for more complete information on proper use and handling of this product.

Sto Corp.

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Tel: 404-346-3666 Toll Free: 1-800-221-2397 Fax: 404 346-3119 www.stocorp.com

S155-80919,80920, 81920,

Revision Number: A3.0 Date: 06/2016

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Sto Expanded Polystyrene (EPS) Insulation Board

→

PRODUCT DESCRIPTION

Sto Expanded Polystyrene (EPS) Insulation Board is a rigid cellular expanded polystyrene insulation board intended for use in StoTherm[®] ci Systems. It is made by licensed Sto EPS Insulation Board molders in accordance with ASTM E2430, and ASTMC 578 requirements for Type 1 EPS.

FEATURES	BENEFITS
Lightweight, easy to cut,	Worker friendly, easy to achieve
score, shape, and rasp	aesthetics
Fully tested for fire	Built-in compatibility of wall
exposure and durability in	system components, peace of
StoTherm ci Systems	mind, for use on all Types of
	construction
Continuous insulation when	Simplifies design to achieve
used in StoTherm ci	required R-value or U-factor in
Systems and StoPanel	wall construction
Systems	

REGULATORY COMPLIANCE

- Complies with ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation, as nominal 1lb/ft³ (16kg/m³) Type 1 thermal insulation
- Complies with ASTM E2430 / 2430M, Standard Specification for Expanded Polystyrene ("EPS") Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems ("EIFS"), Compliant with 2012, 2015, and 2018 IBC, IRC, and IECC when used as a component of StoTherm ci System wall assemblies, Refer to ICC ESR 1748, StoTherm ci, StoPanel Classic ci, StoPanel Impact ci, StoPanel XPS, and StoPanel Classic NExT ci
- Meets requirements of the National Building Code of Canada-2010 and 2015 as a component of StoTherm ci Systems wall assemblies, refer to Intertek Design Listings STO/WEIFS 15-01 and 25-01 for compliance with Clause 3.2.3.8.(1)(b) and Article 3.1.5.5.
- Meets requirements of National Building Code of Canada-2015 as a component of StoTherm ci Systems, refer to CCMC Evaluation Report 12416-R, StoTherm ci Lotusan, StoTherm ci Classic, StoTherm ci Essence Exterior Insulation and Finish

PACKAGING and SIZES

Packaged in yellow polyethylene bags, 2x4 ft (~609x1219mm) sheets at 1-12 inch (~25.4-305mm) thickness in increments of 1/2in (12.7mm)

SHELF LIFE:

18 months, if properly stored in original packaging

STORAGE:

The product is combustible. Protect or store away from sources of high heat, ignition, sparks, flames, flammable or volatile materials. Store in original packaging off the ground in a dry location. Protect form UV exposure and avoid covering with dark colored tarps or other coverings which can cause heat build-up and surface deformation.

LIMITATIONS

- Service temperature limit: -65 to +165°F (-53.9 to +73.9°C)
- A protective barrier or thermal barrier is required as specified in the appropriate building code to separate this product from interior space
- For other limitations of use with respect to building codes refer to ICC ESR 1748

INSTALLATION

Refer to StoTherm ci System specification as www.stocorp.com



Building with conscience.

Sto Corp.

3800 Camp Creek Parkway Building 1400, Suite 120 Atlanta, GA 30331 Tel: 404-346-3666

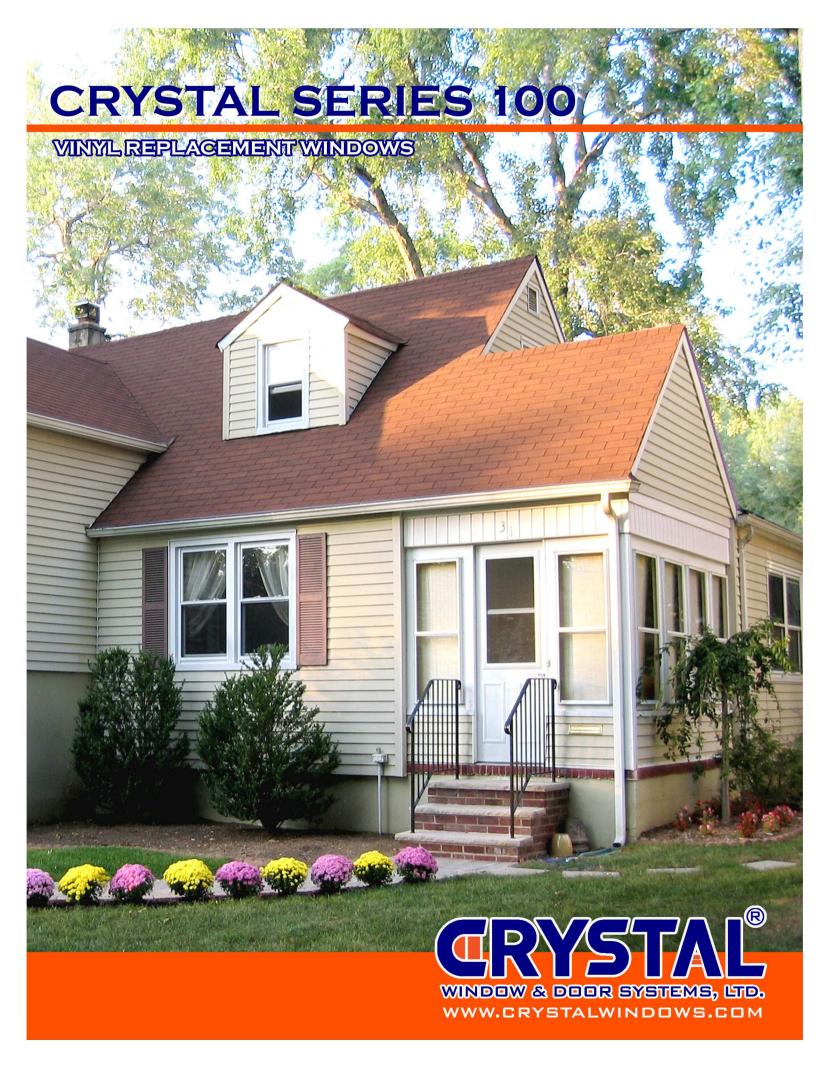
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Date: 05/2020

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STO CORP. DISCLAIMS ALL WARRANTIES EXPRESSED OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH STO'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME. For the fullest, most current information on proper application, clean-up, mixing and other specifications and warranties, cautions and disclaimers, please refer to the Sto Corp. website, www.stocorp.com



Preferred by Contractors



Product Features

- Mechanical Fastened Frame & Sashes
- Strong Multi-Chamber Construction
- Frame Depth: 31/4"
- Insulating Glass Unit Depth: 7/8"
- Low-E Coated Glass
- Argon Filled IGU
- Vitro Intercept "Warm Edge" Spacer
- Tilting Sashes for Easy Cleaning
- Constant-Force Balance System
- Insulating Exterior Foam Wrap
- Dual Ventilation Latches
- Integral Extruded Lift Handle
- Jamb Adjusters
- Half Screen Included
- Lifetime Limited Warranty

Optional Features

Special Grid Patterns

HOW LOW-E GLASS WORKS:





Crystal Window & Door Systems, Ltd.

NYC, NY (HQ) SCRANTON, PA CLEVELAND, OH ST. LOUIS, MO CHICAGO, IL RIVERSIDE, CA

31-10 Whitestone Expressway, Flushing, NY 11354 Tel: 800.472.9988/718.961.7300 Fax:718.460.4594 204 Franklin Valley Rd, Dalton, PA 18414 Tel: 570.276.8000 Fax: 570.563.5313 29299 Clemens Rd. 1-B, Westlake, OH 44145 Tel: 440.871.8694 Fax: 440.871.8690 300 Axminister Dr., Fenton, MO 63026 Tel: 636.305.7880 Fax: 636.305.7881

1300 W. 35th st. Chicago, IL 60609 Tel: 773.376.6688/888.280.3288 Fax: 773.376.6868

1850 Atlanta Ave, Riverside CA 92507 Tel: 951.779.9300 Fax: 951.779.6300

454 W. Mockingbird Ln, Dallas, TX 75247 Tel: 469.248.3012 Fax: 496.248.2978











Crystal Windows Affiliations:

AIA

WDMA

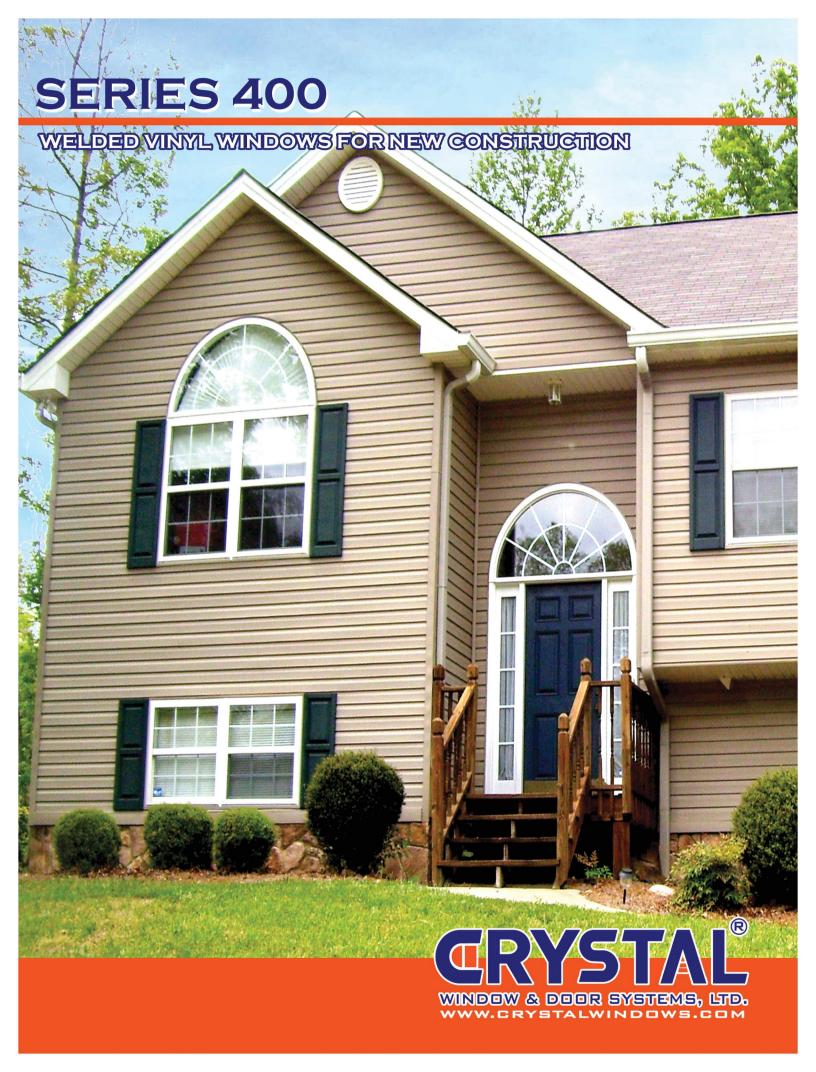












Product Features

- Fusion Welded Frame & Sashes
- Strong Multi-Chamber Construction
- Frame Depth: 2-7/8"
- Insulating Glass Unit Depth: 7/8"
- Vitro Intercept "Warm Edge" Spacer
- Constant-Force Balances
- Tilting Sashes for Easy Cleaning
- Sloped Sill Ensures Quick, Easy Water Run-off
- Double-Seal Weatherstripping
- Integral J Channel
- Integral Full Perimeter Pre-punched Nailing Fin
- Easy take-out Locking Shoes With "T" Pivot Bar for Easy Sash Removal / Installation.

Optional Features

- Special Grid Patterns
- Architectural Shapes
- 10 Custom Colors
- Low E Coated Glass
- Argon Filled IGU



DOUBLE HUNG, PICTURE, SLIDER, **AWNING, SPECIAL SHAPES**



Crystal Window & Door Systems, Ltd.

CHICAGO, IL RIVERSIDE, CA

31-10 Whitestone Expressway, Flushing, NY 11354 Tel: 800.472.9988/718.961.7300 Fax:718.460.4594 SCRANTON, PA 204 Franklin Valley Rd, Dalton, PA 18414 Tel: 570.276.8000 Fax: 570.563.5313 CLEVELAND, OH 29299 Clemens Rd. 1-B, Westlake, OH 44145 Tel: 440.871.8694 Fax: 440.871.8690 ST. LOUIS, MO 300 Axminister Dr., Fenton, MO 63026 Tel: 636.305.7880 Fax: 636.305.7881 1300 W. 35th st. Chicago, IL 60609 Tel: 773.376.6688/888.280.3288 Fax: 773.376.6868 1850 Atlanta Ave, Riverside CA 92507 Tel: 951.779.9300 Fax: 951.779.6300 454 W Mockingbird Ln, Dallas, TX Tel: 469.248.3012 Fax: 496.248.2978

Crystal Windows Affiliations:

AIA WDMA















SAFETY DATA SHEET

We bring comfort to your life. $^{\circ}$

SECTION 1 - Identification

1.1 Product Identifier

Product Name

• EPS Block and Board

Synonyms

• Expanded Polystyrene

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Recommended Use • Foam product development

1.3 Details of the Supplier of the Safety Data Sheet

Manufacturer • Carpenter Co.

5016 Monument Ave. Richmond, Virginia 23230

(804) 233-0606

SECTION 2 - Hazards Identification

2.1 Classification of the Substance or Mixture

EPS Block and Board is an "article", not a chemical, as defined in 29 CFR 1910.1200(c). Under normal conditions of use, this product, in the form in which it is shipped, does not pose a physical hazard or health risk and does not require a Safety Data Sheet. Because the product may become hazardous through downstream activities (e.g. processing, cutting) that may generate dust, as a service to our customers, Carpenter Co. has provided this Safety Data Sheet.

2.2 GHS Label Element

Not applicable.

2.3 Other Hazards

- If small particles are generated during further processing, handling or by other means, EPS Block and Board may form combustible dust concentrations in air.
- EPS foam is flammable.

SECTION 3 - Composition/Information on Ingredients

EPS Block and Board is an "article", not a chemical, as defined in 29 CFR 1910.1200(c). Therefore, it does not meet the criteria of a substance or mixture.

SECTION 4 - First Aid Measures

4.1 Description of First Aid Measures

By route of inhalation • Remove victim to fresh air.

By route of dermal contact
 Wash skin with soap and water.

By route of eye contact

• Flush with plenty of water. Remove larger particulates

from the eye.

By route of ingestion

• If more than a mouthful is swallowed, give 1 to 2

glasses of water. Seek medical attention.

SECTION 5 - Firefighting Measures

5.1 Extinguishing Media

Suitable Extinguishing Media • Dry chemical, foam, carbon dioxide, water fog or fine

spray. Do not use direct water spray.

Unsuitable Extinguishing Media • No data available.

5.2 Special Hazards Arising From the Substance or Mixture

• Emits oxides of carbon and irritating smoke.

5.3 Special Protective Actions for Firefighters

• Wear positive pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing.

SECTION 6 - Accidental Release Measures

Not applicable

SECTION 7: Handling and Storage

7.1 Precautions for Safe Handling

- Keep away from heat and ignition sources.
- Minimize dust generation and accumulation.
- No open flames, no sparks and no smoking.
- Routine housekeeping should be instituted to ensure that dusts does not accumulate on surfaces.

7.2 Conditions for Safe Storage, Including any Incompatibilities

• Maintain adequate sprinkler protection where large volumes of product are stored.

 Store in compliance with insurance regulations, local building codes or other legal requirements. Maintain aisle space to permit access for fire-fighting equipment

and personnel to all EPS storage areas.

Incompatibilities • Keep away from ignition sources.

Other Information • No additional information.

SECTION 8: Exposure Controls/ Personal Protection

8.1 Control Parameters

Exposure Limits/Guidelines • OSHA has established PEL values of 15 milligrams per

cubic meters (mg/m³) for total dust and 5 mg/m³ of respirable dust (8-hour TWA) for such particulates not

otherwise regulated (PNOR).

8.2 Exposure Controls

Engineering Controls • General ventilation.

Eye/Face Protection • Safety glasses with side shields.

Respiratory Protection • None required under normal use.

Skin Protection • None required under normal use.

Environmental Exposure Controls • No data available.

Additional Protection Measures • None

SECTION 9: Physical and Chemical Properties

9.1 Information on Physical and Chemical Properties

Material Description						
Physical Form	• Solid	Odor	 Slight hydrocarbon odor 			
Appearance	 No data available 	Odor Threshold	 No data available 			
Color	White					
General Properties						
Boiling Point	 Not measurable 	Melting Point	 Not measurable 			
Decomposition Temperature	No data available	рН	Not measurable			
Density	 No data available 	Water Solubility	 Negligible 			
Solvent Solubility	 No data available 	Viscosity	 No data available 			
Explosive Properties	 No data available 	Oxidizing Properties	 No data available 			
Decomposition Temperature	Not measurable	Specific Gravity/Relative Density	• <1.0 (H ₂ O=1)			
Volatility						
Vapor Pressure	 Not measurable 	Vapor Density	 Not measurable 			
Evaporation Rate	 Not measurable 	VOC (Vol.)	 No data available 			
Volatiles (Vol.)	 No data available 					
Flammability						
Flash Point	 No data available 	LEL	 No data available 			
UEL	 No data available 	Flammability (solid, gas)	• WILL BURN IN FIRE			
Auto-ignition Temperature	• >800°F (ASTM-D- 1929)					
Environmental						
Octanol/Water Partition Coefficient	Not measurable					

9.2. Other Information

No additional information available

SECTION 10: Stability and Reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical Stability

Stable.

10.3 Possibility of Hazardous Reactions

No data available.

10.4 Conditions to Avoid

Heat, sparks and open flames.

10.5 Incompatible Materials

Aromatic solvents, strong oxidizing agents.

10.6 Hazardous Decomposition Products

No data available.

SECTION 11: Toxicological Information

11.1 Information on Toxicological Effects

No data available.

11.2 Potential Health Effects

Inhalation

• Dust may cause irritation of the nose and throat.

Chronic • None known.

Skin

Acute • Residual amounts of dust or small particulates may cause skin

irritation.

Chronic • None known.

Eye

Acute • Residual amounts of dust or small particulates may cause skin

irritation.

Chronic • None known.

Ingestion

Acute • Not expected to be an ingestion hazard in normal use.

Chronic • None known.

SECTION 12: Ecological Information

12.1 Toxicity

No data available

12.2 Persistence and Degradability

No data available

12.3 Bioaccumulative Potential

No data available

12.4 Mobility in Soil

No data available

12.5 Other Adverse Effects

No data available

SECTION 13: Disposal Considerations

13.1 Waste Disposal Method

Treat as normal refuse in accordance with local, State, and Federal regulations.

SECTION 14: Transport Information

U.S. DOT

Not regulated as hazardous for shipment.

SECTION 15: Regulatory Information

15.1 Regulatory Status

CERCLA Hazardous Substances (40 CFR 302): None reportable.

SARA 311/312: None reportable.

SARA 313: None reportable.

15.2 US State Regulations

STATE RIGHT-TO-KNOW: To the best of our knowledge, this product contains no chemical known to the State of California to cause cancer, birth defects, or other reproductive harm. (California Health and Safety Code Section 25249.6).

15.3 International Inventories*

United States: All components of this product are listed on, or are exempt from the TSCA inventory.

SECTION 16: Other Information

16.1 NFPA RATINGS

NFPA Ratings

Health: 0 Flammability: 1 Instability: 0 Special: None

16.2 EU CLP Relevant Phrases

Not applicable

16.3 Preparation By

I.H. Department

16.4 Preparation Date

September 29, 2009

16.5 Last Revision Date

June 11, 2015

16.6 Disclaimer/Statement of Liability

WARNING

EPS FOAM IS FLAMMABLE. MODIFIED EPS LIKE MOST PLASTIC FOAMS IS FLAMMABLE. DO NOT EXPOSE EPS TO OPEN FLAMES OR OTHER DIRECT OR INDIRECT HIGH TEMPERATURE IGNITION SOURCES SUCH AS BURNING OPERATIONS, WELDING, BURNING CIGARETTES, SPACE HEATERS OR NAKED LIGHTS. WHEN BURNING, EPS WILL CONSUME OXYGEN, RELEASING GREAT HEAT AND SMOKE AND POTENTIALLY TOXIC GASES SUCH AS CARBON MONOXIDE AND CARBON DIOXIDE. DO NOT USE, INSTALL OR STORE EPS EXCEPT IN STRICT COMPLIANCE WITH BOCA, ICBO OR SBCCI CODES, AS WELL AS ANY FIRE-RELATED LAWS/ORDINANCES. FAILURE TO COMPLY WITH THESE CODES/LAWS MAY INCREASE THE RISK OF FIRE AND RESULT IN PERSONAL INJURY OR PROPERTY DAMAGE FROM SMOKE, FLAMES OR WATER.

The data in this Safety Data Sheet is offered for your consideration, investigation and verification. The data is presented in good faith and was obtained from sources Carpenter believes to be reliable. Carpenter, however, makes no representation as to the completeness or accuracy. Carpenter makes no warranty, express or implied, with respect to the data contained herein. Carpenter cannot anticipate all conditions under which this data and the product may be used. The conditions of handling, storage, use, and disposal of the product are beyond Carpenter's control. Thus, we expressly disclaim responsibility or liability for any loss, damage or expense arising out of reliance on the information contained herein. You are advised to make your own determination as to safety, suitability and appropriate manner of handling, storage, use and disposal.

Owner's Authorization Form

I	authorize			
to act as my agent in securing Planning and Zoning Commission, Zoning, or Zoning Board of Appeals permits for the property located at				
Addres.	Hartford, Connecticut.			
In autl	norizing the submission of this application, I hereby certify the following:			
	I am the property owner of record and have authorized the submission of the above-referenced applications. I consent to necessary and proper inspections of the subject property by members and agents of the respective Agency, Board, or Commission that is reviewing the application at reasonable times, both during the application review process and post-decision, should the application be approved. I further understand and consent to the presence of the public on the property as part of any publicly noticed field trip of the Agency/Board/Commission to the property.			
	event that I dismiss this agent, I will notify the Town Planner/Zoning Officer and provide with a new owner authorization letter.			
Signat	ture Date			