energex® wall systems

1. Product Name

energex® Wall Systems

2. Manufacturer

ENERGEX Wall Systems
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3. Product Description

Steinway Piano Condominium Building, Astoria, New York

BASIC USE

energex® Wall Systems are used as outer cladding for exterior building walls. These energy-efficient systems provide the building structure with decorative, lightweight and resilient weather protection.

The energex® Standard System includes the attachment, insulation, reinforcement, basecoat and finish. The energex® Water Management System includes the same components as the Standard System, but with an added weather barrier component. These adhesive and mechanically attached systems are suitable for both new and retrofit construction and can be customized to meet specific thermal and impact resistance requirements.

COMPOSITION & MATERIALS

See Tables 1, 2 and 4.

SIZES

Expanded polystyrene (EPS) insulation board maximum dimensions are 2' x 4' x 4" (610 x 1219 x 102 mm). Minimum thickness is 3/4" (19.1 mm).

The minimum pitch of sloped surfaces is 6"/12" (152/305 mm), with the run of the slope not to exceed 12" (305 mm). Contact ENERGEX Technical Services for larger runs.

TYPES

energex® Standard System

The energex® Standard System is offered with a selection of wet basecoat, dry basecoat and mechanical attachments. These are detailed in Table 1.

The insulation board is flat type 1 pcf (16.02 kg/m^3) expanded polystyrene conforming to ASTM C578, Type 1. It is listed and labeled under a third party quality control and follow-up program for surface burning characteristics, with flamespread not exceeding 25 (class A), and smoke developed not exceeding 450. Maximum board dimensions are 2' x 4' x 4" (610 x 1219 x 102 mm). Minimum thickness is 3/4" (19.1 mm). EPS is aged 6 weeks or receives equivalent accelerated cure for dimensional stability.

Reinforcements are made of glass fiber fabric mesh. They are treated for protection from alkali and are compatible with energex® basecoats. Available in Standard, Intermediate, High Impact, Ultra High Impact, Detail, Adhesive and Corner Mesh styles, they also provide added tensile strength and impact resistance to the system. See Table 2 for details.

Reinforced basecoats form the system's primary weather and impact resistant layer. They are applied to the EPS insulation in order to embed and coat over the glass fiber mesh reinforcements. See Table 3 for details.

Finishes are 100% acrylic copolymers, factory mixed to provide color and texture for exterior or interior applications. They are resistant to cracking, UV rays, mildew, freeze/thaw cycling and abrasion.

energex® Water Management System

The energex® Water Management System is available in 3 different types according to the type of weather barrier used:

- Water Management with Roll-On Membrane
- Water Management with Grooved Back EPS
- Water Management with drainage wrap

The EPS board is mechanically attached over the weather barrier when used with the Water Management with drainage wrap and Water Management with Grooved Back EPS systems. A nylon or polyolefin washer with an expanding shaft anchor is used to attach the EPS board to masonry and concrete substrates, and self-drilling corrosion resistant screws are used to attach the EPS to framed substrates.

The Water Management with Grooved Back EPS system uses the grooved EPS insulation board. The Water Management with drainage wrap and Water Management with Roll-On Membrane systems use the flat type 1 pcf (16.02 kg/m^3) EPS board that is used in the Standard System.

Each energex® Water Management System uses the same reinforcements, basecoats and finishes as are used in the Standard System. See Table 4 for product comparison details.

COLOR

A variety of standard and custom color options are available. Visit the ENERGEX web-

TABLE 1 ENERGEX STANDARD SYSTEM COMPOSITION & MATERIALS, PHYSICAL PROPERTIES

Attachments	energex® Enermix	energex® Enerdry	energex® NON CEM	energex® Enerfast	energex® Enershield	Mechanical Fasteners
Uses	Wet basecoat; embed and coat glass fiber reinforcements	Dry basecoat; embed and coat glass fiber reinforcements	Basecoat and adhesive; embed and coat glass fiber reinforcements	Basecoat; embed and coat glass fiber reinforcements	Liquid weather resistive membrane	For all substrates that use adhesive
Adheres EPS to						
Exterior grade gypsum sheathing	Yes	Yes	No	No	No	Yes
Glass fiber faced gypsum sheathing	Yes	Yes	No	Yes	No	Yes
Masonry	Yes	Yes	No	No	No	Yes
Concrete	Yes	Yes	No	No	No	Yes
Cement board	Yes	Yes	No	No	No	Yes
Dragon Board	Yes	Yes	Yes	No	No	Yes
Paper faced gypsum sheathing	No	No	Yes	Yes	No	Yes
Wood-based sheathings	No	No	Yes	Yes	No	Yes
Plywood	No	No	No	Yes	No	Yes
Material	100% acrylic polymer based	100% acrylic copolymer based	100% acrylic copolymer based	Full-acrylic	100% acrylic based liquid membrane	Plastic
Mixing location	Mixed onsite	Mixed onsite	Factory	Factory	Factory	N/A
Mixing components	Type 1 or Type II Portland Cement	Water	1 component	1 component	1 component	N/A
Test standard	To ASTM C150	To ASTM C150	To ASTM C150	To ASTM C150	To ASTM C355	N/A
Insulation board to ASTM C578						
Fire performance, 1 lb EPS, Type 1, to ASTM E108	Class A	Class A	Class A	Class A	Class A	Class A
Flamespread	25 maximum	25 maximum	25 maximum	25 maximum	25 maximum	25 maximum
Smoke developed	450 maximum	450 maximum	450 maximum	450 maximum	450 maximum	450 maximum
Reinforcements	See Table 2	See Table 2	See Table 2	See Table 2	See Table 2	See Table 2
Basecoats	See Table 3	See Table 3	See Table 3	See Table 3	See Table 3	See Table 3
Finishes	100% copolymers	100% copolymers	100% copolymers	100% copolymers	100% copolymers	100% copolymers

site at www.energerxwallsystems.com to view color selections online or consult ENERGEX to request color samples.

BENEFITS

- Design versatility
- Wide selection of standard and custom finishes
- Class A fire performance
- Readily forms contours and architectural features

LIMITATIONS

- Framing deflection is limited to L/240 or less
- Proper flashing, sealant and roofing detail must be in place for a successful EIFS installation

ACCESSORIES

- energex® Finishing Tracks are extrusions of exterior grade, UV-resistant rigid vinyl used to encase insulation board at system terminations, form straight, crisp edges and provide flat, uniform surfaces for sealant application
- energex® drainage options are available to meet local code requirements
- energex® Sheathing Tape
- energex® finishes
- energex® Primer

4. Technical Data

APPLICABLE STANDARDS

energex® Wall Systems are classified in accordance with the EIFS Industry Members Association (EIMA). The energex® Standard. System and energex® Water Management Systems are classified as PB (Polymer Based) EIF systems.

ASTM International

- ASTM B117 Standard Practice for Operating Salt Spray (Fog) Apparatus
- ASTM C79/C79M Standard Specification for Gypsum Sheathing Board (Withdrawn 2005)
- ASTM C150 Standard Specification for Portland Cement
- ASTM C355 Test Methods for Test for Water Vapor Transmission of Thick Materials (Withdrawn 1982)
- ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- ASTM C1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
- ASTM D897 Standard Test Method for Tensile Properties of Adhesive Bonds
- ASTM D2015 Standard Test Method for Gross Calorific Value of Coal and Coke by the Adiabatic Bomb Calorimeter (Withdrawn 2000)
- ASTM E72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction
- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E96 Standard Test Methods for Water Vapor Transmission of Materials
- ASTM E108 Standard Test Methods for Fire Tests of Roof Coverings
- ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- ASTM G23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Withdrawn 2000)

TABLE 2 ENERGEX® REINFORCEMENTS COMPOSITION & MATERIALS, PHYSICAL PROPERTIES

Reinforcements	Standard Mesh	Intermediate Impact Mesh	High Impact Mesh	Ultra High Impact Mesh	Detail Mesh	Adhesive Mesh	Corner Mesh
Uses	Tensile strength, impact resistance, 2nd layer reinforcement over High Impact and Ultra High Impact meshes	Supplemental impact resistance in base coat	High impact classification	Ultra high impact classification	Back wrapping details and shapes	Self-attaching for intricate shapes	Reinforcing outside corners
Composition	Glass fiber fabric	Glass fiber fabric	Glass fiber fabric	20 mesh glass fiber fabric	Glass fiber fabric	Glass fiber fabric	Pre-folded glass fiber
Weight	4.5 oz/yd^2 (153 g/m^2)	10 oz/yd^2 (476 g/m^2)	14 oz/yd^2 (476 g/m^2)	20 oz/yd^2 (678 g/m^2)	4.5 oz/yd^2 (153 g/m^2)	4.5 oz/yd^2 (153 g/m^2)	7.2 oz/yd^2 (245 g/m^2)

- ASTM G53 Practice for Operating Light- and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials (Withdrawn 2000)

Federal Test Method Standard 141, Method 6201, Humidity Test

FED TT-C-555B Coating, Textured (For Interior and Exterior Masonry Surfaces) - Wind Driven Rain

ICC-ES EIFS Freeze-Thaw Criterion #219

New York State Impact Load Test, Section 805.5 of Part 805 of Subtitle #8 - New York State Division of Housing & Community Renewal

Underwriters Laboratories, Inc. (UL) - UL 723 Tests for Surface Burning Characteristics of Building Materials

Uniform Building Code (UBC)
- UBC 17-2 (NFPA Std 259) Standard Test Method for Potential Heat of Building Materials
- UBC 17-6 Multi-Story Fire Evaluation

University of Pittsburgh (UPITT) - UPITT Test for Combustion Product Toxicity

APPROVALS, LISTINGS

Building Officials and Code Administrators International, Inc. (BOCA) - BOCA Evaluation Service Research Report 89-15

City of Los Angeles, CA

City of New York, NY

City of Phoenix, AZ

International Conference of Building Officials (ICBO) - ICBO Evaluation Report No. ER-4655

Miami Dade County, FL

SBCCI Compliance Report No. 8678

State of New York

Town of Huntington, NY

U.S. Department of Housing and Urban Development (HUD)

NOTE - The above reports are subject to reexamination, revisions and possible cancellation.

PHYSICAL/CHEMICAL PROPERTIES

See Tables 1, 2, 4 and 5.

FIRE PERFORMANCE

EPS insulation board meets Class A requirements for surface burning characteristics when tested to ASTM E84 (UL 723) and ASTM E108:
- Flamespread - 25 maximum
- Smoke developed - 450 maximum

There is no lateral spread of flame from compartment of fire origin to adjacent spaces when tested to UBC 17-6.

5. Installation

PREPARATORY WORK

Deliver products in manufacturer's original unopened, undamaged ENERGEX containers with identification labels intact.

energex® Standard System

Ambient and surface temperatures must be 40 degrees F (4 degrees C) or higher during shipment and storage. Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer.

Inspect substrates for suitable type, condition and securement. Surfaces must be sound, dry, free of irregularities, paint and other foreign matter that can affect adhesive bonds. Do not proceed with installation until unacceptable conditions are corrected.
- Gypsum based sheathings should conform to ASTM C79 or ASTM C1177
- Concrete must be cured a minimum of 28 days

energex® Water Management Systems

Store materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer. Inspect substrates for suitable type, condition, securement, irregularities and other factors that may affect the attachment of the Water Management System or performance of weather barrier. Do not proceed with installation until unacceptable conditions are corrected.

METHODS

energex® Standard System

Ambient and surface temperatures must be 40 degrees F (4 degrees C) or higher during application and drying of wet materials. Install energex® Finishing Tracks as required and fiberglass mesh for back wrapping. Apply adhesives by notched trowel as specified. Install insulation board gap-free in a running bond pat-

TABLE 3 ENERGEX® BASECOAT/ADHESIVE SELECTION

Substrate type [1]	Substrate	Basecoat/Adhesive
Masonry (CMU)	Concrete masonry units	Enermix and Enerdry
	Poured and precast concrete [2]	Enermix and Enerdry
	Brick [1]	Enermix and Enerdry
Sheathed	Exterior gypsum sheathing	Enermix, Enerdry, Non Cem and Enerfast (adhesive only)
	Exterior fiber-faced gypsum sheathing	Enermix, Enerdry, Non Cem and Enerfast (adhesive only)
	Cement board	Enermix, Enerdry, Non Cem and Enerfast (adhesive only)
	Wood based sheathing	Enermix, Enerdry, Non Cem and Enerfast (adhesive only)
	Metal siding	Enermix, Enerdry, Non Cem and Enerfast (adhesive only)
	Dragon Board	Enermix, Enerdry, Non Cem and Enerfast (adhesive only)

[1] For glazed masonry units, glass blocks and similar surfaces, contact Energex Technical Services.
[2] For detailed information about available mechanical fasteners and options, contact Energex Technical Services.

TABLE 4 ENERGEX® WATER MANAGEMENT SYSTEM COMPOSITION & MATERIALS, PHYSICAL PROPERTIES

Types	Water Management with Grooved Back EPS	Water Management with Drainage Wrap	Water Management with Roll-On Membrane
Weather barrier	Drainage wrap with Standard House Wrap	Drainage wrap	energex® Enershield with drainage wrap
Attachments	EPS board mechanically attached over weather barrier	EPS board mechanically attached over weather barrier	Flat EPS board adhesively attached
Attachment method			
For masonry and concrete substrates	Nylon or polyolefin washer with expanding shaft anchor	Nylon or polyolefin washer with expanding shaft anchor	Enermix or Enerdry Adhesive; ribbons vertically oriented
For framed substrates	Self-drilling corrosion resistant screws	Self-drilling corrosion resistant screws	Enermix or Enerdry Adhesive; ribbons vertically oriented
Insulation board	Grooved EPS insulation board	Flat EPS insulation board	Flat EPS insulation board
Reinforcements	Glass fiber mesh; see Table 2	Glass fiber mesh; see Table 2	Glass fiber mesh; see Table 2
Basecoats	Enermix, Enerdry, energex® NON CEM	Enermix, Enerdry, energex® NON CEM	Enermix, Enerdry, energex® NON CEM
Finishes	Any energex® finish and Primer	Any energex® finish and Primer	Any energex® finish and Primer

tern, offsetting insulation board joints from joints of any sheathing boards. Interlock corners and offset board joints 8" (203 mm) minimum from the corners of openings. Allow adhesive to cure.

Level irregularities in insulation board and coat entire surface with basecoat. Embed fiberglass mesh in wet basecoat, lapping fabric edges a minimum of 2 1/2" (64 mm). Apply sufficient basecoat to hide the pattern of the mesh and provide a total basecoat thickness of 1/16" - 3/32" (1.6 - 2.4 mm). Butt fabric edges of heavy duty reinforcing meshes without overlaps. Apply a layer of energex® Standard Mesh and basecoat over the specified heavy duty mesh, staggering fabric edges a minimum 6" (152 mm). Apply sufficient basecoat to hide the pattern of the Standard Mesh. Apply primer to the cured basecoat when specified and allow to dry. Apply finish coat and texture with trowel or float to match approved project sample.

TABLE 5 PHYSICAL PROPERTIES OF ENERGEX® WALL SYSTEMS

Property and Test	Standard System	Water Management Systems
EPS insulation board R-value, ASTM C177	R-3.85 (0.68)	R-3.85 (0.68)
Full-scale multi-story, UBC 17-6 fire test with additions	Complies with all acceptance criteria	Complies with all acceptance criteria
Wind driven rain, Federal Standard TT-C-555B	No dampness on rear of panel	No dampness on rear of panel
Negative wind load resistance, ASTM E330	150 psf (7182 Pa)	150 psf (7182 Pa)
Impact resistance, ASTM E72	Passes	Passes
Structural performance, ASTM E330	Negative presssure 195 psf (9337 Pa) Positive pressure 175 psf (8379 Pa)	Negative presssure 195 psf (9337 Pa) Positive pressure 175 psf (8379 Pa)
Tensile bond strength, ASTM D897		
Concrete masonry	2556.8 psf (122,420 Pa), passed	2556.8 psf (122,420 Pa), passed
Structural clay tile block	3298 psf (157,909 Pa), passed	3298 psf (157,909 Pa), passed
Cement board	260 psf (12,449 Pa), passed	260 psf (12,449 Pa), passed
Plaster	2600 psf (124,489 Pa), passed	2600 psf (124,489 Pa), passed
Foam blocks	2727 psf (130,569 Pa), passed	2727 psf (130,569 Pa), passed
Plywood sheathing	3001 psf (143,688 Pa)	3001 psf (143,688 Pa)
Humidity resistance, Federal Test Method Standard 141, Method 6201	No change	No change
Accelerated weathering, ASTM G23 and ASTM G53	Passed 2000 hours	Passed 2000 hours
Water vapor transmission, ASTM E96	Exceeds requirements	Exceeds requirements
Salt spray/fog resistance, ASTM B117	300 hours, no deleterious effects	300 hours, no deleterious effects
Toxicity, UPITT test	Exceeds requirements	Exceeds requirements
Water penetration, ASTM E331	No water penetration on substrate plane	No water penetration on substrate plane
Impact load, New York State Impact Load Test	Complies with requirements	Complies with requirements
Heat value, oxygen bomb specimen, UBC 17-2 (NFPA Std 259)	15,272.46 Btu/lb	15,272.46 Btu/lb
Heat of combustion, ASTM D2015	17,894 BTu/lb	17,894 BTu/lb

Eagle Electric Condominium Building, Long Island City, New York

energex® Water Management Systems
Flash all rough openings with drainage wrap. Install energex® vented Finishing Tracks or fiberglass mesh back wrapping as required. Fasten the weather barrier over the substrate in accordance with manufacturer's instructions, using the Standard House Wrap for the Water Management System with Grooved Back EPS and the drainage wrap for the Water Management with Drainage Wrap System. Mechanically attach the EPS insulation board using the appropriate anchoring pattern and fastener for the substrate.

When using the Water Management System with Roll-On Membrane, treat exterior-grade gypsum sheathing, glass faced gypsum sheathing, i.e., Georgia Pacific Dens-Glass Gold®, and concrete board sheathing joints with Enershield and energex® Sheathing Tape. Apply Enershield to the entire substrate surface and allow to dry. Adhere flat EPS insulation board to the Enershield with energex® Enermix or Enerdry Adhesive. Ensure that the ribbons of adhesive are oriented vertically, parallel to the 2' (610 mm) dimension of the EPS board.

Rasp the entire EPS board surface to remove irregularities and coat it with energex® basecoat. Embed the fiberglass mesh in wet basecoat, lapping fabric edges a minimum of 2 1/2" (64 mm).

In areas where high impact meshes are used, butt the edges and cover with a second layer of Standard Mesh. Apply a basecoat that is sufficient to hide the mesh pattern.

Apply energex® Primer to the cured basecoat when specified. After drying, apply finish. Texture with trowel or float to match approved project sample.

PRECAUTIONS
- Provide temporary protection when permanent protection will be delayed
- ENERGEX recommends that a primer be used prior to applying a finish
- Colors with reflective value below 30% are not recommended on south and west facing walls
- Test sealants for compatibility with both the system and adjacent dissimilar materials
- All system terminations and penetrations require prompt closure to weather entry by sealants and/or flashings
- To conform to code requirements, insulation requires separation from interior spaces by a thermal barrier of 15 minutes or greater rating

BUILDING CODES
Installation must comply with the requirements of all applicable local, state and federal code jurisdictions.

6. Availability & Cost

AVAILABILITY
ENERGEX adhesives and basecoats, finishes, reinforcing meshes and accessories (seal tape, tracks) are available through ENERGEX distributors, which are located throughout the U.S. Contact ENERGEX for the nearest distributor, who will be able to provide references to currently listed applications.

COST
Consult the manufacturer for project-specific pricing information.

7. Warranty
ENERGEX offers a 5 year limited warranty for its Standard System and a 10 year limited warranty on the Water Management Systems. Contact ENERGEX for details.

8. Maintenance
energex® finishes have have low maintenance requirements relative to other siding products. Soiled surfaces can be washed with mild detergents and soft brushing. To change the color or brighten the surface, recoat with Enercoat, a rolled-on coating, or paint with high quality exterior grade water-based acrylic paint.

Timely repair of sealants, flashings or other construction that allows water to enter the system is essential. Damaged areas of the system can be replaced by new materials joined onto existing materials. For products and procedures, contact ENERGEX.

9. Technical Services
ENERGEX provides technical literature, educational seminars and instructional videos. Test data and reports concerning salt spray, abrasion, mildew, acid rain, impact, freeze/thaw cycling, wind driven rain, water vapor transmission, dew point analysis, moisture resistance and bond strength are available upon request. Full specifications and product details booklets are available for each system in print and electronically. ENERGEX technical staff is available for consultation and assistance on all aspects of energex® systems.

10. Filing Systems
- Reed First Source
- MANU-SPEC®
- Additional product information is available from the manufacturer upon request.