

## SPECIFICATIONS:

### ENERGYCRAFT® INSULATION SYSTEM FOR EXISTING PRE-ENGINEERED METAL BUILDINGS

MasterFormat™ Division 7: Thermal Protection

MasterFormat™ Division 13: Special Construction, Section 13 34 19–Metal Building Systems

#### PART I: GENERAL

**Work Included:** Interior liner fabric of the color specified, support strapping of the appropriate color, fasteners of the appropriate type and color, sealants, thermal break materials and thermal insulation of the appropriate type to insulate the roof and wall areas to the full designed R-value of the building as specified.

**Quality Assurance:** Provide the materials in original manufacturer's packages together with detailed instructions and project drawings of the installation. Materials shall be inspected for damage, proper sizes, and quantities upon delivery and stored in a dry, secure manner. Installation shall proceed with care to assure proper sealing of the liner fabric. Insulation shall be placed on (ceiling) or behind (walls) the liner fabric in the full-specified thickness without voids or compression. Notify Thermal Design (800-255-0776) immediately of any damages, improper sizes or shortages. No changes or substitutions will be allowed unless submitted at least 10 days prior to bid date. Substitutions of systems that do not have a continuous vapor barrier on the inside plane of the purlins or girts will not be allowed. Purlins, girts and insulation must be completely isolated from the inside conditioned air with an effective vapor barrier. Taping or stapling of vapor barrier lap joints is not acceptable. Sealing field joints with a permanent vapor barrier lap sealant is required. Field seams, if any, shall be made on a structural member.

All exposed parts of the system shall be Class A material and have flame spread of 25 or less based on ASTM E84 standards. Vapor barrier fabric shall be opaque white or colored woven reinforced polyethylene with extrusion-welded seams fabricated in one piece, to fit not less than the full bay length by the width of the building. Buildings more than 100' wide may have field seams on the bottom of a ridge purlin but no less than 50' apart. Any field seams must be sealed with vapor barrier lap sealant. Wall bay minimum fabric size shall be not less than one entire wall bay or end wall column space from ceiling to floor. Perimeter edges of the vapor barrier fabric shall be trimmed and sealed to the adjoining steel or fabric with vapor barrier lap sealant. All edges of liner fabric including field seams shall be mechanically fastened with steel retaining straps the full perimeter. In the event that the crew is not experienced in the installation procedures, video taped or on-site installation training shall be requested by the installing contractor from the system manufacturer to assure proper installation procedures.

**Submittals:** Include manufacturer's product brochures; component specifications; samples of the painted support strapping; and samples of the Syseal® reinforced polyethylene vapor barrier fabric, including a sample of the extrusion welded seam; specific detailed drawings from Thermal Design for the project showing purlin spacings, support strap locations

and spacings, fastening points, liner fabric sizes and locations; insulation widths and thicknesses, sizes and locations and detailed installation instructions for quality assurance.

#### PART II: PRODUCTS

Acceptable systems shall be the EnergyCraft® Insulation System manufactured by Thermal Design with an installed total roof insulation R-value of \_\_\_\_\_ and an average installed thickness of \_\_\_\_\_ inches. Roof system shall be a single layer or double layer system (select one). A thermal break or thermal block shall be applied where there is no existing thermal break between metal panel and metal structure. The thermal break shall be **(select one):** 3/16" x 3" foam tape, 3/8" Snap-R® thermal block, or 1" Snap-R® thermal block. The installed total insulation R-value of wall insulation shall be R-\_\_\_\_\_ and an average installed thickness of \_\_\_\_\_ inches. System components shall meet the following minimum specifications:

**Steel Strap:** 80 KSI minimum yield high tensile strength steel, galvanized, primed and then painted the specified color on the exposed side with a clear coat primer on the unexposed side. Minimum size shall be 0.015 x 3/4" x continuous length. The strap color shall be **UVMAX® 8 White**. *Note: Stainless steel, woven polyester plastic and colored strapping are available on a special order basis.*

**Fasteners:** #12 x 3/4", plated self-drilling screws painted to match the specified color for fastening to light gauge steel (up to 12 GA purlins) or #12 x 11/4" plated self-drilling screws painted to match the specified color for heavier gauge steel (up to 3/8" purlins/bar joist). Special fasteners for wood, concrete and other structure types are available from Thermal Design and should be used when appropriate.

**Syseal® Fabric:** Shall be woven reinforced high-density polyethylene yarns coated on both sides with a continuous white or colored polyethylene film. The fabric grade for the roof shall be Syseal® SE (White). The fabric grade for the walls shall be Syseal® SE (White). The fabric shall comply with UL/ULC 723 or ASTM E84 and be Class A compliant with a low flame spread index of 25 or less based on ASTM E84 test standards. This material shall be manufactured in large custom pieces by extrusion welding from roll goods. Pieces shall be fabricated to substantially fit the large defined building areas with minimum practical sealing to be done on job site. Fabric shall be folded to allow for rapid pull-out on the strap support system. *(Custom colors available by special order; fabric upgrades available. Call 800-255-0776 for details.)*

Liner fabric perm rating shall be (**select one**): 0.025 grains per hour per square foot based on ASTM E 96, procedure B or liner fabric shall not function as a vapor barrier but shall be perforated with 3/16" minimum holes space not more than four inches apart in each direction.

**Sealants:** Shall be EnergyCraft Insulation System G524 high tack solvent-based vapor barrier sealant for sealing vapor barrier laps and/or Syseal® Tape (double-sided bonding tape) 3/4" wide by 1/32" thick extruded vapor barrier sealant by Thermal Design.

**Insulation:** Shall be fiberglass blanket or batt insulation meeting ASTM C665-01e1 and ASTM E84 or other insulation form as may be recommended and submitted by the system manufacturer and approved by the architect during submittals.

**Insulation Hangers:** Shall be Fast-R™ insulation hangers for supporting insulation between wall girt or roof purlins in roof pitches over 4:12.

**Thermal Break (Block):** Thermal break shall be (**select one**): 1/8" thick by 3" wide white, closed cell polyethylene foam with pre-applied adhesive film and peel-off backing, 3/8" polystyrene Snap-R® thermal block or 1" polystyrene Snap-R® thermal block. The selection shall be provided as thermal break where there is no existing thermal break.

### **PART III: EXECUTION**

**EnergyCraft Roof Insulation System:** Existing buildings often have light fixtures, electrical conduits, fire sprinkler system hangers, HVAC duct supports, etc. which may be attached to the roof structure. Planning momentary disconnection and reattachment of such items shall be included in the scope of the project. Items that are not possible to temporarily disconnect may be left in place and a field splice made on the closest purlin, sealed and fastened for permanent attachment. Items to be permanently removed are noted on the project drawings or in the specifications. The responsibility for removal and disposal shall also be noted if other than the ceiling insulation contractor; electrical, plumbing, or HVAC contractors may be required to be employed to perform such items of work.

Receive, inventory and store materials in a secure weather-proof environment. Store materials off the floor or ground if there is any risk of water damage from rain, flood, etc. Cut to length and install the painted steel straps or other support strapping if specified under "Products" or above in the pattern and spacing as shown on the project shop drawings. The straps are installed in tension, perpendicular to and at the bottom plane of the roof purlins. Position the pre-folded liner fabric on the strap platform, pull the liner fabric out of its fold and fasten the fabric to the overlying purlins with the appropriate fastener. Liner fabric shall be installed neatly and as wrinkle free as possible. Install the insulation materials on the fabric and strap platform at the specified thickness required to yield the resultant R-value of the insulation specified. Seal, fasten and trim the edges of the fabric liner to complete the installation.

**EnergyCraft Wall Insulation System:** Existing buildings often have doors, windows, louvers, exhaust fans, electrical conduits, etc. in wall systems. Installation of the insulation and wall liner fabric system shall consider any such items. The appropriate materials and methods should be used to install the EnergyCraft Insulation wall system considering such

items. If the wall systems are all metal and have no existing thermal break between the exterior metal skin and the metal girts, install a thermal break on the inside plane of all conductive wall girts, channels, etc. to provide a thermal break. Cut the insulation to length to fit neatly between the girts and floor to girt. Install the insulation on the Fast-R™ insulation hanger unless the insulation can be friction fit securely in place. Install two hangers on each piece of insulation; fluff to maximum recovery and install the insulation without voids, gaps or compression.

Install the wall liner fabric neatly and squarely in the wall bay by hanging it from an eave line strap and fastening the strap to the eave girt or to the ceiling roof strap intersections with the eave line strap. Seal the wall liner fabric along the eave, base angle, or base channel and vertically along the column flanges. Mechanically fasten the edges of the liner fabric along the base along the column flanges and around doors, windows, etc. Install additional vertical strapping approximately 5' on center, fastening to the eave strap, base and each intermediate girt to retain the wall liner fabric permanently in position. Tape or seal around any penetrations and wall openings to complete the installation.

Detailed installation instructions are sent along with the project drawings specific for the project and included with the materials for each shipment. Pertinent information is included on the drawings for each project. Review all information and instructions prior to commencement. If any questions arise, contact the manufacturer prior to installation. On-site installation training is available for actual expense. The manufacturer's toll-free hotline is 800-255-0776.

*Note: The EnergyCraft Insulation System can be applied to many different structure types and installation execution varies slightly. Also, installations and specifications for existing buildings vary. Call or write for specific details. A design manual is also available upon request. Shrink-wrap license terms are included on design manuals, installation instructions, video training tapes and compact discs. For more information about the five-year material warranty, see [www.thermaldesign.com/warranty/](http://www.thermaldesign.com/warranty/).*

United States Patents #5901518. Thermal Design is constantly developing and improving its products. We reserve the right to improve and change component specifications without notice. Syseal®, UVMAX® and Snap-R® are registered trademarks of Thermal Design, Inc. Copyright © 2009 Thermal Design, Inc. All Rights Reserved. TD\_EnergyCraftSpecs.indd JA 11/16/09 Printed in U.S.A.