kaidisen

PRODUCT DATA

BERMUDA ROOFING SLATE

PRODUCT DESCRIPTION

Kaidisen™ Bermuda Roofing Slate is the primary component of the Kaidisen™ Bermuda Roofing System.

Kaidisen™ Bermuda Roofing Slate is made of Aerated Autoclaved Concrete (AAC). AAC is made of finely ground Portland cement, lime, sand, and aluminum that is mixed with water to form a slurry which is then poured into molds where a chemical reaction between the ingredients releases tiny gas bubbles which become trapped within paste of the curing mix. This reaction causes the slurry to rise within the mold, much like a cake rises in an oven. After curing for 45 minutes, the "cake" is then wire cut into individual units (Bermuda Roofing Slates). The slices of AAC are then steam cured under intense pressure in autoclaves for 10 to 12 hours. Kaidisen™ Bermuda Roofing Slates are manufactured in compliance with ASTM 1386 – Standard Specification for Precast Autoclaved Aerated Concrete (AAC)

RECOMMENDED USE

Kaidisen™ Bermuda Roofing Slates are manufactured specifically to be installed within Kaidisen™ Bermuda Roofing System.

- Unit Size: 18 in. tall x 12 in. wide x 1 in. thick
- Unit Weight 5.625 lbs (1.y Kg)
- Package Quantity 240 Bermuda Roofing Slates per palletized weatherized carton
- Application Rate (field): 134 Bermuda Roofing Slates per 100 SF of installed roofing

APPEARANCE

Grey slabs – 18 inches long x l12 inches wide x 1 inch thick

TECHNICAL DATA

Minimum Compressive Strength	580 psi (4.0 MPa)
Modulus of Elasticity	296,000 psi (2040 MPa)
Flexural Tensile Strength	57.79 psi 108.4 MPa
Thermal Conductivity	0.97 BTU per in /ft2 / hr per deg F 0.14 W/mK
Thermal Resistance	R 1.03 per inch 7.14 mK/W
Linear Coefficient of Thermal Expansion	4.5 x 10^{-6} 1º F (8.1 º C x10^{-6})
Design Density (1)	44 pcf (720 kg/m³)
Nominal Dry Density	37 pcf (600 kg/m³)
Moisture Content	(Average) 8% (by mass)
Vapor Permeance	30 perms

INSTALLATION

General

Bermuda Roofing Slates are laid in a shingle fashion up the roof forming courses parallel to the eave with 9 inch exposures. Each Bermuda Roofing Slate is fully supported on a 1 inch thick bed of Kaidisen Mortar giving each successive course a cross sectional profile of approximately 2 inches thick. Mortar is molded to cover the exposed butt end of the Bermuda Roofing Slate forming a canted edge, a feature typical of an authentic Bermuda roof called the weather.

Set the standard for smoothness early in the project with a mock-up at ground level or in-place.

- Apply over solid decking covered with waterproof underlayment.
- All metal flashing should be installed at the underlayment drainage plane.
- Wash off all dust from slate and starters with water before installation.
- Install slate and starters in Saturated Surface Dry (SSD) condition.
- Saw cut slate, do not break with impact.
- Mix mortar with slump range for optimal adhesion and cured compressive strength.
- Optimal adhesion of slate to mortar is critical to the performance of this system.
- Do not install system if ambient temperature is below 40 degrees F.
- Protect completed work from freezing temperatures for 28 days.
- Wet cure with plastic and burlap if completed work is exposed to excessively hot dry weather during the 28 day curing period. Monitor completed work for shrinkage during curing
- Do not allow excessive amounts of mortar to block drainage path at underlayment.
- Do not allow mortar to block invert of valley

For steep sloped application:

- Align slate courses typically to the top edge of the horizontal battens.
- Stagger vertical joints a minimum of 4 inches.
- Courses shall be laid straight and level and spaced 9 inches to the weather including the weather.
- Where adjacent slopes are equal and maintain courses contiguously across valleys and hips.

For low sloped area application:

- Lay out slates on battens so that horizontal edges are fully supported staggering joints in successive courses a minimum of 4 inches. Mechanically fasten bottom

layer with Kaidisen Bermuda Roof Z Clips or screws and plates (2 – 6 screws per slate depending on wind uplift requirements).
- Fully embed succeeding layer(s) in a one inch thick layer of Kaidisen™ Mortar.
- Slope to drain can be made with framing or by use of mortar as light weight fill applied above slate.

Starters:
- Place starters at eaves aligning vertical edges on centers of vertical battens.
- Space from fascia to allow for drainage of the cavity.
- Fully conceal the cavity and any metal flashing.
- Fasten each piece to the battens with four stainless steel screws and washers through predrilled holes.

Field of roof (typical)
Align units with tops aligned to tops of battens. At typical field of steep roof: Lay slate in straight and level courses in a shingle fashion providing a maximum exposure between courses of 9 inches including the weather.

Set each successive course in a full bed of mortar (approximately 1 inch thick). .Employ the following Sequence of installation on steep sloped installation:

Prepare Bermuda Roofing Slate by cleaning them a hose as they are unpacked removing particles. This will also soak them thoroughly to produce a Saturated Surface Dry (SSD) condition which is required before installing them.

Mix mortar by machine mixer or drill in bucket making only enough mortar that will be used within one hour. Mix 1 bag (1.1 CF) with approximately 3.5 gallons of clean potable water depending on the weather conditions and the temperature. Do not re-temper mortar once it is begun to set up.

Smear mortar onto the new mating surface of each Bermuda Roofing Slate covering the concealed portion of each course working the mortar into the surface.

Place mortar to form bed on upper half of Bermuda Roofing Slate to be covered. Finished bed once next Bermuda Roofing Slate is set shall be ¾ inch to 1 inch thick.

Embed reinforcing mesh into the smeared mortar allowing the mesh to overhang the top of the Bermuda Roofing Slate extending up the roof to the next batten. Staple the top edge of the mesh to the batten to prevent mortar from pushing the mesh down into the cavity.

Back-butter each Bermuda Roofing Slate with fresh mortar coating the lower mating surface and sides just before laying it into the mortar bed.

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Apply mortar bed to upper half of Bermuda Roofing Slate below and set Bermuda Roofing Slate aligning it with the top of the next batten. Seat Bermuda Roofing Slates in mortar bed by moving them from side to side as they are pressed into the bed.

Lay each Bermuda Roofing Slate with its upper edge directly over the top edge of its supporting batten ensuring full support of each Bermuda Roofing Slate by the battens.

If one edge of the Bermuda Roofing Slate is chipped or out of square, place the factory finished or still square edge on the batten leaving the broken end to rest on the mortar bed over the Bermuda Roofing Slate below. This ensures the Bermuda Roofing Slate will be firmly and fully supported by the batten. Fill in with mortar to compensate for the missing AAC.
Allow a minimum head joint width of 3/16 inch between laterally adjacent Bermuda Roofing Slates when seating the Bermuda Roofing Slate in to the bed joint and ensure head joints are fully packed with mortar.

After embedding the Bermuda Roofing Slate into the mortar bed insert a Kaidisen clip over the upper edge of each Bermuda Roofing Slate. (If enhanced uplift requirements are indicated follow schedule provided on drawing). NOTE: Typically the field of the roof will require one clip per Bermuda Roofing Slate; edges and ridges may require additional clips or screws.

Apply mortar to butts of AAC units and strike smooth with a trowel to form a fillet fully sealing off the butt end to form the traditional feature of the Bermuda Roof known as “The Weather.

Smooth the exposed mortar of the “The Weather” with a steel trowel sealing surface with cement paste brought to the surface by the action of the trowel.

Keep cavities clean of mortar droppings and other materials during construction.

Stopping and Resuming Work: Rack back units; do not tooth. Do not re-temper mortar with water once it has begun to set up. When resuming work ensure mating surfaces of Bermuda Roofing Slates and starters receiving fresh mortar are SSD.

Clean masonry as work progresses. Remove mortar fins and smears wherever possible before tooling joints. As the mortar sets, finish exposed mortar surfaces, smooth to achieve an even appearance. After mortar has set, grind or cut away rough edges fins and other protrusions from the surface using trowels and rasps to achieve a visually smooth surfaces