



Moisture
Management
for Masonry

Product Submittal Sheet

TotalFlash® Cavity Wall Drainage System - Pre-assembled panels

Description

The TotalFlash® Cavity Wall Drainage Solution is a factory-assembled flashing and drainage system for masonry cavity walls with CMU, wood or steel stud backup. Each 5' (net) panel includes a flashing membrane with attached drainage mesh, weep tabs, drip edge and termination bar with self-tapping, self-sealing screws. Each panel is engineered with a precisely defined 6" lap joint to make water-tight overlaps fast and easy to create.

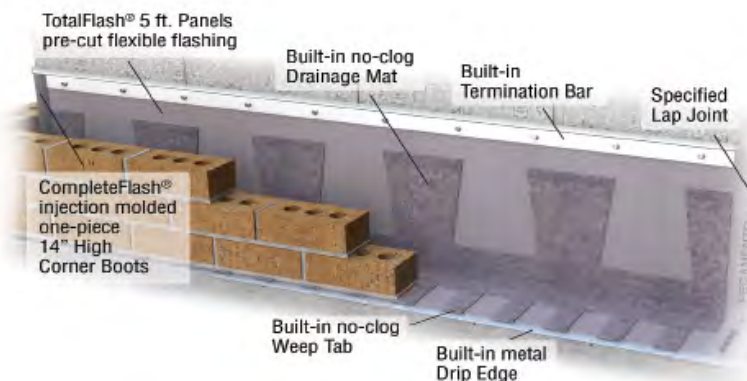
To complete the system, CompleteFlash® one-piece 14" High Inside/Outside Corner Boots and end dams; metal drip edge corners; and BTL-1 sealant may be ordered separately.

Short Form Spec

Install all-inclusive flashing/drainage system with adhered Cavity Drainage/Mortar Collection Material, Drip Edge, Termination Bar, Weep Tabs with included Fasteners. Replaces the requirement for Flashing, Weeps, Mortar Collection products, Drip Edge and Termination Bar.

Product: Subject to compliance with requirements, provide "TOTALFLASH® by Mortar Net Solutions™"

Specifier Note: The TotalFlash® Cavity Wall Drainage Solution includes an 18", 45-mil Ethylene Propylene Diene Monomer (EPDM), 304 Multi-Flash Stainless Steel, 40-mil Rubberized Asphalt, 40-mil Thermoplastic Polyolefin (TPO) or 5-ounce Copper Laminate; recycled polyester 3/16" x 10" MortarNet™ drainage mat; no-clog weep tabs; drip edge choices of 28-gauge 304 stainless steel, 24-gauge cold rolled copper or 24-gauge Kynar®-finish galvanized steel. Colors include Almond, Terra-Cotta, Gray and Tan (all drip edge options available separately in 5' lengths). High strength corrosion and UV resistant plastic termination bar or 16-gauge stainless steel termination bars with or without 1/4" sealant lip are also available. Self-tapping, self-sealing screws are #14 x 2". CompleteFlash® 14" pre-molded inside and outside High Corner Boots and universal, right and left end dams are made of high performance membranes.



TotalFlash® pre-assembled panels
5-1/2-ft. (5-ft. net) panel

Substitutions No substitutions permitted.

Standard Size 18" x 5-1/2-feet (5-foot net)

Available Sizes

- ☐ 12" x 5-1/2-feet (5-foot net)
- ☐ 18" x 5-1/2-feet (5-foot net)
- ☐ 24" x 5-1/2-feet (5-foot net)
- ☐ Custom Size

Membranes

- ☐ 45 mil EPDM
- ☐ 40 mil Rubberized asphalt
- ☐ 40 mil Thermoplastic polyolefin
- ☐ 5 oz. Copper laminate
- ☐ 304 Multi-Flash Stainless Steel

Drip Edges

- ☐ 28 ga. Stainless Steel
- ☐ 24 ga. Cold Rolled Copper
- ☐ 24 ga. Kynar Galvanized Steel
- ☐ No Drip Edge

Termination Bars

- ☐ PVC
- ☐ 16 ga. Stainless Steel
- ☐ 16 ga. Stainless Steel with 1/4" lip

Specification Title:

Project: _____ Date: _____

Firm: _____ Phone: _____

Approval: _____ Date: _____

General Contractor: _____

Bid Date: _____

Comments: _____



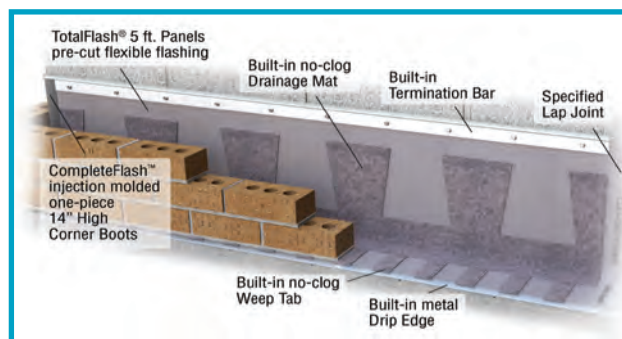
Technical Data Sheet

Description

The patented TotalFlash Panel Cavity Wall Drainage Solution is a complete, factory-assembled masonry cavity wall flashing system. It combines a flashing membrane with a mortar dropping collection drainage mat, weep tabs, drip edge and termination bar into a single, easy-to-install panel.

Features

- Sold in boxes of 10 pre-assembled 5' 6" panels (5' net/panel, 50' net/box)
- 90% open-weave polyester mesh mortar dropping collection mat and weep tabs
- 18" standard height
- Additional available sizes: 12", 24" (Custom sizes available on request)
- Customizable with 5 membranes, 6 drip edges, and 3 term bars
- FREE takeoff service and custom panel sizing



Sizes and Packaging

| STANDARD THICKNESS | PANEL HEIGHT | PANEL LENGTH | # OF PANELS/BOX |
|------------------------------|--------------|--------------|-----------------|
| EPDM - 0.045" | 12" | 5½' (5' net) | 10 panels/box |
| All other membranes - 0.040" | 18" | 5½' (5' net) | 10 panels/box |
| | 24" | 5½' (5' net) | 10 panels/box |

- Custom sizes are available upon request
- 1 starter strip for left-to-right installation per box
- 100 self-tapping #14 x 2" termination bar screws per box

Recycled Content

| MATERIAL | RECYCLED CONTENT |
|---------------------------|-------------------|
| Drainage mat/weep tabs | 40% Pre-consumer |
| PVC termination bar | 100% Pre-consumer |
| Stainless steel drip edge | 80% Post-consumer |
| Kynar® drip edge | 23% Post-consumer |
| Stainless steel flashing | 60% Post-consumer |

LEED form available on website, mortarnet.com



Technical Data Sheet

2/2

Components Options

• Flashing membranes

- Rubberized Asphalt: 0.032" rubberized asphalt bonded to 0.008" polyethylene film, self-adhering, excellent tensile/elongation/permanence characteristics, temperature resistant to 245° F.
- Copper Laminate: 5 oz. Copper sheet reinforced with 2 layers of fiberglass fabric.
- Thermoplastic Polyolefin (TPO): UV stable, ozone resistant, chlorine-free, recyclable.
- EPDM synthetic rubber.
- Stainless Steel Fabric: Single sheet of 304 stainless steel bonded on one side to a layer of polymeric fabric. Superior tensile strength, fire resistant, 180 day fabric UV exposure rating.

• Termination bars

- PVC: 1.125" high x 0.120" thick x 10' 0" long, UV stabilized, non-migratory plasticizers, high strength, corrosion resistant, pre-drilled holes.
- Stainless Steel: 0.750" high x 16 gauge thick, 1/4" lip, pre-drilled holes 6" on-center, 100% recyclable.
- Stainless Steel: 1.25" high x 16 gauge thick x 59-5/8" long, 1/2" lip, pre-drilled holes 6" on-center, 100% recyclable.

• Drip edges

- Stainless Steel: 3.0" high x 26 gauge, 3/8" hemmed edge, 100% recyclable.
- Cold-rolled Copper: 3.0" high x 24 gauge, 3/8" hemmed edge, 100% recyclable.
- Kynar®-coated galvanized steel: 3.0" high x 24 gauge, 3/8" hemmed edge, 4 color choices. (Almond, Tan, Gray, Terra-cotta)
- No drip edge: Membrane edge exposed.

Available Options Sold Separately

• CompleteFlash® - TPO or synthetic rubber/polypropylene blend (RP)

- 14" High inside/outside Corner Boots
- End Dams: right, left, universal

• Metal Drip Edge Corners

- Pre-formed outside 90°
- Adjustable 325° to 22°

• Sealants

- BTL-1 Butyl

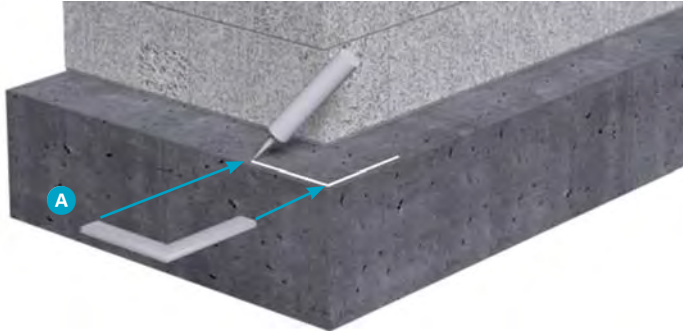
Notes:

- The use of Carborundum Saw blades to cut the Stainless Steel Drip Edge can result in a slight surface rust on any exposed metal.
- Muriatic Acid at any dilution is not recommended on Stainless Steel. • Uses a 5/32" Drill Bit & 5/16" Nut Driver
- Instructions for removing drip edge: When long runs of TotalFlash do not require the starter panel, the lap can be created by cutting with a knife the glue that holds the drip edge to the membrane and snipping off 6 inches of drip edge.

1

STEP ONE

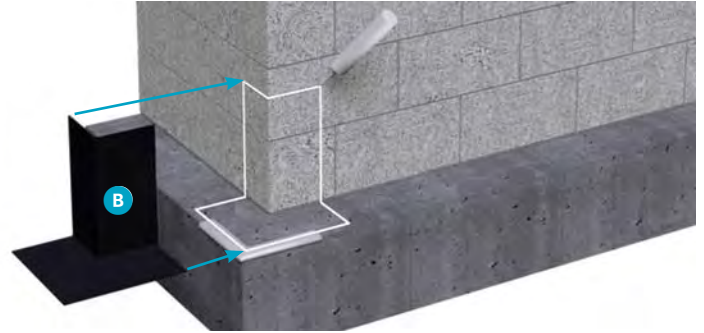
Apply sealant / adhesive to prefabricated Stainless Steel Corner **A** using 1 bead of adhesive.



2

STEP TWO

Install pre-formed 14" Corner Boot **B** using 1 bead of sealant / adhesive.

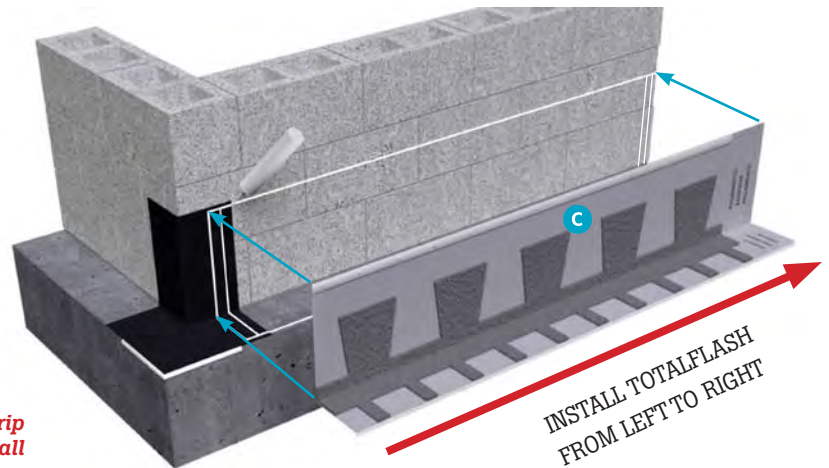


3

STEP THREE

Begin TotalFlash installation at the leftmost corner using the TotalFlash starter strip.

Install starter strip **C** adjacent to corner drip using sealant / adhesive applied horizontally behind termination bar and drip edge and two beads vertically at ends of TotalFlash panel as shown to the right. Install subsequent sections of TotalFlash from left to right.



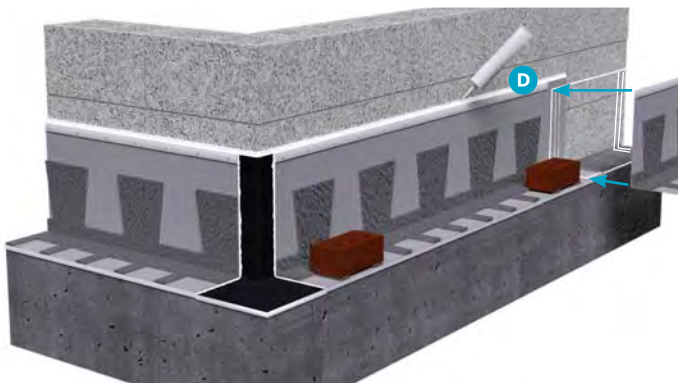
Sealant / Adhesive sets up quickly:

Install the Drip Edge on brick ledge. Create the crease at Drip Edge & backup wall until tight. Work the TotalFlash up the wall creating a smooth tight fit. Attach Termination Bar to the backup wall. Termination Bars may not align horizontally.

4

STEP FOUR

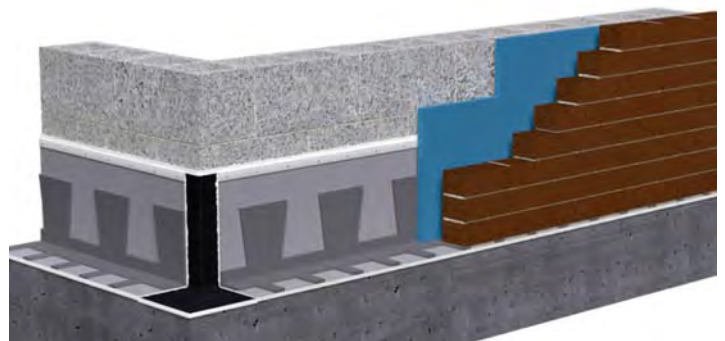
Install remaining sections using the lap system and sealant / adhesive. Caulk top of termination bar **D**. Loose brick units can be used to temporarily hold down TotalFlash while sealant / adhesive cures.



5

STEP FIVE

Install remaining rigid board insulation over TotalFlash. Lay a mortar bed directly atop the TotalFlash weep tabs and install the brick veneer. For proper drainage, ensure the tips of the weep tabs are exposed when tooling the first mortar joint.



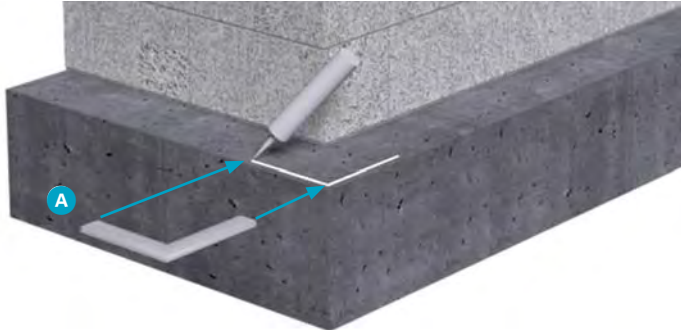
Notes:

- The use of Carborundum Saw blades to cut the Stainless Steel Drip Edge can result in a slight surface rust on any exposed metal.
- Muriatic Acid at any dilution is not recommended on Stainless Steel. • Uses a 5/32" Drill Bit & 5/16" Nut Driver
- Instructions for removing drip edge: When long runs of TotalFlash do not require the starter panel, the lap can be created by cutting with a knife the glue that holds the drip edge to the membrane and snipping off 6 inches of drip edge.

1

STEP ONE

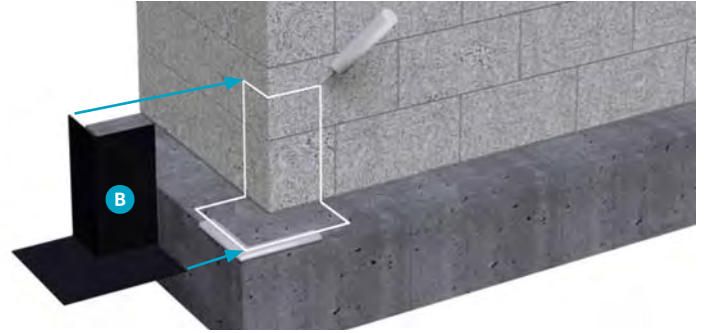
Apply sealant / adhesive to prefabricated Stainless Steel Corner **A** using 1 bead of adhesive.



2

STEP TWO

Install pre-formed 14" Corner Boot **B** using 1 bead of sealant / adhesive.

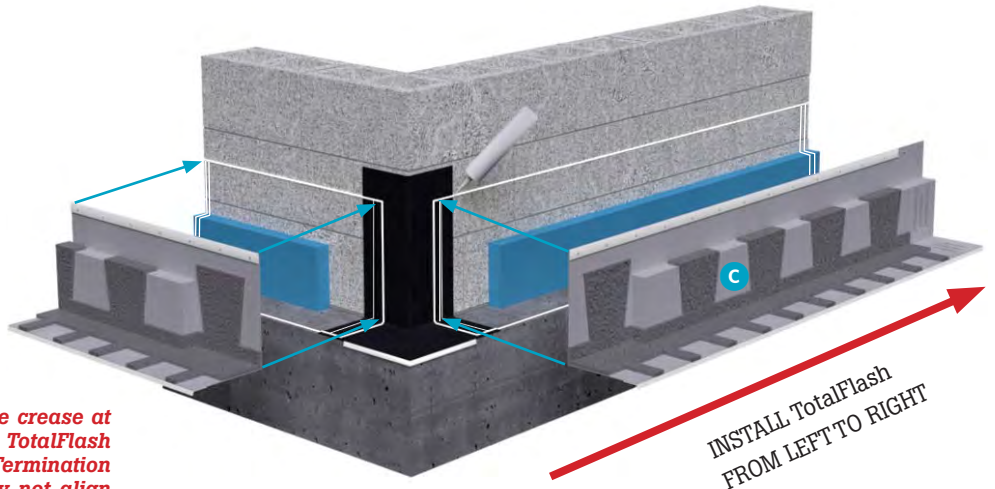


3

STEP THREE

Install 8" high sections of rigid insulation board against back up wall.

Begin TotalFlash installation at the leftmost corner using the TotalFlash starter strip **C** adjacent to corner drip using sealant / adhesive applied horizontally behind termination bar and drip edge and two beads vertically at ends of TotalFlash panel as shown to the right. Install subsequent sections of TotalFlash from left to right.



Sealant / Adhesive sets up quickly:

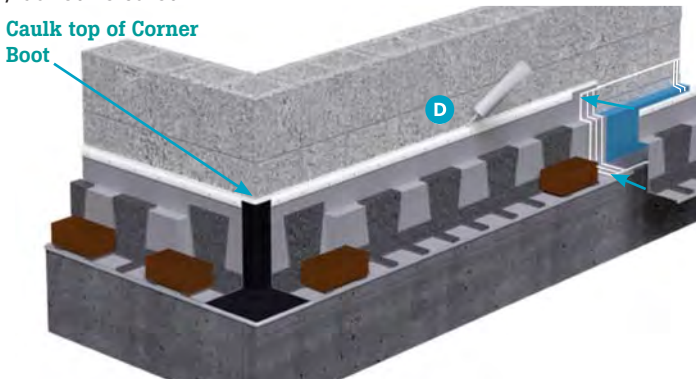
Install the Drip Edge on brick ledge. Create the crease at Drip Edge & backup wall until tight. Work the TotalFlash up the wall creating a smooth tight fit. Attach Termination Bar to the backup wall. Termination Bars may not align horizontally.

4

STEP FOUR

Install remaining sections using the lap system & adhesive, trim end section flush with corner drip. Caulk top of termination bar **D**. Use loose bricks to temporarily hold down TotalFlash while sealant / adhesive cures.

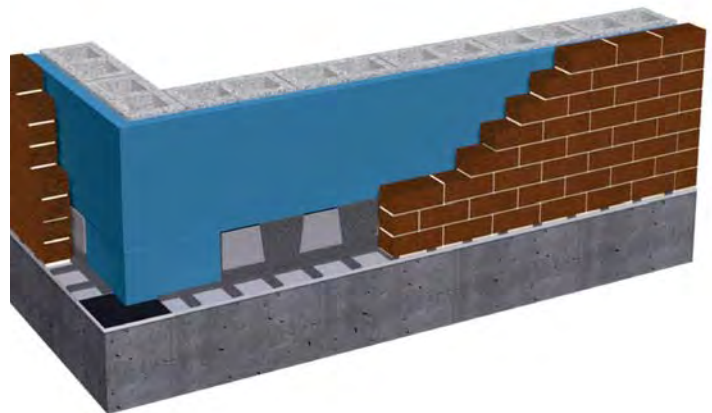
Caulk top of Corner Boot



5

STEP FIVE

Install remaining rigid insulation board.



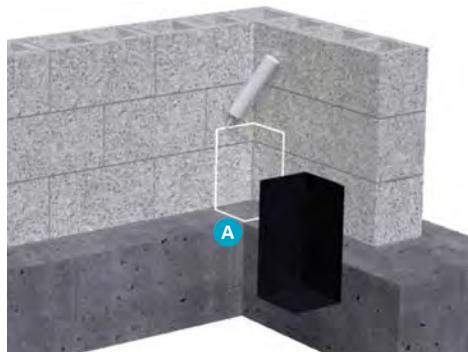
Notes:

- The use of Carborundum Saw blades to cut the Stainless Steel Drip Edge can result in a slight surface rust on any exposed metal.
- Muriatic Acid at any dilution is not recommended on Stainless Steel. • Uses a 5/32" Drill Bit & 5/16" Nut Driver
- Instructions for removing drip edge: When long runs of TotalFlash do not require the starter panel, the lap can be created by cutting with a knife the glue that holds the drip edge to the membrane and snipping off 6 inches of drip edge.

1

STEP ONE

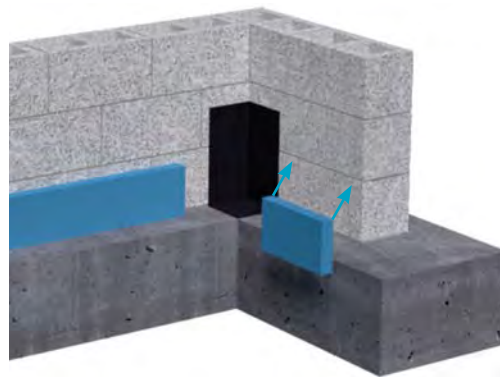
Install pre-formed 14" Corner Boot **A** using 1 bead of sealant / adhesive.



2

STEP TWO

Install 8" high sections of rigid insulation board against backup wall 12" from corner.

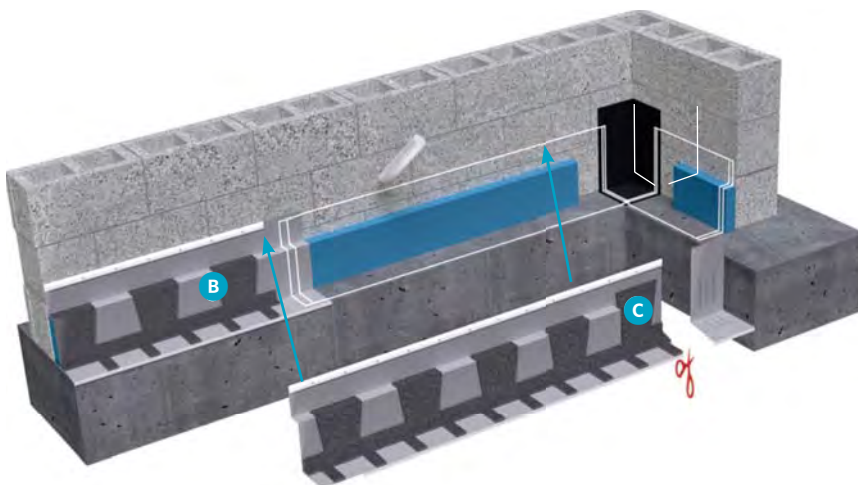


3

STEP THREE

Begin TotalFlash installation at the leftmost edge of the wall using the TotalFlash starter strip piece **B** (place it directly against the stainless steel corner piece previously set). Use sealant / adhesive applied horizontally behind termination bar and drip edge and two beads vertically at ends of TotalFlash panel as shown to the right. Trim off excess TotalFlash panel. **C**.

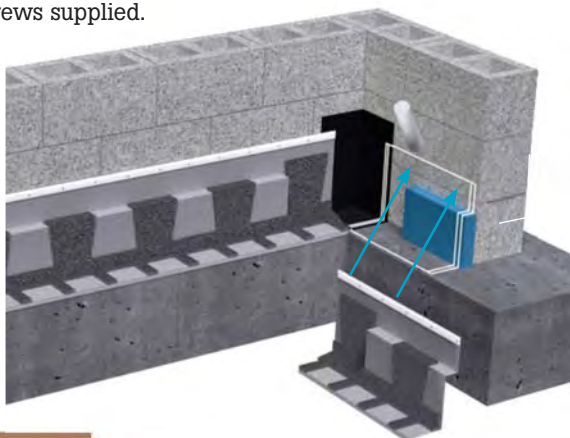
Install remaining sections using the lap system and sealant / adhesive. Caulk top of termination bar



4

STEP FOUR

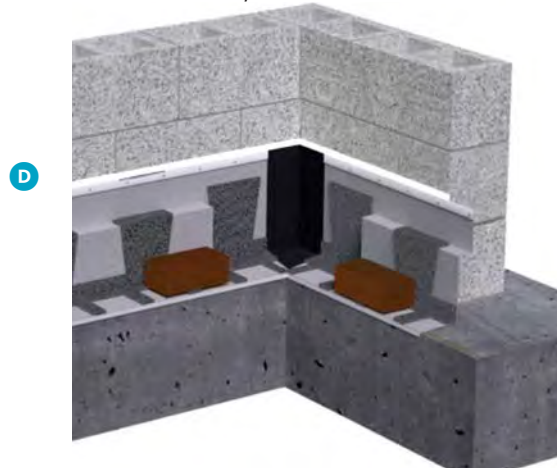
Trim the left side of the TotalFlash drip edge hem at 45° and install into inside corner with sealant / adhesive and termination bars screws supplied.



5

STEP FIVE

Trim top of Corner Boot flush with Termination Bar. Caulk top of termination bar **D**. Loose brick units can be used to temporarily hold down TotalFlash while sealant / adhesive cures.



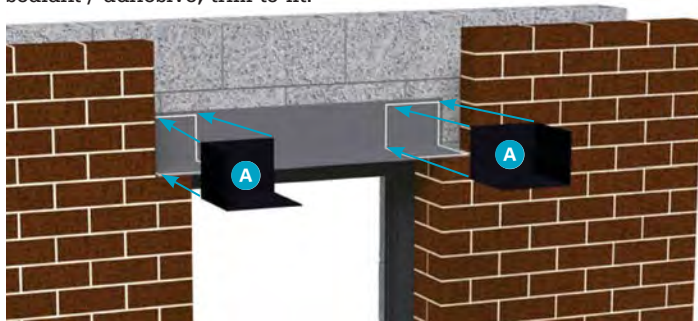
Notes:

- The use of Carborundum Saw blades to cut the Stainless Steel Drip Edge can result in a slight surface rust on any exposed metal.
- Muriatic Acid at any dilution is not recommended on Stainless Steel.
- Uses a 5/32" Drill Bit & 5/16" Nut Driver
- Instructions for removing drip edge: When long runs of TotalFlash do not require the starter panel, the lap can be created by cutting with a knife the glue that holds the drip edge to the membrane and snipping off 6 inches of drip edge.

1

STEP ONE

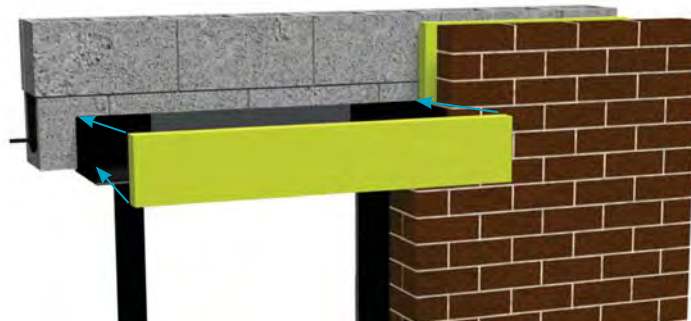
Install pre-formed end dams **A** on both ends of opening using sealant / adhesive, trim to fit.



2

STEP TWO

Install 8" high sections of rigid insulation board against back up wall at lintel.



3

STEP THREE

Install first section of TotalFlash adjacent to end dam using sealant / adhesive and screws. Trim TotalFlash to fit opening.

For larger openings, install additional TotalFlash sections using the integrated lap system, sealant / adhesive and screws.



4

STEP FOUR

Caulk top of Termination Bar.



5

STEP FIVE

Install remaining rigid insulation board and install brick veneer.



BEFORE PROCEEDING: If you have questions or need more information, please contact Mortar Net Solutions® at **800-664-6638** or go to **www.mortar.net.com**

Notes:

- The use of Carborundum Saw blades to cut the Stainless Steel Drip Edge can result in a slight surface rust on any exposed metal.
- Muriatic Acid at any dilution is not recommended on Stainless Steel.
- Uses a 5/32" Drill Bit & 5/16" Nut Driver
- Instructions for removing drip edge: When long runs of TotalFlash do not require the starter panel, the lap can be created by cutting with a knife the glue that holds the drip edge to the membrane and snipping off 6 inches of drip edge.

1 STEP

Install pre-formed end dams **A** on both ends of opening using sealant / adhesive, trim to fit.

2 STEP TWO

Install first section of TotalFlash adjacent to end dam using sealant / adhesive and screws. Trim TotalFlash to fit opening.

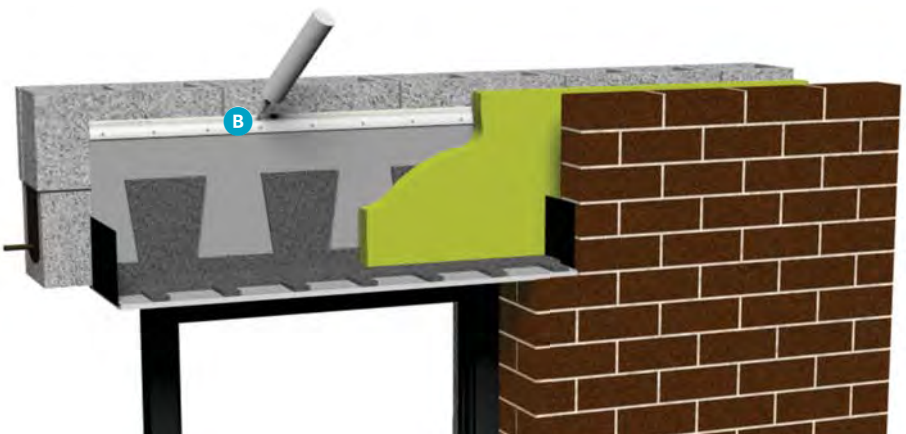
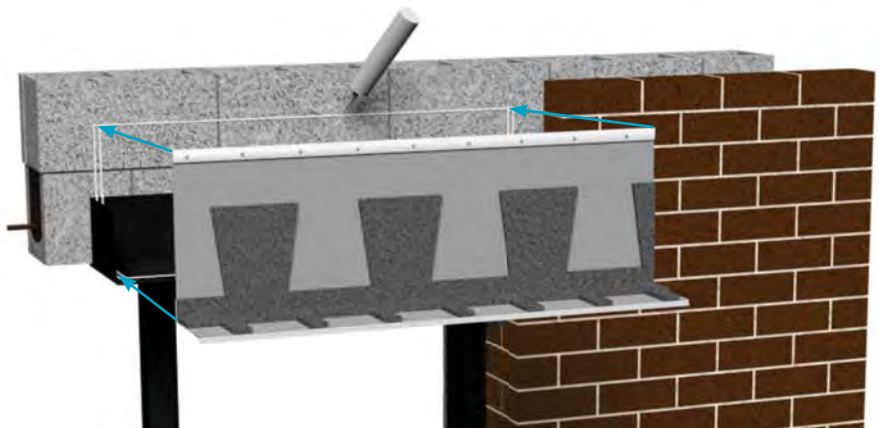
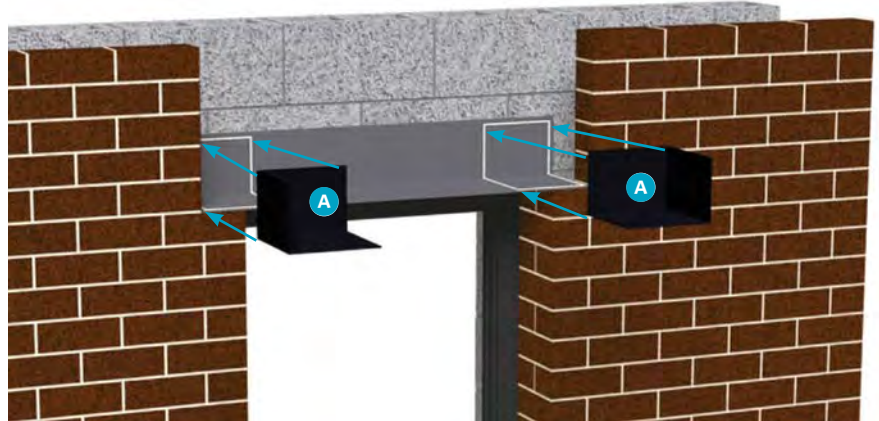
For larger openings, install additional TotalFlash sections using the integrated lap system, sealant / adhesive and screws.

3 STEP THREE

Caulk top of Termination Bar **B**. Install rigid insulation on top of TotalFlash. Install brick veneer above lintel.

INSTALLATION GUIDE B Window Head Flashing TotalFlash Installed in Front of Rigid Insulation Board

For even faster installation contact Mortar Net Solutions® to inquire about TotalFlash window head panels made to the exact size needed.



BEFORE PROCEEDING: If you have questions or need more information, please contact Mortar Net Solutions® at **800-664-6638** or go to **www.mortarnet.com**



Moisture
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for Masonry

326 Melton Rd., Burns Harbor, IN 46304
P 800 664 6638 F 219 787 5088
www.mortarnet.com

Certificate of Compliance

This letter is to certify that TotalFlash® meets specifications as described.

TotalFlash® was tested in accordance with ASTM E514, "Test Method for Water Penetration and Leakage Through Masonry".

TotalFlash® is manufactured in the United States and meets the requirements as described in the American Recovery and Reinvestment Act (ARRA) of 2009.

Regards,

A handwritten signature in black ink, appearing to read 'Greg Skyta', is written over a light gray circular background.

Greg Skyta
Construction Services
Business Development Associate
gskyta@mortarnet.com
219-850-4516



Moisture
Management
for Masonry

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Testing

TotalFlash®

1/9

NELSON TESTING LABORATORIES

Construction Materials

1210 REMINGTON ROAD

SCHAUMBURG, ILLINOIS 60173 USA

Phone (847) 882-1146 Fax (847) 882-1148

www.nelsontesting.com

December 5, 2007

Mortar Net Solutions®
326 Melton Road
Burns Harbor, IN 46304

REPORT OF TESTS

SUBJECT: Water Penetration Study to Determine the Effectiveness of the Mortar Net TotalFlash Cavity-Wall Drainage System Used in Masonry Cavity Wall Construction

PROJECT: Mortar Net Solutions® Research Program - TotalFlash®

TEST METHODS: ASTM E 514, "Test Method for Water Penetration and Leakage Through Masonry"

ASTM C 67, "Test Methods of Sampling and Testing Brick and Structural Clay Tile"

ASTM C 140, "Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units"

ASTM C 270, "Specification for Mortar for Unit Masonry"

NTL PROJECT #: 1039-07

PAGE: 1 of 9

TEST OVERVIEW

This study was designed to test the effectiveness of Mortar Net's TotalFlash cavity-wall drainage system in masonry cavity wall construction. Within this study, three masonry cavity walls were constructed and subjected to the test procedures outlined in ASTM E 514, "Test Method for Water Penetration and Leakage Through Masonry". The walls were constructed each with a first course of brick and a second course of concrete masonry units. Two wall systems were constructed with the TotalFlash cavity-wall drainage system installed at the base of the second course of concrete masonry units, while the third wall was constructed with no water management system, except for standard peel and stick flashing. All three walls were constructed with the intent to allow leakage through the brick to test the effectiveness of the TotalFlash cavity-wall drainage system.

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Mortar Net Solutions®
TotalFlash Cavity-Wall Drainage System
NTL Project #1039-07
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TEST WALL DESCRIPTIONS

Wall #1 – TotalFlash #1

- Brick facing wythe;
- TotalFlash cavity-wall drainage system installed within a 1" cavity;
- Concrete masonry unit wythe.

Wall #2 – TotalFlash #2

- Brick facing wythe;
- TotalFlash cavity-wall drainage system installed within a 1" cavity;
- Concrete masonry unit wythe.

Wall #3 – Control #1

- Brick facing wythe;
- Peel and stick flashing installed within a 1" cavity;
- Concrete masonry unit wythe.

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 TotalFlash Cavity-Wall Drainage System
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TEST WALL FABRICATION

Three (3) walls for water penetration testing were constructed according to ASTM E 514 requirements. The three walls were double-wythe wall panels, 48" wide x 56" high. Each wall was assembled using a face of clay brick and a second of concrete masonry units (cmu). A one-inch air cavity was located between the clay brick and the concrete masonry units. Each open end of the walls used a water end dam. In the first two walls, the mason installed the Mortar Net TotalFlash product in the 1" cavity according to the manufacturer recommendations. In the third wall, the mason installed peel and stick flashing in the 1" cavity.

The walls were built during a two day period by an experienced lead mason. Workmanship was judged as to be average. Ambient temperature was maintained between 60 degrees F. and 75 degrees F. during the fabrication and subsequent curing period. Each wall was constructed by one mason and required approximately 1.5 hours to complete with the masonry work being done over a period of about 60 minutes. The walls were constructed on an inverted steel channel, and the bottom course was laid on a bed of mortar. Full bedded mortar joints were used, and the walls were constructed one course at a time by applying mortar the full length of the bed joint, then buttering the ends of a brick one at a time before setting on the bed joint. The joints were initially struck and tooled with a concave jointer after the top course was laid, and a final tooling was done approximately 30 to 60 minutes later. The bed and head joints were full.

The walls were constructed in a random order to avoid potential systematic errors which might have occurred if the walls had been built in a particular order. The walls were cured according to ASTM E 514 which requires curing for 7 days enclosed in plastic sheeting and for a minimum of 7 subsequent days curing in laboratory air. The total curing time for the walls ranged from 14 to 21 days. Flashing was built into the wall to collect water that had passed completely through the wall. There was a bottom trough which was built under the wall to collect water that penetrated into the interior cavities on the blocks, collected at the bottom of the cavities and leaked through the weep holes and mortar joints.

TEST PROCEDURES

ASTM E 514 test procedures were followed throughout the test. ASTM E 514 test chambers were constructed of welded aluminum angle stock, and the observation face of the chambers was outfitted with Lexan sheet to allow full view into the chamber. All fixtures and appurtenances were in conformity with ASTM E 514, section 4. Each frame was outfitted with a monometer to measure interior pressure and a flow meter to monitor the amount of flow. During the testing, the frame was pressurized to 10 psf, and the water flow was adjusted to 40.8 gal/hour which is equal to 3.4 gal/sq.ft./hr. The units were held in place with clamps, and closed cell foam gasket materials.

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TotalFlash Cavity-Wall Drainage System
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MATERIAL TEST DATA

A. Concrete Masonry Units

Nominal 8" x 8" x 16", two core, medium weight concrete masonry units (CMU) were manufactured by Northfield Block Company, Mundelein, Illinois. The following are the CMU physical properties. The results represent the average of three units tested in conformity with ASTM C 140.

| | |
|--------------------------------|-------|
| Compressive Strength, net, psi | 2970 |
| Dimensions | |
| Length, in. | 15.65 |
| Height, in. | 7.65 |
| Width, in. | 8.00 |
| Thickness | |
| Face shell, minimum in. | 1.33 |
| Web, minimum in. | 1.25 |
| Absorption | |
| Pcf | 6.45 |
| Percent | 4.78 |
| Moisture Content, percent | 11.2 |
| Unit weight, dry, pcf | 114.3 |

Brick Analysis (ASTM C 67)

Brick size: 7.62 inches long x 3.62 inches wide x 2.25 inches high. The following are the clay brick physical properties. The results represent the average of three units tested in conformity with ASTM C67.

| | |
|-------------------------------|--------|
| Absorption (%) | |
| 24 hour | 8.8 |
| 5 hour boil | 10.3 |
| Saturation Coefficient | 0.83 |
| IRA (g/min/30 sq.in.) | 16.2 |
| Compressive Strength (psi) | 10,170 |

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TotalFlash Cavity-Wall Drainage System
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B. Mortar Batches

a. Mortar Batching Information

Similar Mix designs were utilized for each mortar batch. Mortar constituents were weigh-batched to assure accuracy. ASTM C 270, Type "S" mortar proportions were selected for the evaluation. The amount of water was adjusted to provide the required consistency as judged by the mason.

Mortar proportions are as follows:

| | |
|----------------|-----------|
| Cement, Type 1 | 1 part |
| Lime | ½ part |
| Mason Sand | 4 ½ parts |

b. Mortar Cementitious Materials

| | |
|--------|-------------------------------------|
| Cement | Portland Cement Type 1 (ASTM C 150) |
| Lime | Type "S" Hydrated Lime (ASTM C 207) |

c. Mortar Aggregates – Mason Sand

| Gradation | % Passing Each Sieve |
|-----------|----------------------|
| # 4 | 100.0 |
| # 8 | 100.0 |
| # 16 | 90.4 |
| # 30 | 78.3 |
| # 50 | 28.9 |
| # 100 | 2.0 |

F.M. 1.94

The mason sand meets ASTM C 144 specifications

d. Mortar Physical Properties

All mortar properties were obtained in accordance with ASTM C 780. Air contents were determined using the pressure method (ASTM C231). Compressive strengths were determined on 3-inch diameter by 6-inch high cylinders (ASTM C 39).

| | |
|---------------------------|------|
| Plastic Mortar | |
| Cone penetration, mm | 50 |
| Air content, % | 5.3 |
| Hardened Mortar | |
| Compressive strength, PSI | |
| 7 days | 2480 |
| 28 days | 2970 |

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TotalFlash Cavity-Wall Drainage System
NTL Project #1039-07
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TEST RESULTS

A. OBSERVATIONS

Wall #1 – TotalFlash #1

No signs of dampness were visible on the back wall after the four-hour test. Also, no water was collected through the back of the wall. Measurable water began flowing through the weep holes 10 minutes after the start of the test. During the course of the four-hour test a total of 15 gallons of water exited through the weep holes. At the completion of the test, no water was found to have collected within the wall cavity.

Wall #2 – TotalFlash #2

No signs of dampness were visible on the back wall after the four-hour test. Also, no water was collected through the back of the wall. Measurable water began flowing through the weep holes 15 minutes after the start of the test. During the course of the four-hour test a total of 14.5 gallons of water exited through the weep holes. At the completion of the test, no water was found to have collected within the wall cavity.

Wall #3 – Control #1

Measurable water began trickling through the weep holes 90 minutes after the start of the test. During the course of the four-hour test a total 0.25 gallons of water exited the weep holes. At the completion of the test, water collected within the cavity to a height of 4.0 inches.

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TEST RESULTS (continued)

B. DATA

ASTM E 514 Testing

| | | | |
|---|-------------------------------|-------------------------------|----------------------------|
| Test Date: | 11-13-07 | 11-14-07 | 11-14-07 |
| | TotalFlash <u>Wall - 1</u> | TotalFlash <u>Wall - 2</u> | Control <u>Wall - 3</u> |
| First dampness on back of wall | no signs | no signs | 180 minutes |
| First visible water on back of wall | no water | no water | no water |
| Percent dampness on back of wall @ 4 hours | 0% | 0% | 10% |
| Total leakage through back of wall (gallons) | none | none | none |
| Total leakage rate through back of wall (gallons/hour) | 0.00 | 0.00 | 0.00 |

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TEST RESULTS (continued)

C. COMPARATIVE DATA

Water Collection Comparative Study

| | <u>Water Collected Through Weep Holes</u> | <u>First Sign of Water Exiting Weep Holes</u> | <u>Depth of Water Remaining in Cavity Wall</u> |
|--------------------------------|---|---|--|
| <u>Wall #1</u> – TotalFlash #1 | 15.0 gallons | 10 minutes | no water |
| <u>Wall #2</u> – TotalFlash #2 | 14.5 gallons | 15 minutes | no water |
| <u>Wall #3</u> – Control #1 | 0.25 gallons | 90 minutes | 4.00 inches |
| <u>Average</u> | | | |
| TotalFlash | 14.75 gallons | 12.5 minutes | no water |
| Control | 0.25 gallons | 90 minutes | 4.00 inches |

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TEST RESULTS (continued)

D. SUMMARY

The Mortar Net TotalFlash cavity-wall drainage system test walls showed no signs of dampness or water penetration through the back of the concrete masonry units at the conclusion of the ASTM E 514 tests. In addition, Mortar Net TotalFlash strongly outperformed the standard peel and stick flashing system during the course of this test procedure. While the wall cavities and the corresponding weep holes in the control wall became almost completely blocked with mortar droppings, the TotalFlash water management system provided a system for preventing mortar blockage, allowing water to escape through the weep holes.

Respectfully submitted,

NELSON TESTING LABORATORIES



Mark R. Nelson
Principal



Safety Data Sheet

TotalFlash® Rubberized Asphalt

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Section 1: Chemical Product and Company Identification

TRADE NAME: TotalFlash® Rubberized Asphalt
LABEL: TW60 WATERPROOFING MEMBRANE
USE & DESCRIPTION: Rolled Waterproofing
CHEMICAL FAMILY: Mixture

MANUFACTURED BY:
Mortar Net Solutions™
326 Melton Road
Burns Harbor, IN 46304
Tel: (800) 664-6638 Fax: (219) 787-5088
Website: www.mortarnet.com

EMERGENCY TELEPHONE NUMBERS:
General Information: (417) 624-6644 (8 a.m. - 5 p.m.) CST
Chemtrec: (800) 424-9300 (24 HOURS)

Section 2: Hazards Identification

SIGNAL WORD: **Danger**

GHS CLASSIFICATION: Carcinogenicity – Category 1A
Skin Irritation – Category 2
Eye Irritation – Category 2B
Specific Target Organ Toxicity, Repeated Exposure – Category 1



HAZARD STATEMENTS:

May cause cancer.
Causes skin and eye irritation.
Causes damage to organs through prolonged or repeated exposure.
Additional hazard information: Can cause silicosis and other permanent lung damage.

PRECAUTIONARY STATEMENTS:

Prevention

Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
Do not breathe dust. Wear protective gloves/protective clothing/eye protection/face protection.
Do not eat, drink or smoke when using this product. Wash hands and exposed skin thoroughly after handling.

Response

If on skin: Wash with plenty of water.
Get medical advice/attention: If exposed or concerned or you feel unwell, if eye and or skin irritation persists.
Specific treatment: See section 4-First Aid
In case of fire: See Section 5. Take off contaminated clothing and wash before reuse.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

Store locked up.

Disposal

Dispose in accordance with Federal, State, and Local regulations. (See Section 13 for additional information).

Section 3: Composition/Information on Ingredients

| Components | CAS No. | % by Weight |
|-------------------------------------|------------|-------------|
| Asphalt | 8052-42-4 | 40-50 |
| Limestone* | 1317-65-3 | 40-50 |
| Styrene Butadiene Copolymer | 903-55-8 | 10-15 |
| *Contains Crystalline Silica Quartz | 14808-60-7 | 0-1 |



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Section 4: First Aid Measures

EYE CONTACT: Immediately flush eyes with plenty of cool water for at least 20 minutes, occasionally lifting the eye lids to ensure thorough rinsing. Get medical attention if irritation persists.

SKIN CONTACT: Clean any exposed skin with warm soapy water if possible. If not, and a waterless hand cleaner is used, it should be without pumice. Do not use solvents or thinners to remove material from skin. Get medical attention if irritation persists or develops.

INGESTION: If swallowed, do not induce vomiting. If vomiting occurs, keep head lower than hips to avoid aspiration of vomit into the lungs which can cause inflammation or pneumonitis. Call poison control center or get immediate medical attention.

INHALATION: If inhalation of cured product particles, fumes, vapors, or mist occurs, remove person to fresh air. Drink water to clear throat or blow nose to clear. If not breathing, give artificial respiration or give oxygen by trained personnel and get immediate medical attention.

NOTES TO PHYSICIAN: Treatment should be based on removing the source of irritation with treatment of symptoms as necessary.

Section 5: Fire-Fighting Measures

EXTINGUISHING MEDIA: Dry chemical, CO₂, or foam fire extinguisher should be used. Avoid use of straight-stream water.

SPECIAL FIRE FIGHTING PROCEDURES: Firefighters should not enter confined spaces without wearing a National Institute for Occupational Safety and Health (NIOSH) approved positive pressure self-contained breathing apparatus (SCBA) with full face mask and full protective equipment. Water may be used to cool containers in a fire-exposed area.

UNUSUAL FIRE OR EXPLOSION HAZARDS: When heated, fumes may burn if ignition source is provided. Petroleum asphalt fumes can explode if emitted in an enclosed environment and supplied with an ignition source. Burning product may cause thick black smoke.

SEE SECTION 10 FOR COMBUSTION PRODUCTS

Section 6: Accidental Release Measures

PRECAUTIONS IF MATERIAL IS SPILLED OR RELEASED: Pick up large pieces. Do not dry sweep dusts or blow with air in confined area.

WASTE DISPOSAL METHODS: Dispose in accordance with applicable Federal, State, and Local regulations. Do not burn.

Section 7: Handling and Storage

STORAGE TEMPERATURE: Store away from heat and all ignition sources and open flames in accordance with applicable laws and regulations. **THIS PRODUCT SHOULD NOT BE HEATED OR BURNED USING A DIRECT FLAME DEVICE.**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING: Follow recommended work practices and use recommended personal protective clothing and equipment. See Section 8 of this MSDS.

Section 8: Exposure Control/Personal Protection

EXPOSURE LIMITS

| Components Raw Products | CAS No. | OSHA | | ACGIH | | Unit |
|-------------------------------------|------------|-------------------------|------|---------|------|-------------------|
| | | TWA | STEL | TWA | STEL | |
| Asphalt | 8052-42-4 | NE | NE | 0.5**I | NE | mg/m ³ |
| Limestone† | 1317-65-3 | 15/5** | NE | 10/3*** | NE | mg/m ³ |
| †Contains Crystalline Silica Quartz | 14808-60-7 | See 1910.1000 Table Z.3 | NE | 0.025 | NE | mg/m ³ |



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NE= Not established

Note: Due to the form of the product, hazardous exposures from this product are not expected to occur. Gloves must be worn when handling and adequate ventilation must be provided during roofing related activities.

** Asphalt Fume as benzene-soluble inhalable aerosol (Bitumen)

I = Inhalable Fraction

*** Total Nuisance Dust/Respirable Dust

RESPIRATORY PROTECTION: Normally not needed in well-ventilated areas. If applicable exposure standards are exceeded or can be exceeded, use a NIOSH approved air-purifying respirator. If concentrations are sufficiently high that this respirator is inadequate, or high enough to cause oxygen deficiency, use a positive pressure self-contained breathing apparatus (SCBA). Follow all applicable respirator/SCBA use, fitting, training standards and regulations.

VENTILATION: Use only with adequate ventilation to maintain exposures below applicable exposure limits. Local exhaust ventilation and/or enclosure of the process may be required. All equipment must be explosion proof.

EYE PROTECTION: Chemical safety goggles with side-shields or face shield must be used if eye contact is possible.

SKIN: Chemical resistant gloves, apron, or other protective clothing needed to prevent skin contact. Must wear leather or heat-resistant gloves, long-sleeve cotton shirt, long pants with no cuffs, and non-skid shoes or boots with 6-inch leather uppers during application and/or tear off activities.

Section 9: Physical and Chemical Properties

| | |
|-----------------------------------|----------------------|
| Appearance and Odor: | Asphalt coated film. |
| Odor Threshold | Not Applicable |
| pH: | Not Applicable |
| Boiling Point: | >700 °F |
| Melting Point: | >200 °F |
| Flash Point: | Not Applicable |
| Autoignition Temperature: | > 460°C/860°F |
| Viscosity: | Not Applicable |
| Decomposition Temperature: | Not Applicable |

Upper/Lower Flammability or Explosive Limits:

Vapor Pressure:

Vapor Density (Air = 1):

Specific Gravity/Relative Density:

Solubility (IES):

Initial Boiling Point and Boiling Range:

Evaporation Rate (Butyl Acetate = 1):

Flammability(Solid and Gas):

Partition Coefficient: N-Octanol/Water:

Not Available

Not Available

Not Available

Variable

No Data Available

Not Applicable

<0.1

Not Applicable

Not Applicable

Section 10: Stability and Reactivity

STABILITY: Stable

REACTIVITY: Reactivity will not occur.

CONDITIONS TO AVOID: Keep from heat, sparks, open flame and other sources of ignition. Avoid contact with strong oxidizing agents.

HAZARDOUS REACTION: Polymerization will not occur.

INCOMPATIBILITY (MATERIALS TO AVOID): Strong acids or bases, oxidizing agents and selected amines.

HAZARDOUS COMBUSTION PRODUCTS: Carbon monoxide, carbon dioxide, ozone, hydrogen sulfide, oxides of sulfur and various hydrocarbons. These combustion products are not expected unless product is heated or burned.

Section 11: Toxicological Information

EYE – Can cause eye irritation.

SKIN – Can cause skin irritation.

INHALATION – Dust may cause upper respiratory irritation.

INGESTION – May cause harmful effects if swallowed.



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THE FOLLOWING COMPONENT DATA IS PROVIDED FOR USER INFORMATION:

SILICA

Cancer - This product contains crystalline silica (quartz). IARC has determined that crystalline silica inhaled in the form of quartz from occupational sources is carcinogenic to humans (Group 1). IARC concluded that there was sufficient evidence in humans and animals for the carcinogenicity of inhaled crystalline silica in the form of quartz from occupational sources. The NTP has classified silica as known to be a human carcinogen. The physical nature of this product may help limit any inhalation hazard from crystalline silica during application and in its hardened state. However, physical forces such as sawing, grinding, drilling and other demolition work on this product may liberate crystalline silica dust.

Acute Effects - Exposure to silica dust can cause irritation of the eyes, nose and throat. Exposure to high concentrations can also cause Accelerated Silicosis causing progressive shortness of breath, fever, coughing, and weight loss.

Chronic Effects - In addition to cancer, breathing of silica over a period of time can cause damage to the lung tissue or silicosis after long exposure at low concentrations causing shortness of breath, fever, coughing, and weight loss. Prolonged and repeated exposure to respirable silica- containing dust may cause autoimmune disease, kidney disease, tuberculosis, and nonmalignant respiratory disease, and bronchitis.

ASPHALT

Cancer - This product contains asphalt. The National Institute for Occupational Safety and Health has concluded that the fumes of heated roofing asphalt are a potential occupational carcinogen. Asphalt may also cause irritation of the respiratory tract. The physical nature of this product may help limit any inhalation hazard from asphalt during application in its hardened state. However, physical forces such as sawing, grinding, drilling and other demolition work on this product may liberate dust containing oxidized asphalt. Burning or heating of the product may cause fumes, vapors or mists.

Acute Effects - Inhalation of dust, fumes, vapors, mist may cause nose, throat, and mucous membrane irritation. Eye contact may cause severe irritation, redness, tearing, and blurred vision. If ingested, may cause mouth, throat and gastrointestinal tract irritation and upset with possible nausea, vomiting and diarrhea. See Section 8 for exposure controls.

Chronic Effects - In addition to cancer, prolonged or repeated skin contact may result in dryness and irritation of the skin. Long term skin exposure to asphalt can increase sensitivity to the sun, and may cause discoloration. Oxidized asphalt may also cause irritation of the respiratory tract.

Section 12: Ecological Information

Ecotoxicity – No data available

Persistence and degradability – No data available

Bioaccumulative potential – No data available

Mobility in soil – No data available

Other adverse effects (GHG, Ozone) - No data available

Section 13: Disposal Considerations

This product has not been regulated as a hazardous waste by the USEPA. Dispose in accordance with Federal, State, and Local regulations.



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Section 14: Transport Information

This product is not regulated as a hazardous material for transport under 49 CFR or for vessel transport under the IMDG Code.

DOT PROPER SHIPPING NAME: Not Applicable

DOT HAZARD CLASSIFICATION: Not Applicable

DOT LABELING REQUIREMENTS: Not Applicable

UN/NA NUMBER: Not Applicable

PACKING GROUP: Not Applicable

IMDG CODE: Not Applicable

IMDG SHIPPING NAME: Not Applicable

IMDG HAZARD CLASS: Not Applicable

UN/ID NUMBER: Not Applicable

PACKING GROUP NUMBER: Not Applicable

Section 15: Regulatory Information

TOXIC SUBSTANCES CONTROL ACT (TSCA): Some components in this product are listed on the TSCA Inventory.

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (CERCLA): None

SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 (SARA), TITLE III:

Section 302 Extremely Hazardous Substances: None

Section 311/312 Hazard Categories: Immediate Health; Delayed Health; Fire Hazard

Section 313 Reportable Ingredients: None

California Proposition 65: WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

Section 16: Other Information

| HMIS Rating: | NFPA Rating: |
|------------------|------------------|
| Health - * 1 | Health - 1 |
| Flammability - 1 | Flammability - 1 |
| Reactivity - 0 | Reactivity - 0 |

KEYS: 4=Severe; 3=Serious; 2=Moderate; 1=Slight; 0=Minimal

Preparation Date: **April 2015**

Disclaimer of Liability

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