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Technical Data Guide

MASTER® BUILDERS SOLUTIONS

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**Fluid-Applied Membrane Air Barriers**

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# MasterSeal® AWB 660 I

## Air/water-resistive barrier membrane Class 1 Vapor retarder
## FORMERLY ENERSHIELD® I

**PACKAGING**
MASTERSEAL® AWB 660 I
• 5-gallon pail (18.9 L) pail

**ACCESSORIES**
MasterSeal® AWB 971 FIB:
• 4": 4" x 180 ft (101.5 mm x 54.8 m) roll
• 6": 6" x 180 ft (152.4 mm x 54.8 m) roll
• 9": 9" x 180 ft (228.5 mm x 54.8 m) roll
• 56 MasterSeal® AWB 975 FIB pieces per dispenser box

MasterSeal® AWB 970 NP 4: 4" x 100' (10.2 cm x 30.5 m) rolls - 9 rolls per carton

MasterSeal® AWB 970 NP 6: 6" x 100' (15.24 cm x 30.5 m) rolls - 6 rolls per carton

MasterSeal® AWB 970 NP 9: 9" x 100 (22.9 cm x 30.5 m) rolls - 4 per carton

MasterSeal® AWB 900 20 oz. propak with 20 propaks per carton

**SHELF LIFE**
MasterSeal® AWB 660 I has 2 years shelf life when properly stored

**STORAGE**
Store in unopened containers in clean, dry place protected liquid system components from freezing. Store at no less than 4 °C (40 °F) and below 49 °C (120 °F). Protect from extreme heat and direct sunlight. Do not stack pallets.

**VOC CONTENT**
21 g/l, or 0.17 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24).

**SOLIDS**
74%

**COLOR**
Reddish Brown

**DESCRIPTION**
MasterSeal® AWB 660 I is a one-component fluid-applied air/water-resistive barrier that can also function as a Class I vapor retarder. It is based on Silica Fortified Rubber™ chemistry. This water-resistant, resilient membrane may be spray-, roller-, or brush- applied directly to approved above grade wall substrates. It provides excellent secondary moisture protection behind most wall claddings including brick, siding, metal panels, EIFS and stucco. A slipsheet is required for stucco claddings.

**APPLICATION/APPROVED SUBSTRATE**

For use over the following exterior wall substrates:

Poured concrete/unit masonry, poured concrete/unit masonry treated with MasterSeal® AWB 600 FL , ASTM C1177 type sheathings, including DensGlass™ or DensElementexterior sheathing, eXP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, PermaBase™ cement-board by National Gypsum and other cement-boards (ASTM C1325 Type A Exterior), untreated Exposure I or exterior plywood sheathing (grade C-D or better), untreated Exposure I OSB, gypsum sheathing (ASTM C79/ASTM C1396), Fire resistive sheathing such as MagTec, LP FlameBlock

**Do not use MasterSeal® AWB 660 I for below-grade applications or on surfaces subject to water immersion**

**COVERAGE**

Substrate
**ASTM C1177 Type Sheathing**
290 ft² (27 m²) per pail
**Cement Board**
290 ft² (27 m²) per pail
**Plywood***
265 ft² (24 m²) per pail
**Oriented Strand Board (OSB)***
265 ft² (24 m²) per pail
**Concrete Masonry Units (CMU)***
230 ft² (21 m²) per pail
**Poured Concrete***
290 ft² (27 m²) per pail
**Concrete / Masonry with MasterSeal® AWB 600 FL Block Filler**
290 ft² (27 m²) per pail

Embed Sheathing Fabric
4" Sheathing Fabric: 630 ft (192 m) per pail
6" Sheathing Fabric: 420 ft (128 m) per pail
9" Sheathing Fabric: 280 ft (85 m) per pail

*Roll or spray / backroll for optimum coverage rate. Other application methods may provide less coverage. Actual results may vary depending on surface porosity, roughness, moisture uptake or other factors.

Note:
MasterSeal® AWB 971 FIB saturated with MasterSeal® AWB 660 I, when applied per manufacturer instructions, self gauges to a 30-40 mil thickness.

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**MasterSeal® AWB 660 I complies with the air barrier requirements of the Massachusetts State Energy Code**

| FEATURES | BENEFITS |
|---|---|
| ICC-ESR 3310 evaluation report | Confirms compliance with IBC, IRC, and IECC requirements |
| ABAA evaluated | Approved for projects requiring ABAA specifications and quality assurance |
| <1% of allowable air leakage per ASTM E2357 Air Leakage of Building assemblies test | Easily meets air tightness requirements defined by ASHRAE 189.1, ASHRAE 90.1 and ABAA |
| Meets ASTM D1970 nail sealability requirements with and without sheathing fabric | Self sealing performance |
| One component, low-VOC formulation | Easy to apply, meets VOC requirements in all 50 states |
| Nonflammable as applied | Workplace safety |
| Mineral oil and plasticizer free | Will not dry out or crack due to loss of oil / plasticizer over time |
| Water based | Cleans up with water; solvents and citrus based cleaners not required |
| Tough, abrasion resistant | Rugged membrane resists damage after installation |
| Approved for use with Master Builders Solutions EIFS and stucco systems | Full system warranty, seamless membrane for buildings with multiple claddings |
| 180 day outdoor exposure rating | Flexible construction scheduling |

**TEST DATA**

| PROPERTY | RESULTS | TEST METHOD |
|---|---|---|
| **Air Leakage of Air Barrier Assemblies** | 0.0007 l/s.m$^2$ (0.0001 cfm/ft$^2$) @ 75 Pa (1.57 psf) positive/post conditioning<br>0.0014 l/s.m$^2$ (0.0003 cfm/ft$^2$) @ 75 Pa (1.57 psf) negative/post conditioning | ASTM E 2357 |
| **Air Permeance of Building Materials** | 0049 l/s.m$^2$ @ 75 Pa (0.00098 cfm/ft$^2$ @ 1.57 psf)<br>(.00098 cfm/ft(2) @ 1.57 psf | ASTM E 2178 |
| **Rate of Air Leakage** | 0.0185 l/s·m$^2$ @ 75 Pa (0.0037 cfm/ft$^2$ @ 1.57 psf) | ASTM E 283 |
| **Water Vapor Transmission** | 0.09 Perms (grains/Hr. in Hg. ft$^2$) @ 26 mils wet film thickness<br>0.18 Perms (grains/Hr. in Hg. ft$^2$) @ 10 mils wet film thickness | ASTM E 96 Method A |
| **Pull-Off Strength of Coatings** | Pass - Min. 110 kPa (15.9 psi) or substrate failure (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB,plywood; pvc and galvanized flashing) | ASTM D 4541 |
| **Nail Sealability**<br>(without Sheathing Fabric) | Pass - No water penetration at galvanized roofing nail penetration under 127 mm (5") head of water after 3 days at 4 °C (40 °F) | ASTM D 1970 |
| **Compound Stability**<br>(Elevated Temperature) | No flowing, dripping or drop formation up to 177 °C (350 °F) | ASTM D 5147 Section 15 |
| **Surface Burning** | Class A Flame Spread (<25)<br>Class A Smoke Developed Spread (<450) | ASTM E 84 |
| **Radiant Heat Multi-Story Tests** | Passed using numerous wall assemblies. Engineering analyses available upon request. | NFPA 285 |

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**ICC-ES AC 212: Acceptance Criteria for Water-Resistive Coatings used as Water-Resistive Barriers over Exterior Sheathing**

| PROPERTY | RESULTS | TEST METHOD |
|---|---|---|
| **Sequential Testing** | | |
| 1. Structural | No cracking at joints or interface of flashing | ASTM E 1233 Procedure A |
| 2. Racking | No cracking at joints or interface of flashing | ASTM E 72 |
| 3. Restrained Environmental Conditioning | No cracking at joints or interface of flashing | ICC-ES AC 212 |
| 4. Water Penetration | No water penetration after 90 min @ 299 Pa (6.24 psf) Tested over OSB and gypsum sheathing | ASTM E 331 |
| **Sequential Testing - Weathering** | | |
| 1. UV Light Exposure | No cracking or bond failure to substrate | ICC-ES AC 212 |
| 2. Accelerated Aging | No cracking or bond failure to substrate | ICC-ES AC 212 |
| 3. Hydrostatic Pressure | No water penetration at 55 cm (21.7") water column for 5 hours | AATCC 127-1985 |
| **Freeze-Thaw** | No sign of deleterious effects after 10 cycles (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood) | ASTM E 2485 (Method B) |
| **Water Resistance** | No sign of deleterious effects after 14 day exposure (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood) | ASTM D 2247 |
| **Tensile Bond** | >103 kPa (15 psi) Tested over exterior gypsum sheathing, ASTM C1177 glassmat sheathing, cement board, OSB, plywood, CMU; pvc and galvanized flashing | ASTM C 297 |
| **Tensile Bond** (before & after freeze-thaw) | >103 kPa (15 psi) avg; no failure of the lamina after 10 cycles freeze-thaw (Tested over various substrates) | ASTM C 297 |

**ICC-ES AC 148: Acceptance Criteria for Flexible Flashing Materials**

| PROPERTY | RESULTS | TEST METHOD |
|---|---|---|
| **Sequential Testing – Weathering** | | |
| 1. UV Light Exposure | No cracking or bond failure to substrate | ICC-ES AC 148 |
| 2. Accelerated Aging | No cracking or bond failure to substrate | ICC-ES AC 148 |
| 3. Hydrostatic Pressure Test | No water penetration at 55 cm (21.7") water column for 5 hours | AATCC 127-1985 |
| **Peal Adhesion** | Tested over ASTM C1177 glass-mat sheathing, OSB, plywood, pvc and uncoated aluminum | ASTM D 3330 Method F |
| After UV Exposure | Pass | ASTM D 3330 Method F |
| After Accelerated Aging | Pass | ASTM D 3330 Method F |
| After Elevated Temperature Exposure | Pass | ASTM D 3330 Method F |
| After Water Immersion | Pass | ASTM D 3330 Method F |
| **Nail Sealability after Thermal Cycling** | Pass | ASTM D 1970 (Modified), AAMA 711 |
| **Tensile Strength after UV Exposure** | All samples meet the minimum requirement of 3.5N/mm (20 lbs/in) | ASTM D 5034, AAMA 711 |
| **Cold Temperature Pliability** | No cracking after bending around a 25 mm (1") mandrel after 2 hour exposure to -18 °C (0 °F) | ASTM D 1970, AAMA 711 |
| **Resistance to Peeling** | No signs of distress or failure after 24 hours of exposure at room temperature, 50 °C (122 °F), 65 °C (149 °F), 80 °C (176 °F) | AAMA 711 |

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**MIXING**

1. Use directly from original packaging or prepare in a container that is clean and free of foreign substances. Do not use a container which has contained or been cleaned with a petroleum-based product.
2. Mix MasterSeal® AWB 660 I with a clean, rust-free paddle and drill until thoroughly blended. Dilution of MasterSeal® AWB 660 I is not recommended.
3. Additives are not permitted.
4. Close container when not in use.
5. Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

**PRODUCT CONSIDERATIONS AND JOB CONDITIONS**

- Cold temperature application less than 40 °F (4 °C) down to 25 °F (-4 °C): expect extended dry time. Final air/water-resistive properties and film durability rely on temperatures rising above freezing (32 °F/0 °C)
- Do not apply MasterSeal® AWB 660 I in ambient temperatures below 25 °F (-4 °C) or onto substrates below 25 °F (-4 °C).
- Walls shall be capped to prevent moisture and precipitation from entering wall during construction.
- Treat expansion joints with MasterSeal AWB 970 NP flashing membrane, provide sufficient slack in MasterSeal AWB 970 NP at joint to allow for movement.

**SURFACE PREPARATION**

Substrate shall be dry, clean, sound and free of release agents, paint or other residue or coatings. Verify substrate is flat, free of fins or planar irregularities greater than 6.4 mm in 3 m (1/4" in 10'). Unsatisfactory conditions shall be reported to the general contractor and corrected before application of apply MasterSeal® AWB 660 I.

**EQUIPMENT**

Use a 20 mm (3/4") nap roller or paint brush. If spraying, refer to Spray Application of apply MasterSeal® AWB 660 / MasterSeal® AWB 660 I/ MasterSeal® AWB 665/ MasterSeal® AWB 600 FL technical bulletin for spray application equipment and application instructions.

Note: If using roller application, it is necessary to pre-wet the synthetic roller pad with water and spin out the excess water. The pre-wetting only needs to be done once at the start of application.

**PROCEDURE**

1. Substrate shall be of a type acceptable by Master Builders Solutions and shall be installed per substrate manufacturer's instructions and local code requirements.
2. Apply MasterSeal® AWB 660 I and/or MasterSeal® AWB 900 Liquid Flashing Membrane to fasteners, sheathing joints, and rough openings as outlined in *MasterSeal® AWB Application Guidelines for Joint Treatment and Flashing Rough Openings on Framed Construction* technical bulletin or *MasterSeal® AWB Application Guidelines for Flashing Rough Openings on Concrete and Masonry Construction* technical bulletin.
3. **A.** Immediately place and center MasterSeal® AWB 971 FIB over wet MasterSeal® AWB 660 I at knot holes and check cracks that may exist in plywood or OSB. Completely saturate MasterSeal AWB 971 FIB with MasterSeal® AWB 660 I .
   **B.** If using roller, brush, or trowel application, allow to dry to the touch before applying MasterSeal® AWB 660 I to entire wall surface. If spraying, "wet on wet" application is acceptable.
4. Refer to *Spray Application of MasterSeal® AWB 660 /MasterSeal® AWB 660 I/ MasterSeal® AWB 665/ MasterSeal® AWB 600 FL* technical bulletin for spray application equipment and application instructions
5. **A.** Apply MasterSeal® AWB 660 I to DensGlass™ exterior sheathing, eXP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, PermaBase™ cement-board by National Gypsum and other cement-boards (ASTM C1325 Type A Exterior), gypsum sheathing (ASTM C79/ASTM C1396) plywood, OSB, concrete or CMU substrate(s) with a 20 mm (¾") nap roller or spray to a consistent, minimum 13 wet mil thickness. Prior to application of the second coat, visually inspect to assure that the surface is blister free and coating is free of voids and pinholes. Repair if needed and then apply a second coat after the initial coating is sufficiently dry. A minimum of two (2) 13 mil wet coats of MasterSeal® AWB 660 I is required. MasterSeal® AWB 660 I may be sprayed onto ASTM C1177 sheathing to a 26-mil thickness in one wet application. Note: Refer technical bulletin for spray application equipment and application instructions .
   **B.** One application of MasterSeal® AWB 660 I at a minimum of 26-mil wet film thickness on concrete/masonry substrates that have been treated with a fully cured coat of MasterSeal® AWB 600 FL. For concrete/masonry substrates that have not been treated with MasterSeal® AWB 600 FL, two (2) minimum 13-mil applications of MasterSeal® AWB 660 I are required. Note: Lightweight CMU or other CMU with high porosity may require additional MasterSeal® AWB 660 I to produce an acceptable result.
   **C.** Visually inspect the MasterSeal® AWB 660 I for voids, pinholes, surface deficiencies, etc. Repair deficiencies and areas that are not intact. Apply additional MasterSeal® AWB 660 I as necessary such that MasterSeal® AWB 660 I is free of voids, pinholes, etc. All sheathing joints, terminations, inside and outside corners must be reinforced with 4" or 9" MasterSeal® AWB 971 FIB or MasterSeal® AWB 970 NP 4, 6 or 9.

**DRYING TIME**

40 °F (4 °C) and rising: allow to dry completely, typically 2-10 hours before proceeding with cladding installation.
40 °F (4 °C) down to 25 °F (-4 °C): when applied at a 10-mil wet film thickness, typically dry in approximately 12 hours at 32 °F (0 °C) and 50% relative humidity (RH). When applied at a 20-mil thickness (single pass spray), typically dry in approximately 18 hours at 32 °F (0 °C) and 50% (RH). Allow to dry completely prior to proceeding with cladding installation.

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**Note:** Actual drying time will vary depending on ambient and substrate temperature, humidity and the ability of the substrate to absorb water. Final air/water-resistive properties and film durability rely on temperatures rising above freezing (32 °F/0 °C).

## TECHNICAL SUPPORT

Consult the Master Builders Solutions Construction Systems Technical Services Department for specific recommendations concerning all other applications. Consult the Master Builders website, www.master-builders-solutions.com/en-us, for additional information about products and systems and for updated literature.

## HEALTH AND SAFETY

Follow good safety and industrial hygiene practices during handling and installing products and systems. Take necessary precautions and wear the appropriate personal protective equipment as needed. Read Safety Data Sheet (SDS) and related literature on this product before specification and/or installation.

### Solids

74% solids

### VOC Content

21 g/l, or 0.17 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24)

## LIMITED WARRANTY NOTICE

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