

PROTECTING AMERICA'S BRIDGES



Premium Building Products
That Protect®

M-400A AND M-400A(R)

Cold Applied Bridge Deck Waterproofing Membranes

PROTECTO WRAP BRIDGE DECK WATERPROOFING SYSTEMS

Since 1952, Protecto Wrap Company has been known for its excellence in research, development and manufacturing of high quality waterproofing membranes. Our products meet or exceed waterproofing properties of sheet membranes or liquid coatings for almost any job specifications and we offer you the benefits of our experience and field service to back the quality of our products.

PRODUCT DESCRIPTION

M-400A and M-400A(R)

Protecto Wrap's M-400A and M-400A(R) waterproofing membranes are cold applied, self-adhering sheet membranes to be used on bridge deck or parking structures with an asphaltic concrete wearing course. The membranes will prevent penetration of water, salts, acids and alkalis thereby protecting the structure from damage by these elements.

Protecto Wrap's M-400A and M-400A(R) waterproofing membranes are manufactured from a formulation of premium bituminous resins modified with synthetic resins. This rubberized asphalt is then reinforced with an inert reinforcement to withstand puncture and severe stress. The preformed membrane provides effective waterproofing, high mechanical strength and puncture resistance, along with excellent chemical resistance and physical properties over the wide temperature conditions to which the material is exposed in the field. The M400A membrane is tacky on both sides to provide good bonding characteristics to the primed surface, to itself on overlap areas and to the asphalt overlay. M-400A and M-400A(R) membranes are provided in rolls inter-wound with a release film to prevent self-adhesion to the material in the roll. There is no paper backing to remove. Installation errors can be corrected during application, an advantage not found in adhesive applied or liquid waterproofing membranes.

A unique "Zip Strip" along the edge of the roll provides a built-in overlap seam guide and provides a self adhering overlap, eliminating the need for a joint seal tape or compound process. The membranes only require a 7-day curing of concrete and can be immediately overlaid. All of our membranes can be applied over a wide temperature range and are highly resistant to punctures, petroleum distillants, hydrocarbons and other contaminants.

Protecto Wrap membranes resist mildew and rot.

The membranes are frequently used for application to concrete, steel, asphalt and other surfaces for use as a membrane beneath an asphaltic concrete overlay. Asphaltic concrete can be applied directly against the membrane for a positive bond immediately after the protective polyethylene film has been removed.

The membranes are not intended as a wearing surface and must be covered after application.

With our high quality control you are guaranteed a uniformly thick membrane.

PRODUCT SELECTION

- M-400A is a 70 mil, nominal internally reinforced sheet waterproofing membrane for use on bridge deck structures.
- M-400A(R) is a 70 mil, nominal internally reinforced sheet waterproofing membrane with a built in white reflective topping. M-400A(R) is specially designed for hot weather bridge deck applications and where heavy equipment will be driven on the deck immediately after membrane installation.
- 80/1170 Primer VOC asphalt primer acts as a bonding agent to provide a bond between the membrane and the primed surface.
- 100 VOC Primer is a VOC compliant version of our standard 80/1170 Primer VOC.
- No. JS160H Mastic is formulated from a blend of bituminous resins and inert fillers. JS160H mastic is used to seal membrane terminations and detail cuts around drains and weep holes. **NOTE: If the membranes are to be applied to a surface where a curing compound, form release, or concrete additive have been used please contact Protecto Wrap Company for recommendations.**

NOTE: For low VOC requirements, use Protecto Universal Water Based Primer.

MEMBRANE APPLICATION BRIDGE DECKS & PARKING DECKS SURFACE PREPARATION

Concrete surfaces shall have a minimum cure time of (7) seven days and shall be clean and dry. All patching must be cured, but may not require seven days of curing. Remove all forms as soon as possible so as to allow as even a cure as possible. All surfaces shall have a smooth steel troweled float finish and shall be clean, free of sharp protrusions, loose aggregate, dust, voids or spalled areas. Repair all areas

as needed before applying 80 primer. Broom finishes shall not be used. All exposed metal surfaces are to be clean and free of paint, oils, rust or any other contaminants.

PRIMING

Minimum surface temperature at the time of application shall be 40°F and rising. Cold weather primer is available for applications below 40°F. Consult Protecto Wrap Company for cold weather application recommendations.

Prior to priming, the surface shall be cleaned by brooming, vacuuming or high pressure clean dry air so that all dust, loose concrete, etc. are removed.

Apply primer to all surfaces by roller, spray or brush using 225-275 square feet per gallon depending on the porosity of the surface. Primed surfaces shall be free of runs, puddles or excessive primer as this could cause blistering. Priming is important; be certain the entire surface to be waterproofed is primed. Prime only as much surface as can be covered with the membrane in one working day. Primed areas not covered must be reprimed. If an area must be reprimed do not remove existing primer, but be certain area is clean and dry, free from dust and dirt. Reprime and again allow primed area to become tack free prior to applying membrane. When tack free state has been reached, test the primer by the "Rule of Thumb" method. Press thumb firmly on the primed surface and twist. If primer feels pliable but does not adhere to thumb, the primed surface is ready for the membrane. Average tack free time is 20 to 45 minutes. This time frame may vary depending upon ambient temperature. **DO NOT COVER WET PRIMER WITH MEMBRANE.**

Thinning of the primer is not recommended. The opened containers, when not in use, should have the lids replaced so as to lessen the evaporation of the solvents. **Protecto Wrap Company primers and mastics are specially formulated for use with Protecto Wrap Company's systems, substitutes are specifically not recommended.**



Release film removes easily after positioning membrane on overlap.



Silicone coated release film on the bottom allows the membrane to be easily positioned on the deck.

REPAIRS

Make careful inspection of the applied membrane surface before overlaying to make certain the membrane is free of large blisters, covered rocks, fishmouths or any damaged areas and repair as needed. Special care and inspection should be taken when heavy equipment has been allowed on the deck.

Note: Some blisters or wrinkles will occur from the natural outgassing vapor of the deck. The asphalt overlay will lay the blisters flat. If a blister is large and needs to be punctured, use an ice pick at a 45 degree angle to the deck, puncture and release vapor pressure. After the blister is released, press the puncture down with your thumb. M-400A and M-400A(R) will self seal once the asphalt overlay has been placed. If membrane is cut or damaged or requires repairing, clean the area and lightly reprime with 80/1170 VOC or 100 VOC Primer at least 6" beyond the area of damage. Cut the membrane so as to cover the area reprimed, press on the patch and roll firmly.

EQUIPMENT CHECKLIST

80/1170 Primer VOC, 100 VOC Primer, M-400A Membrane, M-400A(R) Membrane and JS160H Mastic:

- Molasses valve for 55 gallon drums of primer
- 5 gallon pails for primer (not required if ordered in 5 gallon containers)
- Rags
- Gloves
- Paint brushes – 2" stiff bristled or 2" small trowel for mastic applications
- Heavy duty knives
- Paint rollers (18" -24" optimum) heavy duty with long handles
- Push brooms (24")
- Keel, chalk lines, measuring tape
- Small, hard hand roller for curbs
- Larger roller for deck surface
- Hand cleanser for cleanup

SHELF LIFE

M-400A and M-400A(R) maintains optimum initial adhesion to substrates when used within one year from the date of manufacture when properly stored.

ESTIMATING INFORMATION

1. 30" Membrane: Use a 10% overlap and normal waste factor when calculating coverage of 30" membrane.
2. 60" Membrane: Use a 7% overlap and normal waste factor when calculating coverage of 60" membrane.
3. Horizontal Primer 80/1170 Primer VOC or 100 VOC: Coverage = 225 to 275 square feet per gallon (depending upon porosity of the substrate).
4. No. 160H Mastic: Coverage = 200 lineal feet per gallon. Based on a 2" 60 mil wet film troweled bead.

STORAGE

M-400A and M-400A(R) should be stored in the original, unopened container at ambient temperatures between 40-90°F (5-32°C). Storage area should remain dry and out of direct sunlight. Do not remove materials from original containers until ready for use. Do not double stack pallets. Do not store rolls on end.

CLEAN UP

Dispose of waste in accordance to local requirements. Control worksite so that boxes and release liner do not present a hazard.

**CLEAN, DRY AND SMOOTH
TROWELED CONCRETE IDEAL FOR
MEMBRANE INSTALLATION**



**PRIMER IS APPLIED TO ALL
SURFACES PRIOR TO MEMBRANE
APPLICATION**



**DETAIL OF PERIMETER TERMINATION
- LEADING EDGE TERMINATED WITH
JS160H MASTIC SEALANT**





M-400A(R) ROLL IS ALIGNED WITH PERIMETER AND INSTALLATION BEGINS



MEMBRANE IS BROOMED AND ROLLED IN PLACE



COMPLETED DECK WITH M-400A(R) MEMBRANE READY FOR IMMEDIATE OVERLAY APPLICATION

MEMBRANE APPLICATION - BRIDGE DECKS & PARKING DECKS

PRODUCT DESCRIPTION

Apply M-400A membrane from the low point to the high point across the fall lines so that the laps shed water on horizontal surfaces.

The area along each curb should be applied first. There are two accepted curb terminations for the M-400A membrane. First, if the membrane is to be placed on the curb face, roll firmly to ensure complete adhesion to the surface. Place a troweled bead of JS160H mastic on the membrane termination on the curb face. Mastic should run 1" onto the membrane and 1" up the curb face with an approximate 60 mil wet film thickness. The second method is to heat the membrane at the curb where it terminates with a hot air gun or light flame from a torch while smoothing and conforming the membrane to the curb with a trowel. Heat membrane until surface becomes glossy and conforms to curb. Do not burn reinforcement. Proceed by pulling the "Zip Strip" overlap guide and lay the succeeding layers of membrane tack side down on the primed surface.

Slightly pull membrane taut while smoothing with a broom or roller as it comes into contact with the primed deck. Lay membrane as flat as possible to avoid wrinkles, entrapped air and fishmouths. Apply each succeeding sheet in the same manner, overlapping the side laps a minimum of 2". End laps shall be no less than 4". Pressure rolling of the overlaps and the entire surface is essential to the development of a complete and permanent waterproofing system. Remove release film and broadcast a light dust of mortar or talc to the top of the membrane the same day of application to improve the walk-ability of the membrane's surface.

Areas around conduits, drains and other protrusions shall be terminated with JS160H mastic after application of the membrane. JS160H mastic shall be applied to the membrane at all terminations.

At the end of each working day, or when application is interrupted by change in construction scheduling, all edges of the membrane at terminations should have a troweled bead of JS160H mastic applied. **Note: JS160H mastic is for terminations only. Do not use mastic as a cant strip or cover mastic with membrane.**

M-400A(R) MEMBRANE APPLICATIONS

M-400A(R) membrane is installed by rolling or kicking the material out with the white side up and the release film facing down on the primed deck.

Position the roll into the desired location by sliding the membrane over the deck, then pull material tight from each end. Once positioned onto the overlap of the succeeding roll, lift one end of the film membrane and strip the entire width of release out to one side. Replace the end of the membrane onto the primed deck and smooth into place. Proceed by pulling the release film out to the side of the membrane while someone else brooms the sheet flat. The brooming should be right behind the person pulling off the release film to ensure a smooth finished application as well as to minimize entrapping air. The built-in white reflective topping allows the overlay equipment or other heavy equipment to drive on the deck immediately after the membrane application and is recommended for hot weather installations.

PROTECTO WRAP MEMBRANE ADVANTAGES

- 70 mil
- Over 50 years of proven field application
- The only 5' wide membranes available which reduce overlap waste and seams
- Meets ASTM D 6153-15 Type III standard specifications for materials for bridge deck waterproofing membrane systems

For special application of the membranes, please contact your supplier or Protecto Wrap Company.

OVERLAYING

When covering the membrane with asphaltic concrete mix, maximum aggregate size for both membranes should not exceed 3/8". **Asphaltic application temperature should range between 300°F minimum* and 315°F maximum at the time of application to the membrane.**

**At the deck.*



M-400A(R) rolls provide unique salvage edge (black SBS adhesive top) ensuring all roll laps are mastic to mastic cohesive bond for fully monolithic deck result.

PRODUCT TECHNICAL DATA

MEMBRANE PROPERTIES

| | M-400A | M-400A(R) | Test Method |
|---|---------------|---------------------------------|----------------------|
| Thickness (nominal) | 70 mil | 70 mil | ASTM D 1000 & D 3767 |
| Tensile | 2400 | 104 lbf/in MD ; 124 lbf/in CMD | ASTM D 882-B |
| Grab Tensile Strength (Fabric) | N/A | MD-347 lbf/in CMD-382 lbf/in | ASTM D 4632 |
| Elongation at Break | 500% min | 133% MD ; 167% CMD | ASTM D 882-B |
| Permeance – Perms | 0.002 | 0.04 Perms | ASTM E 96-B |
| Puncture Resistance (lbs) | 225 Avg | 258 lbf (1,150N) | ASTM E 154 |
| Pliability (180° bend over ¼" mandrel at -15°F) | Passes | Passes | ASTM D 146 |
| Pliability (180° bend over ¼" mandrel at -25°F) | N/A | Passes | ASTM D 146 |
| Softening Point | 228°F (109°C) | 228°F (109°C) | ASTM D 36 |
| Standard Specification for Materials for Bridge Deck Waterproofing Membrane Systems | N/A | Type III Compliant | ASTM D 6153-15 |
| Peel Strength | N/A | 15.2 lbf/in | ASTM D 903 |

PRODUCT PACKAGING

| | | | M-400A | M-400A(R) |
|------------------|---------------------|---------------------|---------|-----------|
| <u>Roll Size</u> | <u>Rolls/Carton</u> | <u>Sq. Ft./Roll</u> | | |
| 12" x 50' | 5 | 50 | 23 lbs | |
| 30" x 50' | 1 | 125 | 58 lbs | 58 lbs |
| 60" x 50' | 1 | 250 | 115 lbs | 115 lbs |

* Other widths available, subject to special pricing

PRIMER & MASTIC PROPERTIES

| | 80/1170 Primer VOC (a) | 100 VOC Primer | JS160H Mastic | Test Method |
|--|------------------------|----------------|------------------|-------------|
| Adhesion to Steel | Excellent | Excellent | Excellent | |
| Adhesion to Concrete | Excellent | Excellent | Excellent | |
| Adhesion to Membrane | Excellent | Excellent | Excellent | |
| Shelf Life (minimum) | One Year | One Year | One Year | |
| Tack Free Time (minutes) | 15-45 minutes | 15-45 minutes | 30 minutes (min) | |
| Specific Gravity | 1.015 | 0.944 | 1.488 | ASTM D 70 |
| % Solids (by weight) | 47 | 55 | 85 | Calculated |
| Flash Point | 71°F TCC | 79°F TCC | 54°F TCC | ASTM D 56 |
| (a) Meets ASTM D41 Type I requirements | | | | |

PACKAGING & WEIGHT

| | 80/1170 Primer VOC | 100 VOC Primer | JS160H Mastic |
|----------------------------|--------------------|----------------|---------------|
| Tubes | - | - | 41 lbs |
| 1 U.S. Gallon Can 4/Carton | 38 lbs | 38 lbs | 48 lbs |
| 5 U.S. Gallon/Pail | 46 lbs | 46 lbs | 60 lbs |
| 55 U.S. Gallon/Drum | 485 lbs | 485 lbs | - |

*The information provided herein is based on our best knowledge, but Protecto Wrap Company does not warrant the results to be obtained, or intend anything herein as a recommendation for any use which would infringe any patent or copyright. All specifications are subject to change and all sales of Jiffy Seal Waterproofing Systems materials are subject to Protecto Wrap Company's conditions of sale, INCLUDING THOSE LIMITED WARRANTIES.

PRODUCT WARRANTY PROVISION

Protecto Wrap Company expressly warrants, subject to the Exclusion Of Warranties provision set forth below, that its products shall be fit for the ordinary purposes for which such products are intended for a period of ten (10) years. **NO OTHER EXPRESS WARRANTIES AND NO IMPLIED WARRANTIES** including implied warranties of MERCHANT ABILITY and/or fitness for a particular purpose shall be applicable to any product(s) of Protecto Wrap Company, except to the extent that any of such products are specifically covered by an expressed warranty that is provided in writing to a particular purchaser by an authorized employee of Protecto Wrap Company.

In the event of breach of any product warranty extended by Protecto Wrap Company, Protecto Wrap Company's liability and the associated claimant's sole and **EXCLUSIVE REMEDY** is **EXPRESSLY LIMITED** to the repair or replacement of the defective product(s) FOB Denver on a pro rata basis according to the original sale price, so that the claimant will effectively be charged only for that portion of the normal useful life of the defective product(s) which has elapsed since the purchase date of the product(s). Under no circumstances shall Protecto Wrap Company be liable for any consequential damages, including any labor costs, that may be associated with a breach of any product warranty extended by Protecto Wrap Company.

EXCLUSION OF WARRANTIES

Protecto Wrap Company assumes no warranty regarding the installation of its products. In addition, if Protecto Wrap Company's products are not properly installed, then no product warranties, expressed or implied shall apply to the products that have been improperly installed.



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