

I. General

1.01 Description of the Spray Max 420 Totally Adhered System

The Spray Max 420 Totally Adhered System is a non-penetrating single ply EPDM roofing system. The EPDM is totally adhered to the insulation board by means of International Spray Max 420 Adhesive.

The EPDM membrane for this system is available in .045" or .060" sheets.

1.01-1

The Spray Max 420 Totally Adhered System must be installed in strict accordance with specifications approved by International Diamond Systems, Toledo, Ohio

1.01-2

The Spray Max 420 Totally Adhered System must be installed using recognized safety procedures and standards for the products used. Material Safety Data Sheets will be provided as prescribed by law.

1.02 Submittals

1.02-1

A dimensional drawing of the overall roof showing penetrations, drains, perimeter details, etc. must be furnished to IDS. Flashing details as used must be done according to approved details in this manual.

1.02-2

No deviation shall be made from IDS specifications or the approved roof drawings without prior written permission of IDS.

1.02-3

When field conditions require changes, Qualified Contractors are to supply IDS with as-built construction drawings.

1.03 Material Storage and Handling

1.03-1

Keep all materials stored in their original unopened containers.

1.03-2

Keep all containers of adhesives, cleaners, and primers in areas away from sparks, open flames and excessive heat. Always use proper protective equipment when handling hazardous materials.

1.03-3

Store all materials between 60 and 80 degrees F. Start work with adhesives, sealants and tape products at temperatures between 60 and 80 degrees F.

1.03-4

Store all adhesives, sealants and tape products in a dry area protected from water and direct sunlight. Damaged material will be replaced at the contractors expense.

1.04 Site Conditions

1.04-1

Do not use bitumen base, coal tar base, oil base or plastic roof cements.

1.04-2

Do not install directly onto low melting point asphalt.

1.04-3

Do not allow waste products (petroleum, grease, oil, solvents, animal fat, etc.) or direct steam to come in contact with the IDS System. Present any exposures not typical for normal installation to IDS for assessment of impact to the roof systems total performance.

1.04-4

Do not install EPS roof insulation directly onto coal-tar roof surface.

1.04-5

Protect all material and components from direct contact with steam or heat sources in excess of 180 degrees F.

1.04-6

Splicing and Spray Max 420 surfaces must be clean and dry.

1.04-7

Adhesives, sealants and primers and their fumes contain petroleum distillates and therefore are *Extremely Flammable*. Do not breathe vapors for extended periods. Avoid use near fire or other heat sources. Do not place open

containers near fresh-air intake ventilators. Consult container labels and Material Safety Data Sheets for specific information.

1.04-8

Roof surface must be free of ponded water, ice and snow prior to application. The roof surface should be designed to be water-free within 48 hours after precipitation.

1.04-9

Do not apply IDS roof systems in inclement weather. High humidity at lower temperatures may cause moisture to condense and freeze. Do not apply systems when these conditions exist.

1.04-10

The minimum roof slope will be determined by the building owner or his designee. IDS recommends a minimum roof slope of 1/8 inch per horizontal foot.

1.05 Quality Assurance

1.05-1

IDS roofing materials must be applied by an approved applicator. It is the building owner's responsibility to select a qualified, approved contractor. International reserves the right to refuse approval.

1.05-2

As IDS reserves the right to revoke approval without notice, it is the building owner's responsibility to verify his qualified roofer's status.

1.05-3

If a warranty is requested, the approved applicator must certify that all IDS products have been installed according to applicable specifications and details. After certification, an IDS technical representative will visually inspect the roofing system and materials. This inspection is not certification that all conditions on the roof and all elements of the roofing system are in conformance with IDS specifications. IDS is not responsible for the products of others or conditions not discoverable by visual inspection.

1.05-4

It is the building owner's responsibility to have sufficient knowledge to interpret all specifications in this manual.

1.05-5

These specifications are in lieu of all other specifications, written or implied.

1.05-6

Building codes are above and beyond the intended purpose of these specifications. IDS cannot be responsible for adherence to local building codes. It is the responsibility of the building owner or his designee to notify IDS of local requirements.

1.06 Warranty

1.06-1

A membrane systems warranty is available for commercial and industrial buildings within the United States and Canada and applies only to the products supplied by IDS.

1.06-2

Installation subjected to conditions not typical are not warrantable.

1.06-3

IDS is not responsible for the cleanliness or the discoloration of the roofing membrane caused by conditions including, but not limited to, dirt, pollutants or biological agents. IDS is not responsible for acts of God or vandalism, etc.

1.06-4

IDS assumes no liability for internal moisture. Changes or repairs made to the roofing system without prior written authorization from IDS will void the warranty.

1.06-5

To obtain the IDS warranty, fill out the Request for Warranty form certifying the roof has been installed according to IDS specifications and that the building owner or his designee have approved all specifications.

1.06-6

The roofing contractor is responsible for workmanship for a period of two (2) years from the issue date of the warranty.

1.06-7

For more detailed information, please refer to the warranty section of this manual.

II. Products

2.01 Product Statement

2.01-1

All components of the Spray Max 420 Totally Adhered roofing system are to be products of IDS or accepted and approved, in writing, by IDS.

2.01-2

Products by other manufacturers are not covered by the IDS warranty. See Full System Warranty for exception.

2.02 Membrane

2.02-1

IDS EPDM, .045 or .060 inches thick is available in widths of 5, 7, 10, 20, 30, 40, and 50 feet and in lengths of 50 or 100 feet.

2.03 Insulation

2.03-1

A minimum of ½" of approved insulation board must be placed over the existing substrate. Insulation that is placed directly onto metal deck must be of proper density and thickness to support normal traffic and meet building and fire codes.

2.03-2

Install only as much insulation as can be covered and completed before the end of the day or before inclement weather.

2.03-3

Stagger insulation joints when installing multiple layers.

2.03-4

Contact IDS for specific insulation restrictions.

2.04 Fasteners

2.04-1

On-site tests should be performed by an independent laboratory to determine the actual pullout values of possible fasteners.

2.04-2

Refer to section 3.02 and section 7 of this manual for specific fastener information.

Note: Only domestic steel fasteners are approved for use with IDS roofing systems. All fasteners must be tested and approved by Factory Mutual prior to approval for use by IDS. Contact IDS for complete list of approved fasteners.

2.05 Attachment Plates

2.05-1

Insulation plates and fasteners must be tested by Factory Mutual and accepted by IDS prior to project bid and installation.

III. Execution

3.01 Inspection and Preparation for New Construction

3.01-1

It is the building owner or his designee's responsibility to provide adequate decking for the application of the IDS roofing system.

3.01-2

The roofing contractor shall confirm the structural integrity of the existing deck and specify replacement or repair as required.

3.01-3

Fluted metal decks require an overlayment rigid enough to withstand the traffic to which the roof may be subjected.

3.01-4

New membrane substrate must be clean, dry, smooth, free of sharp edges, loose or foreign materials. Gaps greater than ¼ inch must be filled with appropriate material.

3.01-5

Wood nailers shall be pressure treated #2 lumber or better. Wood nailers treated with asphalt or creosote are not acceptable.

3.02 Roof Deck Criteria

3.02-1

The roofing contractor shall confirm the structural integrity of the roof deck and replace or repair as required.

3.02-2

22 Gauge metal

Due to the fluted design of most metal decks, a specific effort is required to insure $\frac{3}{4}$ inch deck penetration by all fasteners. Pre-bid investigation of deck alignment, physical conditions and rib depth is recommended. Pullout resistance of minimum 360 pounds is required.

3.02-3

Structural concrete

Rated at 3000 psi or greater, into which at least 1 inch penetration is possible. Fasteners must penetrate the deck a minimum of 1 inch and a maximum of 1 $\frac{1}{2}$ inches. Structural concrete requires the drilling of pilot holes.

Due to wide variations in "structural concrete", only on-site trial of drill bits and fasteners can determine compatibility. Pull-out resistance of 800 pounds minimum is required.

3.02-4

Cement-Wood Fiber and Gypsum

Use IDSs' Liquid Auger Seal Screw. Pull-out resistance of 360 pound minimum required.

3.03 Execution (Retrofit)

3.03-1

All wet insulation and substrate must be removed. Depressions or holes must be filled with an appropriate material.

3.03-2

Sprayed in-place urethane foam is not an approved substrate for IDS systems.

3.03-3

When re-roofing over single-ply membranes:

A. Cut and ventilate the existing membrane to avoid moisture build up.

B. Substrate must be dry, clean, smooth, free of sharp edges, loose and foreign material.

C. A minimum $\frac{1}{2}$ inch recovery board or approved insulation is required.

3.03-4

IDS recommends consulting the S.P.R.I.'s most recently published guidelines for retrofitting existing roof systems.

3.03-5

When re-roofing over existing BUR:

A. A minimum $\frac{1}{2}$ inch approved insulation is required.

B. IDS requires all gravel surfaces be vacuumed or power broomed for removal from the substrate. This will eliminate the excess weight and avoid vertical instability of the recovery board or insulation, which could result in the attachment screw penetrating the membrane.

C. Before final application of the system the substrate must be dry, clean, smooth, free of sharp edges, loose and foreign material.

3.04 Tear – Off

3.04-1

The roofing contractor must confirm the structural integrity of the roof deck and repair or replace as required.

3.04-2

It is the building owner or his designees responsibility to provide adequate decking for the application of IDS systems.

3.04-3

Fluted metal decks require an overlayment rigid enough to withstand the traffic to which the roof may be subjected.

3.04-4

Tear off all existing material. The substrate must be dry, clean, smooth, free of sharp edges, loose and foreign material. Gaps greater than $\frac{1}{4}$ " must be filled with appropriate material.

3.04-5

All decks must meet or exceed Factory Mutual pull-out test requirements.

3.05 Installation of the Spray Max 420 Totally Adhered System

3.05-1 Insulation Attachment

The Spray Max 420 Totally Adhered System is a roofing system where the EPDM membrane is solidly glued to the insulation board.

A. Install Factory Mutual approved insulation board. Insulation must be fastened with insulation fasteners every 2 square feet. Insulation must then be swept thoroughly so no gravel or debris is left on the insulation which could come in contact with the bonding adhesive and the EPDM.

B. Position the membrane and allow to relax for a minimum of thirty minutes.

C. Fold the membrane back into itself exposing the underside. Sweep the membrane with a stiff push broom to remove any contaminants.

D. **Open Spray Max and mix in pail for a minimum of 2 minutes utilizing the mixing attachment installed on a drill. Make sure to mix from the bottom of the can (failure to properly mix may result in bubbles under the membrane).**

E. Insert Spray Max pail into spraying unit. Clip or bend handle down on unit to insure proper lid seal. Tighten down wing nuts with wrench diagonally to prevent air leakage on unit. Attach air line to unit and the other end to the filter. Attach 25' compressor hose into filter then to compressor.

F. Recommend compressor specifications: Gas compressor preferred with minimum 12 CFM rating. Open main compressor to 120-150 PSI. Control recommended pressure on Spray max unit. Periodically drain moisture from compressor unit. Spray Max unit red lever air gauge and red lever fluid gauge shall be set in middle position.

G. Install self draining filter in upright position a minimum of 25' from compressor unit. The arrow on filter shall be pointing away from compressor unit. Filter element should be changed approximately 6 months or when dirty. All fittings on Spray Max unit and gun shall be wrapped with Teflon tape. Make sure extra fluid line is capped with brass fitting and red lever turned to "off" position.

H. Unit: Set both gauges on Spray Max unit to 68-70 lbs. Slightly increase pressure on both gauges with high wind conditions. Coverage will decrease because of added pressure and wind.

I. Spray Max gun (1.6 mil tips): Open top nozzle on gun to fully open position. Turn counter clockwise to fully open position. To decrease spray pattern turn clockwise. Middle dial (fluid adjustment) shall be pre-set showing 4-5 screw threads. Bottom dial on gun shall be in wide open position when spraying Spray Max adhesive.

J. Apply Spray max adhesive to both membrane and acceptable substrate (see attached approved substrate list). Spray Max adhesive shall be sprayed at approximately 4.2 squares per gallon. Coverage may vary depending on wind and temperature. Hold Spray Max gun at approximately 18" from substrate. In high wind conditions you may have to spray lower to the ground. Spray Max applicator shall walk in a side to side motion at a brisk pace. Overlap Spray Max spray pattern 50%. Spray Max pattern shall be between 13"-18". Inspect Spray Max pattern every 20' to insure no voids. Make sure Spray Max adhesive is sprayed between membrane folds and approved substrate. Allow adhesive to dry between 5-15 minutes. Adhesive should be tacky but not wet. Wind and temperature affects dry time.

K. Starting at the fold, float the membrane into the substrate. Broom the membrane with a stiff push broom to ensure proper contact.

L. Apply the other half of the membrane in the same manner.

M. After EPDM sheets are adhered, finish application by completing seams and detail work according to IDS specifications.

N. To Clean Spray Max unit release air hose by loosen wing nuts. Remove Spray Max pail and reseal top. Fill cleaning can with Spray Max cleaner a minimum of one quart. Install fluid feed in container. Re-attach Spray Max lid and air hose and spray cleaner till empty. Turn bottom air adjustment to closed position when cleaning. Soak Spray Max tip and gun in cleaner for 5 minutes and make sure hole and tip of gun are clean. Handle and store spray

gun with care to avoid needle damage in tip. **DO NOT DROP SPRAY GUN!**

3.05-2 Membrane Splicing

A. Seam Tape

1. Fold back the top sheet to allow cleaning of both surfaces. Clean both surfaces with clean natural fiber rags, dampened, but not saturated with Splice Cleaner. Turn rags frequently and replace often. Particular attention should be given to factory splices to remove excessive amounts of dusting agent. The splice area must be free of any foreign material that may interfere with ultimate bonding.

2. Stir Activator thoroughly before and during use. Apply Activator sparingly to both sides of the seam lap with a sponge mop. Allow the Activator to dry completely before proceeding. Drying time may vary due to weather conditions.

3. When applying seam tape, allow 1/8 to 1/4 inch overlap on the outside edge of the top lap of the EPDM. Before the release paper is removed from the tape roll with a steel roller perpendicular to the seam. After rolling, remove the release paper and mate the two surfaces. Roll the completed seams. No caulking is needed.

Note: An additional piece of seam tape will be needed at all cross seams. Always avoid back water seams.

4. Flash all seams at change in direction in accordance with detail I-25.

B. Splice adhesive

1. Position the membrane to overlap a minimum of 4 inches. Fold the top sheet back to allow for cleaning of both surfaces to be spliced.

2. Clean both surfaces using clean rags with International Splice Cleaner to remove all dusting agent, dirt, and other contaminants that will affect the completed splice. Allow to dry. Repeat as necessary to assure that the membrane is completely clean. Change rags frequently.

3. Thoroughly stir International Butyl Splice Adhesive before and during use. Apply the Splice Adhesive using a 3" – 4" wide solvent resistant brush in an even, smooth coat with long painting type strokes. Apply the Splice Adhesive to both surfaces at about the same time to allow equal drying. Apply at specified coverage rate.

Note: Do Not use circular motions when applying Splice Adhesive. Do Not use paint rollers, spray equipment, or other mechanical equipment for application of Splice Adhesive.

4. Allow the Splice Adhesive to flash off. Touch the Splice Adhesive with a clean, dry finger to be sure that the adhesive is dry. If the Splice Adhesive is dry none will transfer to your finger. If adhesive transfers the splice is not ready for mating and should not be closed. Flash off time will vary due to weather conditions.

5. Roll the top sheet toward the bottom sheet until it falls freely into place so as not to stretch or wrinkle the membrane.

6. Apply pressure by brushing your hand across the entire length of the seam. Roll the seam using a 1 1/2" – 2" wide silicone or hand roller, roll the entire splice toward the outside edge of the splice then along the entire length of the splice.

7. Install T-Joint lap covers at all field seam and flashing intersections. Install flashing at horizontal to vertical direction change.

8. Wait a minimum of 4 hours and 24 hours maximum if weather permits before caulking with Lap Sealant. If weather is threatening apply Lap Sealant before leaving the project. Apply Lap Sealant in a continuous bead 3/8" to 1/4" wide along the length of the seam. Using the supplied Lap Sealant tool, feather immediately, be sure to leave an adequate amount of Lap Sealant directly over the splice edge.

3.05-3 Base Tie In

Secure membrane at all locations where the membrane terminates or changes angles more than 2 inches in 12 inches (curbs, roof edge, interior walls, etc.) except for pipe penetrations

less than 18 inches in diameter or, square penetrations less than 6 inches square.

A. Install reinforced Perimeter Base Attachment strips with International 2" Seam Plates or International Batten Bar in accordance with details and specifications in this manual.

B. Install Diamond 105 Plates in accordance with details and specifications in this manual.

C. See System section to determine applicable Perimeter Base Attachment method or contact International.

3.05-4 Flashing & Details

A. Parapet Walls, Curbs, Skylights, Etc.

1. Mechanically fasten 5/8" exterior grade or pressure treated plywood in accordance with the project designers specifications over the following substrates.

- a. Textured Masonry
- b. Gypsum or Gypsum Board
- c. Stucco
- d. Corrugated Metal
- e. Any Uneven Substrate

2. Remove old, loose or unsecured flashing and excessive amounts of asphalt to provide a smooth surface for the new flashing.

3. Splice between flashing and the field sheet using Splice Adhesive or Seam Tape prior to adhering to the vertical surface. **USE CURED MEMBRANE WHENEVER POSSIBLE. See DETAILS.**

4. Apply Spray Max 420 Adhesive to the vertical surface and flashing at the same time to allow for the same amount of flashing off time.

5. Allow Spray Max 420 Adhesive to dry until tacky to the touch. Test readiness by touching with a clean, dry finger. If the Spray Max 420 Adhesive is dry no adhesive will transfer to the finger. Flash off time will vary due to weather conditions.

6. Roll the flashing up the wall into the adhesive being careful to minimize wrinkling.

7. Broom the flashing using a stiff bristled push broom. When using Uncured Flashing roll with a hand roller.

8. Terminate in accordance with applicable details.

9. Cover T-Laps with a minimum 7" x 7" Cover Tape. Roll T-Lap Cover with a hand roller.

B. Metal Drip Edges & Gutter Flanges.

1. International 7" x 100' Cover Tape should be used to flash metal drip edge and gutter flanges. Never use it to flash seams at angle changes. Never use it as a substitute for Uncured Flashing.

2. Clean the metal and the membrane with clean rags, dampened but not saturated with Splice Cleaner. Turn rags frequently and replace often. Particular attention should be given to factory splices to remove excessive amounts of dusting agent. Allow the Splice Cleaner to flash-off.

3. Stir Activator thoroughly before and during use. Apply activator sparingly to the metal and the membrane using a sponge mop. Allow Activator to dry until all solvent has completely flashed-off.

4. Apply the Cover Tape so that a minimum of 3 inches extends onto the membrane and a minimum of 3 inches onto the metal. An additional piece of Uncured Flashing is required at all metal edge overlaps where the Cover tape does not completely cover the metal edge.

5. Roll Cover Tape with a steel hand roller perpendicular to the edge.