

Sure-Weld® TPO SAT™ Reinforced Membrane

G U I D E - S P E C **Sure-Weld® SAT™ (Self-Adhering Technology)** **ADHERED ROOFING SYSTEM**

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This **GUIDE-SPEC** is a brief outline of Carlisle's Sure-Weld SAT (Self Adhering Technology) Fully Adhered Roofing System requirements and is intended for use as a submittal document to compliment a contractors bid package. Specifiers and Carlisle Authorized Roofing Applicators must reference and comply with applicable information contained within the current Carlisle Thermoplastic Roofing System Specification prior to design or bid of a project.

PART I GENERAL

1.01 DESCRIPTION

The Sure-Weld SAT (Self-Adhering Technology) Adhered Roofing System incorporates a membrane which is a heat-weldable single-ply thermoplastic polyolefin (TPO) sheet available in 10' and 12' wide, white 60-mil or 80-mil reinforced TPO membrane laminated to an elastomeric pressure-sensitive adhesive. The membrane is fully adhered to the insulation with the factory applied adhesive. Adjoining sheets of membrane are overlapped approximately 2" and joined together with a minimum 1-1/2" wide heat weld.

1.02 QUALITY ASSURANCE

- A. The specified roofing system must be installed by a Carlisle Authorized Roofing Applicator in compliance with drawings and specifications as approved by Carlisle SynTec.
- B. Upon request, an inspection shall be conducted by a Field Service Representative of Carlisle to ascertain that the membrane roofing system has been installed according to Carlisle's published specifications and details applicable at the time of bid. This inspection is to determine whether a warranty shall be issued. It is not intended as a final inspection for the benefit of the owner.
- C. For specific code approvals achieved with this system, refer to Carlisle's Sure-Weld Code Approval Guide, DORA (Directory of Roof Assemblies), FM Approvals or UL Fire Resistance Directory for Roofing Materials and Systems.

1.03 SUBMITTALS

- A. To ensure compliance with Carlisle's minimum warranty requirements, the following projects should be forwarded to Carlisle for review prior to installation, preferably prior to bid.
 - 1. Air pressurized buildings, canopies, and buildings with large openings, cold storage buildings or freezer facilities, projects over 250' in height or projects where the membrane is expected to come in direct contact with petroleum-based products, waste products (i.e., grease, oil, animal fats, etc) and other chemicals.
- B. Shop drawings must be submitted to Carlisle by the Carlisle Authorized Roofing Applicator along with a completely executed Notice of Award (Page 1 of Carlisle's Request For Warranty form) for approval. Approved shop drawings are required for inspection of the roof and on projects where on-site technical assistance is requested.

1.04 GENERAL DESIGN CONSIDERATIONS

- A. It is the responsibility of the building owner or his/her designated representative to verify structural load limitation. In addition, a core cut may be taken to verify weight of existing components when the roofing system is to be specified on an existing facility.
- B. On new construction projects, especially in cold climate regions, moisture generated due to the construction process could adversely impact various components within the roofing assembly if not addressed. [Refer to Design Reference DR-01-21 "Construction Generated Moisture" included in the Carlisle Technical Manual.]

- C. On structural concrete decks, when a vapor retarder is not used, gaps in the deck along the perimeter and around penetrations must be sealed along with vertical joints between tilt-up panels, if present, to prevent infiltration of hot humid air and possible moisture contamination resulting from condensation. This is specifically important when adhesive is used to attach the roof insulation.

CAUTION: If left unaddressed, collected moisture could weaken insulation boards and facers resulting in a blow-off or increase the probability of mold growth.

D. Vapor Retarders

1. Carlisle does not require a vapor retarder for the protection of the membrane; however, it should be considered by the specifier for the protection of the roofing assembly (i.e. primarily insulation, underlayment and adhesives). The following criteria should be considered by the specifier:
 - a. Use of a vapor retarder to protect insulation and reduce moisture accumulation within an insulated roofing assembly, should be investigated by the specifier.
 - b. In the generally temperate climate of the United States, during the winter months, water vapor flows upward from a heated, more humid interior towards a colder, drier exterior. Vapor retarders are more commonly required in northern climates than in southern regions, where downward vapor pressure may be expected and the roofing membrane itself becomes the vapor retarder.

1.05 WARRANTY

Table I Adhered Membrane Systems Warranty Options

Years	Thermoplastic Membranes (Sure-Weld SAT TPO)		
	55, 72, 80, 90 or 100 mph (3)	Minimum Membrane Thickness	Additional Puncture Coverage (1)(4)
	Adhered		
5, 10, 15 or 20 year	√(2)	Sure-Weld SAT 60-mil	Available
25 or 30 year	√(2)	Sure-Weld SAT 80-mil	Available

Notes:

N/A = Not Acceptable

√= Acceptable

- (1) Limits of Hail/Puncture Coverage to be defined by other Tables within the Carlisle Technical Manual.
- (2) Perimeter enhancements required for wind speed coverage greater than 72mph. Contact Carlisle for requirements.
- (3) For warranties greater than 100 mph, submit to Carlisle for review.
- (4) Carlisle's Accidental Puncture Warranty covers labor hours and material used during the repair. Maximum labor and material hours are dependent upon system design. Refer to the Warranty Availability Quick Reference Guide for coverage.

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to the job site in the original, unopened containers labeled with the manufacturer's name, brand name and installation instructions.
- B. Store Sure-Weld membrane in original undisturbed plastic wrap.
- C. Job site storage temperatures in excess of 90°F may affect shelf life of curable materials (i.e., adhesives and sealants).
- D. When liquid adhesives and sealants are exposed to lower temperatures, restore to a minimum of 60°F before use.

1.07 JOB CONDITIONS

- A. Refer to Carlisle Technical Manual for applicable project specific Job Conditions.

PART II PRODUCTS

2.01 GENERAL

The components of this roofing system are to be products of Carlisle or accepted by Carlisle as compatible. The installation, performance or integrity of products by others, **when selected by the specifier and accepted by Carlisle**, is not the responsibility of Carlisle and is **expressly disclaimed** by the Carlisle Warranty.

2.02 MEMBRANE

The Sure-Weld SAT™ (Self Adhering Technology) membrane is a heat-weldable single-ply thermoplastic polyolefin (TPO) sheet available in 10' and 12' wide and in length of 50' and 100' long, white 60 or 80-mil thick reinforced TPO membrane laminated to an elastomeric pressure-sensitive adhesive.

2.03 RELATED MATERIALS

Sure-Weld Non-Reinforced or Reinforced Flashing, Standard and Low-VOC Bonding Adhesive, Pressure Sensitive Cover Strip, TPO T-Joint Covers, Cut Edge Sealant, Water Cut-Off Mastic, Universal Single Ply Sealant, Weathered Membrane Cleaner, Standard and Low-VOC Primers, One Part Pourable Sealer, Pre Molded Accessories, Heat Weldable Walkway Rolls and LIQUISEAL Liquid Flashing.

PART III EXECUTION

3.01 GENERAL

- A. When feasible, begin the application at the highest point of the highest roof level and work to the lowest point to prevent moisture infiltration and minimize construction traffic on completed sections. This will include completion of all flashings and terminations.

3.02 ROOF DECK CRITERIA

- A. A proper substrate shall be provided by the building owner. The structure shall be sufficient to withstand normal construction loads and live loads.
- B. Defects in the roof deck must be reported and documented to the specifier, general contractor and building owner for assessment. The Carlisle Authorized Roofing Applicator shall not proceed unless the defects are corrected.
- C. Refer to Carlisle Technical Manual for acceptable decks and the applicable Carlisle Fasteners (when mechanical attachment of insulation is specified).

3.03 SUBSTRATE REQUIREMENTS

- A. Acceptable Carlisle insulations include various types currently approved with Design "A" Adhered Roofing Systems. HP Recovery Board is not an acceptable substrate.
- B. The substrate must be dry, relatively smooth, free of protrusions, debris, sharp edges or foreign materials and must be free of accumulated water, ice and snow. Cracks or voids in the substrate greater than 1/4" must be filled with Flexible FAST Adhesive or other suitable material.
- C. On retrofit-recover projects, cut and remove wet insulation as identified by the specifier and fill all voids with new insulation, so that it is relatively flush.

3.04 INSTALLATION

Sure-Weld SAT TPO may only be installed when the outdoor temperature is at least 25°F, surface temperature, refer to the applicable Safety Data Sheets and Technical Data Bulletins for additional cautions and warnings.

A. Insulation Attachment

1. Carlisle Flexible FAST Adhesive may be specified for insulation securement in full spray or beads with spacing as outlined in the Carlisle Technical Manual.
2. Carlisle Fasteners may be used, when specified, to secure Carlisle Insulation at the specified density outlined in the

B. Membrane Installation and Hot Air Welding

10' and 12' wide Sure-Weld SAT is fully adhered to an approved insulation or substrate with Factory Applied Pressure-Sensitive Adhesive.

1. Position Sure-Weld SAT membrane over the acceptable substrate.
2. Fold membrane sheet back so half the underside is exposed.
3. Remove the release liner on one half of the sheet starting from the split in the liner at the middle of the sheet. The liner should be removed at an angle to reduce risk of splitting or tearing.
4. Broom the membrane across the width of the sheet, onto the substrate while avoiding wrinkles. To achieve the best adhesion, the membrane should also be rolled onto the substrate with a 30" wide, 150 lb. segmented steel roller. When applying the Carlisle Sure-Weld SAT TPO membrane it is recommended to maintain a large curve on the leading edge of the membrane. This will help eliminate creases and bubbles that cannot be removed after the sheet is in place.
5. Fold back the remaining half of the sheet and repeat the above process.
6. Install adjoining membrane sheets in the same manner, overlapping edges a minimum of 2" to provide for a minimum 1-1/2" hot air weld. It is recommended that all splices be shingled to avoid bucking of water.
7. Hot air weld the membrane sheets a minimum of 1-1/2" with an Automatic Hot Air Welding Machine.
8. Membrane that has been exposed to the elements for approximately 7 days must be prepared with Weathered Membrane Cleaner. Wipe the surface where Weathered Membrane Cleaner has been applied with a clean, dry HP Splice Wipe or other white rag to remove cleaner residue prior to hot air welding.

C. Additional Membrane Securement

The membrane must be secured at the perimeter of each roof level, roof section, expansion joint, curb, skylight, interior wall, penthouse, etc., at any angle change which exceeds 2" per horizontal foot and at all other penetrations in accordance with Carlisle's published detail (Thermoplastic) U-12A. Securement at angle changes may also be accomplished using a variation of Detail U-12B, replacing the depicted 6" Sure-Weld Pressure-Sensitive RUSS Strip with a 6" wide strip of reinforced TPO membrane or a SAT strip of membrane cut in the field and installed with the adhesive side facing up (U-12H). Note 5, which requires the use of TPO Primer would also be eliminated when this detail is used in conjunction with SAT TPO.

D. Membrane Flashing

1. Flash all walls and curbs with Sure-Weld reinforced membrane. Non-Reinforced membrane shall be limited to inside and outside corners, field fabricated pipe seals, scuppers and Sealant Pockets where the use of pre-molded accessories are not practical. Terminate the flashing in accordance with an appropriate Carlisle Termination Detail.
2. On vertical surfaces, such as walls, curbs and pipes, Bonding Adhesive is not required when flashing height is 12" or less and membrane is terminated under a metal counterflashing (nailed). When a coping or termination bar is used for vertical terminations, Bonding Adhesive may be eliminated for flashing heights 18" or less.

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Carlisle SynTec
P.O. Box 7000, Carlisle, PA 17013-0925
800-479-6832

<http://www.carlisle-syntec.com>

Physical properties of Sure-Weld SAT TPO Membrane can be referenced in Part II, "Products" of the Thermoplastic Specification.

Attach copies of the applicable Carlisle Details that pertain to the individual project to complete a bid package submittal.