

# USP® TUFFCAP 190

## STANDARD MODIFIED BITUMEN MEMBRANE

*“Pioneered With Performance In Mind...  
Engineered To Stand The Test Of Time.”*

### HANDLING THE EXTREMES

USP® TuffCap 190 membranes begin with select grades of asphalt which are then modified with thermoplastic or elastomeric polymers. The result is a modified bitumen compound that demonstrates revolutionary waterproofing characteristics, extreme heat resistance and flexibility in low temperatures. U.S. Ply reinforces our modified bitumen with non-woven polyester reinforcement giving the USP® TuffCap 190 membranes more durability and flexibility to withstand building movement and extreme temperatures.

### ABOUT USP® TuffCap 190 APP MEMBRANES

USP® TuffCap 190 APP membranes contain modified bitumen compound that is made by blending select grades of non-blown asphalt with quality APP (Atactic Polypropylene) thermoplastic polymers. The result is a modified bitumen membrane with waterproofing characteristics far superior to standard asphalt blends. USP® TuffCap 190 APP membranes are manufactured in rolled sheets which are applied by torch welding. During installation, the modified bitumen is heat welded to itself to form a solid weatherproof seam.

### ABOUT USP® TuffCap 190 SBS Membranes

USP® TuffCap 190 SBS membranes contain a modified bitumen compound that is made by blending select grades of non-blown asphalt with quality SBS (Styrene Butadiene Styrene) elastomeric polymers. The result is a modified bitumen compound with far superior waterproofing characteristics to standard asphalt blends. USP® TuffCap 190 SBS membranes are manufactured in rolled sheets that are applied by hot asphalt mopping or USP® #330 SBS Modified Adhesive. Either application method gives you a solid weatherproof seam.

### ABOUT U.S. PLY, INC.

U.S. PLY, INC. entered the commercial roofing industry in 1985, utilizing the company's 25 years as a pioneering leader in the development of APP modified bitumen technology. We offer high quality components and roofing systems that are designed to be durable and the right choice to help your roof stand up to the most extreme environmental elements for years to come.

Our systems can meet a variety of code approvals; Factory Mutual (FM), Underwriters Laboratories (UL), Florida Building Code (FBC), and Texas Department of Insurance (TDI) to name a few. U.S. PLY, INC. offers only high quality membrane and components and the systems are designed and tested for weathering, durability and compatibility. They can be specified, installed and maintained with confidence.

**TEXAS MADE... TEXAS TUFF**



## Product Specifications

USP® TuffCap 190 Membrane	TuffCap 190 APPS	TuffCap 190 APPM	TuffCap 190 SBSM
<b>ASTM Designation</b>	<b>D6222 Type I Grade S</b>	<b>D6222 Type I Grade G</b>	<b>D6164 Type I Grade G</b>
<b>Nominal Size of Roll</b>	One (1) Square	One (1) Square	One (1) Square
<b>Nominal Roll Weight</b>	84 lb (38 kg)	102 lb (46 kg)	98 lb (44.4 kg)
<b>Dimensions</b>	39-3/8" x 32'9" (1m x 10m)	39-3/8" x 32'9" (1m x 10m)	39-3/8" x 32'9" (1m x 10m)
<b>Membrane Thickness</b>	3.5 mm (138 mils)	4.0 mm (157 mils)	3.8 mm (150 mils)
<b>Application Method</b>	Heat Welding	Heat Welding	Cold Applied/Hot Asphalt Applied
<b>Surfacing</b>	Smooth	Granule	Granule
<b>Function</b>	Base/Interply/Cap	Cap	Cap
<b>Post Consumer Recycled %</b>	4.2%	3.4%	3.4%
<b>Post Industrial Recycled %</b>	4.7%	3.0%	6.8%

The sizes and weights listed are approximate, and are for unapplied rolls.



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## STANDARD MODIFIED BITUMEN MEMBRANE

## Application Specifications

### GENERAL SAFETY

Use soapy water only to check for leaks. Torches shall be equipped with a shutoff valve, pressure release trigger and support stand or legs. Equipment shall be compatible with LP gas withdrawal system and shall be maintained in good operating condition. Contractor/user should consult equipment manufacturer for specific recommendation on specifications and usage. Do not allow torching devices to come in contact with flammable materials. The roofing surface, walls, abutments and all surrounding surfaces must be inspected prior to utilization of the torching device so that necessary precautionary measures may be taken. Keep torch flame moving at all times; failure to do so may result in ignition of surface and/or underlying materials. Avoid prolonged contact with heat sensitive metals such as lead, as overheating of these metal surfaces could ignite underlying flammable surfaces. Always use the base sheet as recommended by U.S. Ply specifications manual. Failure to do so is extremely hazardous as the base sheet provides an additional protective covering for underlying combustibles. Cant strips used at the roof/wall abutment must be composed of fire retardant material or protected from direct contact with the torch flame. Follow U.S. Ply's current roofing safety requirements, procedures, and specifications, which are available from Technical Services at 1-866-PUSH-PLY (866-787-4759). Application personnel must remain on the job site for a minimum of one (1) hour after completion of installation to inspect for any possible smoldering combustible material. Since fires can result hours after completion of work, periodical inspection thereafter must be made; the time and nature of which will vary depending on the size of the job; the nature of the application surface and abutments, and local code requirements. Note: U.S. Ply recommends the use of infra-red thermometers, and a thorough inspection of areas where torching equipment has been utilized. Prior to leaving the job site the contractor must be certain that all chance of fire, including smoldering fire, has been eliminated. Never place a hot torching device on the roof surface, insulation or any other surface or object other than an acceptable stand or holder or fireproof surface. Never leave a lit torching device unattended. Never use a torching device to apply any material other than APP modified bituminous membranes and/or SBS modified bituminous membranes that are designed to be torch applied. Allow torching devices to cool completely to room temperature before removing from the roof.

### USP® TuffCap 190 APP MEMBRANE APPLICATION:

1. Careful review and implementation of all relevant safety and fire watch requirements including materials / combustible substrates review, LP-Gas equipment storage and handling guidelines, worker safety precautions and training. See above for additional recommendations and safety precautions.
2. The surface over which the membrane is to be installed must be clean, smooth, and dry and prepared in accordance with this specification manual. Do not apply USP® TuffCap 190 APP membranes directly to a fresh asphalt glaze or flood coat or over base plies with excessive asphalt mopping bleed out at laps.
3. Do not install USP® TuffCap 190 APP membranes over base plies or materials installed with solvent based cold adhesives or mastics.
4. For slopes  $\frac{3}{4}$ " per foot (6.2 cm per meter) and over, USP® APP membranes must be run vertically, parallel to roof slope and back nailed in accordance with Part 10, "Steep Slope Requirements". For slopes less than  $\frac{3}{4}$ " per foot (6.2 cm per meter), install cap sheet perpendicular to slope.
5. Cap sheet application: Install full width cap sheets, lapping 3" (7.6 cm) on the sides and 6" (15.2 cm) on ends. Stagger adjacent end laps a minimum of 18" (45.7 cm) apart. All side and end laps must be staggered from underlying plies.
6. Never apply USP® APP 190 membranes by any method except welding with a propane torch or other equipment specifically designed for application of APP modified bitumen.
7. The coiled membrane must be unrolled approximately 10 ft. (3 meters), aligned, then the propane torch flame applied uniformly across the exposed back surface of the membrane and lap areas until the compound reaches the proper application temperature and exhibits a slight sheen. Be sure that there is complete burn off of release films where present on the underside of the rolls, membrane selvage edges or both surfaces as applicable. Avoid over heating which may result in damage to or improper adhesion of the membrane. (The flame should be moved from side to side in the shape of an "L", applying about 75% of the heat to the membrane and 25% to the substrate or underlying plies including the lap area of the previously installed courses.) The membrane is slowly unrolled as heat is applied to ensure proper adhesion. When complete, re-roll the opposite end of the membrane and install in the same manner.
8. A minimum  $\frac{3}{8}$ " (10 mm) asphalt flow-out must be obtained at all seam areas. Dry laps are not acceptable. To ensure the proper  $\frac{3}{8}$ " (10 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the torch no more than 4 ft. (1.2 m) nor less than 3 ft. (0.91 m) to be sure that the membrane will be at the proper temperature to produce proper flow. Hand rollers or "walking-in the seam" methods are also acceptable. Check all seams for full and uniform adhesion un-adhered seams must be lifted with a heated trowel and resealed by lightly torching the seam area.
9. Matching granules may be broadcast into the modified bitumen bleed out at seams while hot to enhance the finished appearance of the membrane.
10. All end laps must be staggered a minimum of 18" (45.7 cm) so that no adjacent end laps

coincide. If end laps fall in line or are not staggered the proper distance, a full width of USP® TuffCap 190 APP membrane must be installed over the end laps. End laps, flashing sheets and other seams formed over granule surfaces require pre-heating of the top surface of the underlying granule surface membrane to a point where the granules just begin to sink into, and the modified bitumen compound comes up through the granules to ensure proper seam construction and adhesion.

11. All laps must be parallel or perpendicular to the slope of the roof so that water is never flowing against the lap.
12. USP® TuffCap 190 APP membranes must not be applied during adverse weather or without precautionary measures in temperatures below 45°F (7.2°C). Refer to Part 15 for additional information on Cold Weather Precautions.

**USP® TuffCap 190 SBS MEMBRANE APPLICATION: Surface Preparation:** All surfaces to be adhered must be clean, dry and free from any foreign matter, such as oil, grease, dirt or any debris that could inhibit the bonding capabilities of the adhesive. On existing roofs, inspect roof deck condition – moisture in old roof may require complete removal of existing roof. Check local building codes – local building codes may require complete removal of existing roof. Check with manufacturer for details on cutting out and repairing blisters, buckles and raised edges for a smooth surface. Check all flashings, edges, drains, valleys and vents and repair as needed.

**Hot Asphalt Application:** Asphalt shall be applied at its EVT temperature or 425°F (218°C), whichever is greater, in a uniform layer, without voids, at a rate of 25 lb/square (1.2 kg/m<sup>2</sup>) ± 20%.  
**Adhesive Application:** Mechanically mix adhesive before application. Apply adhesive by notched squeegee at a rate of 1.5 - 2 gallons per 100 ft<sup>2</sup> (0.6 - 0.8 L/m<sup>2</sup>) to structural concrete, approved coverboard, Type G2 base sheet or SBS modified asphalt membrane.

1. USP® TuffCap 190 SBS membranes must not be applied during adverse weather or without following all precautionary measures in temperatures 45°F or below.
2. Install USP® TuffCap 190 SBS membrane in full width sheets, lapping 4" on the sides and 6" on the ends. Stagger adjacent end laps a minimum of 18" apart. Starting at the low point or the drains, apply the HOT ASPHALT or USP® #330 SBS Modified Adhesive to the substrate per specification.
3. End laps and selvage laps of the base sheet or interply membrane being lapped must be coated with asphalt or adhesive so that a visible bead of asphalt or adhesive appears. Roll all laps with a steel roller to ensure proper adhesion.
4. Cap sheet application: Install full width cap sheets, lapping 3" (7.6 cm) on the sides and 6" (15.2 cm) on ends. Adjacent end laps must be staggered from underlying plies.
5. The coiled membrane must be unrolled, placed upside down and allowed to relax for approximately 15 minutes prior to application. Then reroll to apply. This will allow the membrane to lay flat.
6. For mop applications of SBS membranes, the mopping stroke will be such that the side lap is covered with asphalt last. A rolling bank (puddle) of mopping asphalt must be maintained across the full width of the roll.
7. For adhesive applications of SBS membranes, after applying the adhesive, roll the membrane into the tacky adhesive, making sure that it is laying flat and making full contact with the adhesive. End laps and selvage laps of the SBS being lapped must be coated with adhesive so that a visible bead of adhesive appears. Roll all laps with steel roller to ensure proper adhesion. Alternately, the end laps and side laps of the SBS may be heat welded with a hot air welder; this method of application will provide a watertight lap immediately and may be preferable when inclement weather or temperatures between 45°F and 70°F are threatening.
8. Hot air welding techniques should obtain a continuous  $\frac{3}{8}$ " (10 mm) bead of molten modified bitumen visible at all laps/seams after application. Dry laps are not acceptable. To ensure the proper  $\frac{3}{8}$ " (10 mm) flow of bitumen at the seam areas, a weighted roller may be used. Roller application should follow behind the electric heat welder or propane torch no more than 3 ft (0.91 m) nor less than 1-1/2 ft. (0.48 m) to ensure that the membrane will be at the proper temperature for proper flow. Hand rollers or "walking-in the seam" are also acceptable. Check all seams for full and uniform adhesion. Un-adhered seams must be lifted with a heated trowel and resealed by lightly heat welding the seam area.
9. Matching granules must be broadcast into the modified bitumen bleed out at seams while hot to enhance the finished appearance of the membrane.
10. All end laps must be staggered a minimum of 18" (45.7 cm) so that no adjacent end laps coincide. If end laps fall in line or are not staggered the proper distance, a full width of USP® TuffCap 190 SBS membrane must be installed over the end laps. End laps, flashing sheets and other seams formed over granule surfaces require pre-heating of the top surface of the underlying granule surface membrane to a point where the granules just begin to sink into it, and the modified compound comes up through the granules to ensure proper seam construction and adhesion.
11. All laps must be parallel or perpendicular to the slope of the roof so that water is never flowing against the lap.
12. USP® TuffCap 190 SBS membranes must not be applied during adverse weather or without precautionary measures in temperatures below 45°F (7.2°C). Refer to Part 15 for additional information on Cold Weather Precautions.



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