ASTM D562-10
AASHTO T59

TSW Top Seal White

TSW-AASHTO/TSM

Soil Stabilizer

DESCRIPTION

TSW is an all-purpose liquid soil stabilizer and additive that binds and transforms the base into a solid, yet flexible mass that resists fracturing. It prevents base failure, dust pollution and soil erosion, and it increases soil strength and reduces its permeability.

MATERIALS

Use a polymer seal meeting the following requirements.

2.1 Specialty seal materials must be low volatile content water based emulsions of polymers specifically designed for use as seals and must meet the requirements of Table 1.

Table 1
TSW Material Properties

Property	Procedure	Min	Max
Viscosity, 77°F, Krebs unit	D 562	2	75
Sieve test, %	T 59	-	0.15
Storage stability, 1 day, %	T 59	-	3
Residue by evaporation, %	T 59	1	-

2.2 For materials diluted either by the manufacturer or at the jobsite, the final diluted material must meet these requirements.

2.3 Materials that are prequalified under this specification will still be subject to a regular approval process, as described in Texas Department of Transportation Tex-545-C, “Asphalt Binder Quality Program.” Use a material specifically designed as a polymer seal as shown on the plans or as approved. Provide water in accordance with Article 204.2, “Materials.”

A. Aggregate. Furnish base material that meets the requirements of TxDOT Item 247, “Flexible Base,” or washed crushed aggregates meeting the requirement of TxDOT Item 340 for the type and grade shown on the plans.

B. Water. Furnish water free of industrial waste, salt and other objectionable material.

C. Tack Coat. Use a polymer tack coat compatible with the paving mixture.

D. Mix Design. The Engineer will determine the target polymer content and optimum moisture content to produce a stabilized mixture that meets the strength requirements shown on the plans or as approved.

TP340.3. Equipment. Provide machinery, tools, and equipment necessary for proper execution of the work.

A. Polymer Storage. Store polymer in closed, air tight containers and ensure lids are tight with temperatures between 10°C to 45°C

B. Mixing Equipment. Utilize a motor grader to mix material in the field. When plant mix is required, utilize drum or batch plant mixers in accordance with TxDOT Item 320.

C. Hauling Equipment. Provide trucks with enclosed sides to reduce moisture loss. Cover each load of mixture with waterproof tarpaulins. Before use, clean all truck beds to ensure the mixture is not contaminated. Spray the inside truck beds with a light coating of water. Ensure truck bed is wet but no water is ponding in the bed before placement of Terra Pave mixture.

D. Paver. When using plant mixed pavement, furnish a paver that will produce a finished surface that meets longitudinal and transverse profile, typical section, and placement requirements. Provide loading equipment that does not transmit vibrations or other motions to the paver that adversely affect the finished pavement quality. Equip the paver with an automatic, dual, longitudinal-grade control system and an automatic, transverse-grade control system.

1. **Screed.** Provide a compacting screed that will produce a finished surface that meets longitudinal and transverse profile, typical section, and placement requirements. Screed extensions must provide the same compacting action as the main unit unless otherwise approved.

2. **Grade Reference.** Provide a grade reference with enough support that the maximum deflection does not exceed 1/16 in. between supports. Ensure that the longitudinal controls can operate from any longitudinal grade reference including a string line, ski, mobile string line, or matching shoes. Furnish paver skis or mobile string line at least 40 ft. long unless otherwise approved.

E. Rollers. Provide rollers in accordance with TxDOT Item 210, “Rolling.” Provide proof rollers in accordance with TxDOT Item 216, “Proof Rolling,” when required.

TP340.4. Construction.

A. Paving Production.

1. **Flex Base.** When flex base is specified as a paving surface, it should be combined with a polymer stabilized base and should be road mixed. Before the base material has cured and after completing the base compaction, clip, skin, or tight-blade the surface with a maintainer or subgrade trimmer to a depth of approximately 1/2 in. Windrow cut material and then blade it evenly across paved surface. Place designed quantity of liquid polymer

by sprinkling with a water truck. Ensure adequate polymer is placed and paving layer is adequately coated. Roll with a pneumatic roller to achieve a tight uniform surface. Let surface dry for an hour or more if necessary before rolling to ensure material does not pick up on roller tires.

2. **Crushed Aggregate.** When crushed aggregate is specified as the paving surface, it should be plant mixed utilizing equipment as specified in accordance with TxDOT Item 320. Utilize a design as specified by the polymer manufacturer.

3. **Placement Operations.** Prepare the surface by removing raised pavement markers and objectionable material such as moisture, dirt, sand, leaves, and other loose impediments from the surface before placing mixture. Remove vegetation from pavement edges. Ensure that all finished surfaces will drain properly.

4. **Weather Conditions.** Polymer mixes cure with contact with air and require dry conditions. Place mixture when the roadway surface temperature is 50°F and rising, or higher, drying conditions are high and humidity is low, unless otherwise approved. Measure the roadway surface temperature with a handheld infrared thermometer. Place mixtures only when weather conditions and moisture conditions are suitable in the opinion of the Engineer. Do not place polymer pavement when rain is forecast within 2 days of completion of placement.

5. **Tack Coat.** Clean the surface before placing the tack coat. Unless otherwise approved, apply tack coat uniformly at the rate directed by the Engineer. The Engineer will set the rate between 0.03 and 0.10 gal. of residual polymer per square yard of surface area. Apply a thin, uniform tack coat to all contact surfaces of curbs, structures, and all joints. Prevent splattering of tack coat when placed adjacent to curb, gutter, and structures. Roll the tack coat with a pneumatic tire roller when directed. The Engineer may suspend paving operations until there is adequate adhesion.

6. **Lay-Down Operations.** Place the mixture to meet the typical section requirements and produce a smooth, finished surface with a uniform appearance and texture. Offset longitudinal joints of successive courses of paving mix by at least 6 in. Place mixture so longitudinal joints on the surface course coincide with lane lines, or as directed. Place mixture with a maximum compacted lift thickness of 2".

E. Compaction. Compact the mixture in maximum lifts of 2" unless otherwise approved. Begin rolling longitudinally at the sides and proceed towards the center, overlapping on successive trips by at least one-half the width of the roller unit. On super elevated curves, begin rolling at the low side and progress toward the high side. Offset alternate trips of the roller. Operate rollers at a speed between 2 and 6 MPH, as directed. Remove areas that lose required stability, compaction, or finish. Replace with polymer-treated mixture at the Contractor's expense.

Sprinkle or aerate the treated material in accordance with TxDOT Item 204, "Sprinkling," to adjust the moisture content during compaction so that it is within 2.0 percentage points of

optimum as determined by Tex-120-E. Determine the moisture content of the mixture at the beginning and during compaction in accordance with Tex-103-E. Adjust operations as required.

Use air void control unless ordinary compaction control is specified on the plans. Avoid displacement of the mixture. If displacement occurs, correct to the satisfaction of the Engineer. Do not allow rollers to stand on the pavement. Unless otherwise directed, use only water or an approved release agent on rollers, tamps, and other compaction equipment. Keep diesel, gasoline, oil, grease, and other foreign matter off the mixture. Unless otherwise directed, operate vibratory rollers in static mode when not compacting, when changing directions, or when the plan depth of the pavement mat is less than 1-1/2 in. Use tamps to thoroughly compact the edges of the pavement along curbs, headers, and similar structures and in locations that will not allow thorough compaction with the rollers. The Engineer may require rolling with a trench roller on widened areas, in trenches, and in other limited areas.

TP340.5. Measurement.

A. Flex Base Polymer Pavement. Flex Base Polymer Pavement will be measured by the square yard of surface area.

B. Plant Mixed Polymer Pavement. Plant mixed polymer pavement will be measured by the square yard of surface area for the depth specified. The dimensions for determining the surface area is established by the widths shown on the plans and lengths measured at placement.

TP340.6. Payment. The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid in accordance with Section TP340.5.A, "Flex Base Polymer Pavement," or Section TP340.5.B, "Plant Mixed Polymer Pavement." Furnishing tack coat, placing and rolling, except proof-rolling, will not be paid for directly but will be subsidiary to this Item, unless otherwise shown on the plans. When proof-rolling is shown on the plans or directed by the Engineer, it will be paid for in accordance with TxDOT Item 216, "Proof Rolling." Where subgrade is constructed under this Contract, correction of soft spots in the subgrade or existing base will be at the Contractor's expense. Where subgrade is not constructed under this Contract, correction of soft spots in the subgrade or existing base will be in accordance with pertinent Items or TxDOT Article 4.2, "Changes in the Work."