



## Tire Rubber Modified Asphalt Emulsion Sealer

EnduraSeal TR is a cationic emulsified sealer that is formulated with asphalt, recycled tire rubber, select fillers, and chemical additives. This sealer has been engineered for the use on bituminous driveway and parking lot surfaces. When properly applied, EnduraSeal TR forms an impervious seal against water and provides a wear resistant coating with a rich black luster extending the life of the pavement. EnduraSeal TR also protects the surface from the harmful effects of rain, sun and seasonal temperature variations. EnduraSeal TR stalls the penetration of gasoline and oil into the pavement’s surface. The tire rubber in EnduraSeal TR provides an environmentally “Green” solution to agencies who desire to use eco-friendly maintenance techniques.

### 1.1 Scope

This covers the application of mineral-colloid-stabilized asphalt sealer. It is not meant to be used as a bid specification. The examples set forth herein are guidelines derived from proven application methods. Material coverage will vary depending on texture and porosity of the pavement’s surface.

EnduraSeal TR is manufactured as a ready to use product with the proper application viscosity for coating bituminous surfaces with a single or multiple coats. Compatible fine aggregates and latex additives may be mixed with EnduraSeal TR.

### 2.1 Job Mixes and Appropriate Application Rates

EnduraSeal TR is a ready to use product that can be blended with additives.

When more than one coat of sealer is applied to a surface, subsequent coats should be applied in a perpendicular pattern to the previous coat.

2.1.1 Application rates for a single coat of EnduraSeal TR should be calculated at 0.15 to 0.17 gallons per square yard. Application rates for a double application should be calculated at 0.23 to 0.25 gallons per square yard. (The first coat should be applied at 0.15 to 0.17 gallons per square yard with a second coat at a rate of 0.08 to 0.10 gallons per square yard.)

2.1.2 Latex additive, if used, should be calculated at a rate of 1 - 2% per gallon of EnduraSeal TR. Latex should conform to paragraph 3.3.

2.1.3 Silica sand may be added at a rate of 2 lbs. per gallon. Sand should conform to the provisions of paragraph 3.2. For best results, sand should be added to the sealer at the jobsite immediately prior to the application. We strongly recommend the use of sand to enhance skid resistance of the pavement.

2.1.4 Application rates for latex modified or sand/latex mixes will vary due to the porosity of the pavement’s surface, but will generally be the same as the rates applied for sand and latex free mixtures.

### Material Specifications

3.1 EnduraSeal TR Sealer is manufactured using a base emulsion produced with a colloid mill to insure homogeneity and appropriate sizing of the particles in suspension.

Specifications for the emulsion base are as follows:

<u>Test on Emulsion Base:</u>	<u>ASTM</u> <u>Test</u>	<u>Specification</u>
Residue by Dist. Or Evaporation	D244	57% Min
Saybolt Furol Visc. @ 77°F, seconds	D244/D88	20 Min 100 Max
Sieve Test %	D244	0.1% Max
24 hr. Settlement %	D244	1.0% Max
Particle Charge/ Ph (2)	D244	Positive/0 to 6.7Ph
Penetration @ 77°F	D5	60 Max
Solubility %	D2042	97.5% Min
Ductility @ 77°F (5cm)	D113	40 Min

EnduraSeal TR Sealer meets the following specifications:

<u>Test on EnduraSeal TR</u>	<u>ASTM Test</u>	<u>Specifications</u>
Uniformity	D3320, para 4.1	report
Wet film continuity	D3320, para 6.1	smooth nongranular
Density	D2939, sec 7	1.150 Min.
Residue by Evaporation %	D2939, sec 8	37 Min.
Water content %	D95	report
Resistance to volatilization	D3320, para 6.6	15 Max.
Tire Rubber %		2 Min
Solubility of res in cs <sub>2</sub> %	D2939 sec 24	25 Min
Drying time firm set, hrs.	D2939 sec 13	8 Max
Resistance to heat/ 80°C	D2939 sec 14	No blistering, slippage, or sagging
Adhesion and resistance	D2939 sec 15.2	No loss of adhesion
Flexibility / 23°C	D2939 sec 16	Pass
Resistance to impact	D3320 para 6.14	no chipping flaking or loss of adhesion

3.2 Sand shall be clean, washed and graded silica or slag. Sand filler should be hard and free of clay, dirt, mineral salts and organic matter. The aggregate shall conform to the following gradation:

Sieve Size	% Passing
40	90
50	80
70	90

(Aggregates with gradations outside of the noted ranges may be used, provided that the material has been used on other projects with successful results.)

3.3 Latex Additive compounds should conform to the following guidelines:

Weight per Gallon, ASTM D1010, (lbs)	8.50-8.80
Nonvolatile %, ASTM D2939	51.00-55.00
Viscosity @ 77°F, ASTM D562 (Kreb's Stormer Unit)	60-65
Resistance to Water, ASTM D2939 (hours)	18
Shelf Life (years)	1-2

Latex additives should provide greater toughness, viscosity and flexibility in the pavement's surface. Latex additives will speed up the curing process and helps to retain the aggregate in suspension. Recommended products are Alt-604 Poly Tough and Alt-659 Black Elixir (different application rate may apply), manufactured by Allstates Coatings Company.

#### GUIDELINES FOR SELECTING PROPER AMOUNTS OF MINERAL AGGREGATE AND ADDITIVE IN ENDURASEAL TR

Sealer (Gallons)	Sand (Pounds)	Additive (Gallons)	Total Mix (Gallons) Estimated
A 100	150-200	0	115
B 100	150-200	1-2	125

\*Note: No water should be added to the sealer.

## 4 New Asphalt Surfaces

4.1 Cold and Hot mix asphalt should be allowed to cure 60-90 days prior to applying any sealer.

## 5 Surface Preparation

5.1 Alligator cracking, sunken spots (indicating base failure) should be dug out and patched. If cold or hot mix asphalt is used for the patched areas, the repairs should be completed 60-90 days prior to sealing with Sealer.

5.2 Cracks, birds baths and all other surface irregularities shall be repaired 24 hrs. prior to sealing. Use appropriate repair products according to manufacturer's recommendations.

5.3 Treat oil and grease spots that have not permanently damaged or softened the pavement by burning with a hand held propane torch and coating with Poly Oil Sil primer.

5.4 Painted traffic control lines should be ground or sand blasted or blotted out using an approved acrylic black paint if the existing marking are to be relocated.

5.5 The surface shall be free of all loose dust, dirt, leaves, standing water or other foreign materials prior to sealing. This can be accomplished by sweeping, blowing and flushing with water.

## 6 Equipment

Suitable squeegees, brush, spray apparatus or mechanical sealing machines may be used.

6.1 Hand held tools may be used for the application of Sealer. Brush or flexible rubber strip type squeegees are acceptable to achieve even coverage.

6.2 Spray applicators should be kept in good operating condition to assure a uniform coating at the specified application rate.

6.3 Riding applicator equipment, if used, should have two or more devices such as squeegees and/or drag brooms to assure an even application of the sealer. Mechanical mixing devices shall be integral to the equipment to assure proper mixing of the emulsion and any required additives.

6.4 Holding tank should have shall be of a capacity to assure homogeneous mixing of the emulsion and the required additives. The tank shall be equipped with an agitator to maintain the suspension of the mineral aggregates and fillers in the mixture. The Sealer must be agitated daily during storage to keep the emulsion homogenous.

## 7 Cure Time, Weather Precautions, Temperature Recommendation

7.1 When multiple coat applications are used, you may apply a second coat 2-4 hours after the first coat. In ideal conditions when temperatures are higher than 70 degrees F, there is sunshine and the relative humidity is less than 60%, the drying time allowed between coats could be less.

7.2 Sealer should not be applied unless the temperature is 50 degrees F. and rising. The pavement temperature should be 60 degrees and rising. Work should be completed during daylight hours allowing two hours exposure to sunshine upon completion.

7.3 Do not apply Sealer in damp weather, if rain is imminent or if temperature is below 50 degrees F. Sealing should not be done under cold and/or wet conditions.

7.4 Freshly sealed asphalt surfaces should not be reopened to traffic less than 24 hours after sealing. Time may vary dependent on weather.

## 8 Handling, Storage, Cleanup

8.1 EnduraSeal TR should only be used in well ventilated areas. Avoid prolonged breathing of vapors or contact with skin or eyes. In case of skin contact, wash thoroughly with soap and water for 15 minutes. If irritation persists or if swallowed, call a physician immediately. Wash contaminated clothing before reuse. Keep container closed when not in use. CAUTION: May cause skin irritation; keep out of reach of children.

8.2 EnduraSeal TR contains no solvents or coal tar. EnduraSeal TR is a Non Flammable, water soluble seal coating product. The coating sets by water evaporation and must be protected from freezing. Do not use any sealer which has been frozen.

8.3 Clean water may be used for clean up. Clean tools immediately after use with water. Do not allow the material to set before cleaning.

8.4 EnduraSeal TR concentrate may be stored up to 30 days. Sand-based EnduraSeal TR should be blended and applied within the same day.

## 9 Striping

9.1 Allow the freshly sealed area to cure at least 24 hours before applying new traffic lines or marking for parking stalls. Striping done within 10 days of sealing the asphalt surface shall be done with acrylic or latex traffic paint. Striping applied in two applications reduces the "browning effect" and increases the reflectivity of the pavement marking.

\*Note: Sealer tends to bleed through oil base paint when applied on freshly sealed surfaces.

## 10 Disclaimer

10.1 The statements contained in this Application Note or by any of our agents concerning this material are given for information only. The statements made are believed to be true and accurate and are intended to provide a guide to approved construction practices and materials. As workmanship, weather, construction equipment, quality of other materials and other variables affecting results are beyond our control, Bi-State Emulsions, Inc., St. Louis, Missouri does not make nor does it authorize any agent to representative to make any warranty of Merchantability or Fitness for any purpose of any other warranty, guarantee or representation, expressed or implied, concerning this material except that it conforms to Product Specifications of Bi-State Emulsions, Inc. Buyer and user accept the product under those conditions and assume the risk of any failure, injury to persons or property (including that of the buyer or user), death, loss or liability resulting from the handling, storage or use of the product whether or not it is handled, stored or used in accordance with directions or specifications. Any liability whatever of Bi-State Emulsions, Inc., to the buyer or user of this product is limited to the replacement value of the product.

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