



Gilsonite Emulsion Sealer

1. Enduraseal GS General Description

Enduraseal GS is a cationic emulsified sealer that is formulated with select fillers, chemical additives, plasticizers and 99.85 % pure Gilsonite ore. This sealer has been engineered for use on bituminous surfaces of driveways, parking lots, airports and service stations. When properly applied, Enduraseal GS forms an impervious seal against water and provides a wear resistant coating which extends the life of the pavement. Enduraseal GS also protects the surface from the harmful effects of rain, sun and seasonal temperature variations. Enduraseal GS stalls the penetration of gasoline and oil into the pavement's surface protecting it from additional damage.

1.1 Scope

This Application Note covers the application of mineral-colloid-stabilized Gilsonite 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 dependent on texture and porosity of the pavement's surface. Enduraseal GS is manufactured to the proper application consistency for coating bituminous surfaces with a single or multiple coats. Compatible fine aggregates and latex additives may be mixed with Enduraseal GS.

2.1 Job Mixes and Appropriate Application Rates

2. Enduraseal GS comes in "ready to use" form. No dilution is required. When additives are used the manufacturer's recommendations should always be followed. Depending on the additive selected, usually, 1 to 3 gallons of additive will be blended with 100 gallons of sealer.

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 Enduraseal GS Emulsion should not be diluted.

2.1.2 Application rates for a single coat of Enduraseal GS should be calculated at 0.10 to 0.15 gallons/square yard. Application rates for a double application should be calculated at 0.18 to 0.25 gallons/square yard. (The first coat should be applied at 0.10 to 0.15 gallons/square yard with a second coat at a rate of 0.08 to 0.10 gallons/square yard.)

2.1.3 Latex additive, if used, should be calculated at a rate of 1 - 3% per gallon of Enduraseal GS.

2.1.4 Enduraseal GS and Silica Sand - Silica sand may be added to the diluted batch of Enduraseal GS at a rate between 2 pounds/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.

2.1.5 Enduraseal GS, Latex Additive and Silica Sand After the Enduraseal GS has been blended with the latex additive (at an approximate rate of 1 - 3 gallons per every 100 gallons of Enduraseal GS) 2 pounds per gallon of silica sand may be added to the tank. We strongly recommend the use of sand to enhance skid resistance of the pavement.

2.1.6 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.

3. Material Specifications

3.1 Enduraseal Emulsion is produced by using a colloid mill to insure homogeneity and appropriate sizing of the particles in suspension. Enduraseal GS Emulsion Sealer (undiluted) meets or exceeds the following specifications:

Specifications for ESB Concentrate are as follows:

<u>Test on Emulsion Concentrate:</u>	<u>ASTM Test</u>	<u>Specification</u>
Residue by Dist. Or Evaporation (1)	D402	57% Min
Saybolt Furol Visc. @ 77F, seconds	D7496	20 Min 100 Max
Sieve Test %	D6933	0.2% Max
5 Day Settlement %	D6930	5.0% Max
Particle Charge/ Ph (2)	D244	Positive/0 to 6.7Ph

Test on Residue from Distillation, or Evaporation:

Viscosity @ 275F Cps.	D4402	1250 Cps Max
Penetration @ 77F Dmm	D5	50% Max
Solubility %	D2042	97.5% Min
Asphaltenes%	D6560	30% Min
Polar Compounds%	D6560	25% Min
Saturates%	D6560	15% Max

*Typical Results, not tested with every batch. Results are from last test.

(1) ASTM D-244 Modified Evaporation test for percent of residue is made by heating sample to 300F until foaming ceases, then cool immediately and calculate results. 300F should also be used for Distillation.

(2) pH may be used only when a particle charge tester is not available or test is inconclusive.

Anionic emulsion typical pH 7.0 to 14.0

Cationic emulsions typical pH 0 to 6.7

The bituminous base residue shall contain **not less than 10 percent Gilsonite**, and will not contain any tall oil pitch.

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

Sieve Size	% Passing
30	100
40	100
50	80
70	20
100	5

(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 Polytough and Black Elixir (different application rate may apply), manufactured by Allstates Coatings Company.

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

Sealer (Gallons)	Sand (Pounds)	Additive (Gallons)	Total Mix (Gallons) Estimated
A 100	150-200	0	115
B 100	150-200	1-3	125

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

4 **New Asphalt Surfaces**

4.1 Hot mix or cold mix asphalt pavement should be allowed to cure 60 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 hot-mix is used for the patched areas; the repairs should be completed 60 days prior to sealing with Sealer.

5.2 Cracks, birds baths, alligatored areas, and all other surface irregularities shall be repaired 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 markings are to be relocated.

5.5 The surface shall be free of all loose dust, dirt, leaves, other foreign materials and standing water 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 shall have mechanical mixing devices so as to control mixing of the emulsion and any required additives. Compressed air equipment is not advised for the application of Enduraseal GS emulsion. 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 Mixing/Holding tank equipment may be either portable or powered tank-type power mixer. Either type 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 periodically agitated during storage to keep the emulsion homogenous during storage.

7 **Cure Time, Weather Precautions, Temperature Recommendation**

7.1 When multiple coat applications are used, do not apply a second coat until the first coat is dry.

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 GS Sealer, 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 GS contains no solvents or coal tar. Enduraseal is not a fire hazard. 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 GS concentrate may be stored up to 30 days. Sand-based Enduraseal GS 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 markings 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 markings.
- *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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