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TUFF COAT PRODUCT SPEC SHEET

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A. Product description

Tuff Coat is a high-performance emulsion based asphalt sealer. Consisting of industry leading aggregates providing unmatched mix stability, size gradation, hardness, minerology, and chemical compatibility. Resulting in unparalleled friction characteristics and life longevity of the fixative film that is Tuff Coat. Tuff Coat asphalt sealer is always manufactured and sold at 60% residue solids. Tuff Coat is and has been since 1989 the number one choice emulsion based sealer when performance is a priority.

B. References

1. **ASTM D2172:** Determining asphalt content % by weight.
2. **ASTM D6934:** Determining solids content % weight.
3. **ASTM D6937:** Determining Density "WPG" in lbs.
4. **ISSA TB100 MODIFIED:** Determining wear resistance after one hour soak in water.
5. **ISSA TB100 MODIFIED:** Determining wear resistance after 6 day soak.
6. **AASHTO T59:** Determining viscosity.
7. **AASHTO T59:** Storage stability.
8. **AASHTO T59:** Cement mixing test.
9. **AASHTO T59:** Sieve test%
10. **AASHTO T59:** Determining asphalt content by evaporation.
11. **ASTM T49:** Penetration test, 100g 5s, dmm
12. **ASTM T51:** Ductility test.
13. **ASTM T44:** Solubility in trichloroethylene.
14. **ASTM C136:** Sieve analysis on fine and coarse aggregate.
15. **ASTM C128:** Determining density of fine and coarse aggregate.
16. **ASTM C170:** Determining compressive strength of stone.
17. **ASTM C616:** Determining the MOHS Hardness of stone.
18. **ASTM D2216:** Determining moisture% content of coarse and fine aggregate.

C. Preparation

1. All areas to be sealed with Tuff Coat must be free from dirt, oil, grease, standing water, and any other foreign materials.

2. Crack filling and or patching should be completed prior to sealing.

3. Tack Coat may be advisable on severely raveled, oxidized, porous, or, "dry" pavement.

4. Consult with property owner regarding sprinkler runoff.

D. Weather

1. Apply only when pavement and ambient air temperature in the shade is 55° F. and rising. Cease application if weather is forecasted to drop below 40° F. within 48 hours.

2. Do not apply on wet pavement, in the rain, 24 hours prior to forecasted rain, or in unsuitable weather.

3. It is advisable to seal pavement during warm weather seasons as emulsion based and waterborne coatings are susceptible to damage from freezing anytime within ten days of application. Freeze damage is most prominent in late fall when weather outlook will only become colder with more frequent instances of freezing. Most notably in shadow areas such as the shadows present on the north side of buildings and trees etc.

E. Application

1. Two separate application coats are recommended. The first application coat must be thoroughly set and free from any damp or wet areas before the second application begins.

2. Typical coverage 28-34 square feet per gallon Tuff Coat concentrate (undiluted) for a two coats application.

2.1 Target tolerance on each application is as follows and order may be reversed.

First application= 16-19 square feet per concentrate gallon.

Second application= 12-15 square feet per concentrate gallon.

3. Keep material delivery at a constant rate during application procedure.

4. Apply complete and uniform coverage on entire pavement.

5. Maintain application rate along curb edges, manhole covers, etc. on both first and second coats alike.

6. Tuff Coat can be applied either with hand held squeegees, hand held brush coaters, motorized squeegee buggies, or spray wand and spray bar systems. A qualified contractor will be able to determine which application technique will best suit the job needs.

6.1 Maintaining fresh, clean, and supple squeegee rubber will greatly aid in achieving optimal application rates.

7. In order to maintain and eliminate inter-aggregate loss, apply Tuff Coat asphalt pavement sealer/re-surfacer as needed. Optimum aesthetics and performance of the asphalt pavement preservation hygiene will be achieved when sealer surface is allowed 3-5 seasons/years to wear between applications.

7.1 Avoid annual application as it may result in, "sealer stacking" and micro cracking of sealer surface.

F. Mix properties

1. Tuff Coat meets the requirement in **TABLE 1**

TABLE 1			
CRITERION	**STANDERD**	**MIN**	**MAX**
Asphalt content percent by weight.	ASTM D2172	22	27
Solids content percent by weight.	ASTM D6934	59%	62%
Weight per gallon in pounds "Density"	ASTM D6937	11	11.6
Wet track abrasion loss 1 day soak	ISSA TB100	0	8 per square foot
Wet track abrasion loss 6 day soak	ISSA TB100	0	20 per square foot

G. Asphalt binder

1. Perform asphalt emulsion verification in accordance with **UDOT** specification **Section 02745, AAHTO T59,** and **ASTM** D977. Tuff Coat meets the requirements on **TABLE 2 and 3.**

TABLE 2			
CRITERION	**STANDARD**	**MIN**	**MAX**
Saybolt Furol Viscosity	T 59	20	100
Storage Stability 24 Hour, %	T 59		1.0
Cement Mixing, %	T59		2.0
Sieve Test, %	T59		0.10
Residue	T59	59	63

TABLE 3 TESTS ON RESIDUE FROM DISTILLATION			
CRITERION	**STANDARD**	**MIN**	**MAX**
Penetration, 100g, 5s,dmm	T49	40	90
Ductility, (5cm/min.), cm	T51	40	
Solubility in Trichloroethylene	T44	97.5	

H. Aggregate

1. Aggregate must be free from organic material and other contaminants. The mineral aggregate must consist of natural crushed stone such as slate, Lime stone, and other suitable aggregate blends.

1.1 Total sand in aggregate blend shall not exceed 10% of total aggregate weight.

2. Gradation analyzed according to **ASTM C136** on dry weight and percent passing. The combined aggregate blend shall conform to the following gradation on **TABLE 5** and physical properties on **TABLE 6.**

TABLE 5 AGGREATE GRADATION ANALYSIS ASTM C136			
Sieve	**ASTM**	**TARGET**	**TOLERANCE**
NO. 8	C 136	100	+/-5%
NO. 16	C 136	85-95	+/-5%
NO. 30	C 136	85-90	+/-5%
NO. 50	C 136	75-85	+/-5%
NO. 70	C 136	75-85	+/-5%
NO. 100	C 136	65-75	+/-5%
NO. 140	C 136	35-45	+/-5%
NO. 200	C 136	20-30	+/-5%

TABLE 6 SLATE PHYSICAL PROPERTIES			
CRITERION	**ASTM**	**MIN**	**MAX**
Relative Density (Specific Gravity)	C 128		2.7
Compressive strength of dimension stone	C 170	11,000	
MOHS Hardness	C 616	6.5	
Determining moisture% content	D 2216		1

I. Additives and dilution

1. Tuff Coat can be diluted with water up to 15% by volume. In extremely hot weather it may permissible to dilute up to 5% more. Dilution should never exceed 20% max by volume.

1.1 Use clean potable water, free from contaminants.

2. Seal Coat Supply has a line of additives which have been tested in our in-house laboratory and have proven to enhance the performance of Tuff Coat if used properly. Use additives per manufacture recommendation.

2.1 Agent bond is an Acrylic co-polymer which will allow the seal coat to dry faster, add adhesion properties, help minimize early tire scuffing, and increase residue plasticity.

2.2 TC Activator is a property enhancing catalyst used to activate adhesion promotion, water repulsion, and anti-striping properties. Tuff Coat treated with TC Activator yields Wet Track Abrasion test results with zero to nearly zero loss results.

J. Traffic paint

1. Do not paint or restripe until Tuff Coat has had ample time to fully dehydrate.

2. For best results the use of “water borne” paint is recommended when striping seal coated roadways or parking lots. The use of “chlorinated rubber” or other, “hot” solvent paints is **NOT** recommended when striping roadways or parking lots as “lifting” or “bleeding” may occur. As always it is recommended to follow paint manufacturers specifications on recommended film thickness etc.

K. Opening to traffic

1. Do not open for traffic until the Seal Coat and traffic paint have had ample time to dry. The Contractor and property owner should wait if possible up to 24 hours under normal circumstances to open the pavement to rolling traffic.