NEXT GENERATION ASPHALT PAVEMENT SEALER

Functionally Meets and or Exceeds ASTM and FAA Specifications.

Detailed Application Specifications

1.0. OBJECTIVE

1.1. This specification covers the application of the STAR-TRITON SUPREME® sealcoating system for existing, sound asphalt pavements.

1.2. STAR-TRITON SUPREME® is used to extend the service life of asphalt pavements by providing protection from elements that attack and degrade those pavements:

1.3. The sun's ultraviolet rays, which result in oxidative decomposition.

1.4. Deteriorating effects of de-icing salts, oils, gasoline, and grease. Water and subsequent damage to the sub-base caused by water penetration through porosity, cracks and surface defects.

1.5. STAR-TRITON SUPREME® will beautify and enhance the appearance of asphalt.

1.6. STAR-TRITON SUPREME® will reduce maintenance costs and extend service life.

1.7. STAR-TRITON SUPREME® will fill minor surface imperfections and yield an even looking surface coating.

1.8. STAR-TRITON SUPREME® will provide a limited degree of skid resistance.

2.0. MATERIALS

2.1 Specialty Petroleum Resin Emulsion (Mineral Colloid Type). ***STAR-TRITON SUPREME® functionally meets and or exceeds the requirements as detailed below.***

2.1.1 For composition and performance properties, STAR-TRITON SUPREME® meets or exceeds ASTM 5727-00 (formerly Fed spec RP-355e) when tested in accordance with D 2939-98.

2.1.2 STAR-TRITON SUPREME® meets and or exceed the performance requirements of applicable FAA specifications namely FAA P-630 and P-631.

2.1.3 The material shall be homogeneous and show no separation or coagulation components that cannot be re dispersed with moderate stirring.

2.1.4 The material shall be suitable for application and complete coverage, by squeegee, brush or by approved mechanical methods, to the bituminous surface at a spreading rate of approximately 0.18 - 0.20-gallon (of the concentrated sealer) per square yard in a two (2) coat application system.

2.2. Physical Properties and Constants According to ASTM D5727-00

PROPERTIES & CONSTANTS	TEST METHOD	SPECIFIED LIMITS	STAR-TRITON SUPREME	STATUS
Solids, % By Weight	ASTM D5727-00	Min. 47-53%	50% (+/-) 1	Passes
Ash % NVM (Solids) By Weight	ASTM D5727-00	30-40%	37% (+/-) 1	Passes
Specific Gravity 25/25° C	ASTM D5727-00	Min. 1.2	1.22 - 1.24	Passes
Drying Time, Hrs.	ASTM D5727-00	Max. 8 Hrs.	Approx. 4 Hrs.	Passes
Appearance, Wet	Chocolate Brown	-	Dk Brown/Semi Liquid	Yes
Appearance, Upon Drying	Dark Black/Slate	-	Dark Slate Black	Yes

2.3. Sand / Aggregate Specifications

2.4. Sand shall be clean, hard and irregular silica sand, free of clay, dust, salt, and organic matter. It must meet the following gradation:

U.S. Sieve Size		Percentage Retained	
		Minimum	Maximum
No. 20 *or coarser*	(0.850 mm)	0	0
No. 30	(0.600 mm)	0	5
No. 40	(0.425 mm)	7	25
No. 50	***(0.300 mm)***	***15***	***50***
No. 70	***(0.212 mm)***	***20***	***40***
No. 100	(0.150 mm)	3	30
No. 140	(0.106 mm)	0	10
No. 200	(0.075 mm)	0	7

**50/70 U.S. Sieve Size is recommended for STAR-TRITON SUPREME®*

2.4 Water Specifications

2.4.1 Water shall be clean and potable, free of harmful soluble salts, within a temperature range of 50-80° F.

2.5 Additives Specifications

2.5.1 Follow manufacturer's recommendation for selection, and mix design, for specific project requirements.

2.5.2 WARNING: Using other additives or additives manufactured by companies other than STAR, Inc. in conjunction with this product might produce undesirable results. Consult your STAR representative for recommendations.

2.6 Crack Filler Specifications

2.6.1 Any crack filler/sealer must be certified by the supplier for compatibility with the sealcoating material. Cold pour crack fillers manufactured by STAR® such as STAR® STA-FLEX™, STAR® STA-FLEX TROWEL GRADE™ and STAR® SURE-FLEX™ are recommended. Hot pour rubberized crack fillers such as STAR® ELASTO-BOND™ may also be used successfully.

2.7 Primer Specifications

2.7.1 Oil spot primers must be certified by the sealcoat manufacturer for compatibility with the sealcoating material. STAR® S.O.S. Sealer™ oil spot primer/sealer is compatible and recommended.

2.7.2 Specialty coatings/primers may be recommended by the manufacturer for problematic areas such as rust streaks in the pavement, excessive surface contamination with oil, grease, fat, tree sap etc., areas of highly polished aggregate due to high traffic use, or in areas that might require extra attention due to high traffic use. In these cases; STAR® RUST-ARREST™ and STAR® GENESIS PRIME™ are recommended products and are also useful for promoting adhesion on fresh asphalt installations.

3.0 SURFACE PREPARATION

3.1. Important: STAR-TRITON SUPREME® must be applied to structurally sound pavements. Do not apply over chip seal or gilsonite sealed surfaces.

3.2. New asphalt pavement surfaces must have time to properly cure so that there is no concentration of oils on the surface. A period of 90 days at 70° F+ daytime temperatures must elapse between the placement of the hot-mixed asphaltic concrete surface course and the application of the sealcoating. Check the suitability of the asphalt pavement by performing a "water-break-free" test; Cast one gallon of potable water onto the surface, the water should sheet out without crawling, beading or showing oil rings confirming that the surface oils have oxidized and dissipated.

3.1.2 The surface must be cleaned thoroughly to remove all foreign debris (dirt, gravel, silt, vegetation, etc.) using air blowers or by flushing with water. Embedded dirt and silt will need to be removed with steel bristle hand brooms or with the careful use of pressure washers.

3.1.3 Mudded areas need to be thoroughly scraped and carefully pressure washed with clean water. Time must be allowed for the surface to dry.

3.1.4 Treat all grease and oil spots by scraping off the excess oil and dirt with a wire bristle broom and coat with STAR® S.O.S. SEALER™ oil spot primer/sealer in accordance with directions. STAR® GENESIS PRIME™ is recommended for areas contaminated extensively with oil, grease, fuel, tree saps etc. or areas with highly polished aggregate surfaces that can create challenging adhesion situations for sealcoatings.

3.1.5 Make all necessary pavement repairs; patch soft spots, fill and seal all cracks, properly patch pot holes and level any "bird baths". All patched areas must be cured before applying STAR-TRITON SUPREME®.

3.1.6 Treat old or badly oxidized asphalt pavement with a primer coat of diluted STAR-TRITON SUPREME® as one (1) part by volume thoroughly mixed with three (3) parts of clean water. Apply the primer at 0.04 to 0.06 gallon per square yard or 0.18-0.27 liter per square meter (concentrated sealer). Allow the primer coat to dry thoroughly, about 2-4 hours under normal drying conditions, prior to sealcoating with STAR-TRITON SUPREME®.

4.0 MATERIAL USE RECOMMENDATIONS

4.1 Material Calculations

4.1.1 For a standard two (2) coat sealcoating system, calculate at the rate of 0.18-0.20 gallons per square yard (0.81-0.90 liter/sq. meter) of concentrated sealer on the asphalt surface to be sealcoated.

First Coat Requires: 0.10-0.12 gal./sq. yard, (0.45-0.54 liter/sq. meter)
Second Coat Requires: 0.08-0.10 gal./sq. yard, (0.36-0.45 liter/sq. meter) 4.1.2 For the quantities of other ingredients, water, sand/aggregates, additives such as Star Macro-Flex® see section 4.2.0 “Recommended Systems”.

4.2 Recommended Systems

INTENDED USAGE AREA	No. of COATS	STAR-TRITON SUPREME Gallon / Liter Concentrate	WATER Gallon / Liter Clean/Potable	SAND Lb. / Kg. 50/70 Sieve	ADDITIVE (i.e. Macro-Flex®) Gallon / Liter	COVERAGE RATE (Mixed Sealer) Gal/sq yd / Lt/sq mtr
Low Traffic AREAS:						
Home Driveways, Parking Stalls	1st.	100 / 100	30-40 / 30-40	200-300 / 24-36	0-3 / 0-3	.15-.20 / .68-.90
Walkways, Cart and Bicycle Paths, etc.	2nd.	100 / 100	25-40 / 25-40	0- 300 / 0-36	0-3 / 0-3	.10-.15 / .45-.68
Moderate Traffic AREAS:						
Parking Lots, Highway Shoulders	1st.	100 / 100	30-50 / 30-50	300-500 / 36-60	0-4 / 0-4	.15-.20 / .68-.90
Driveways, Gas Stations, Airfield Aprons.	2nd.	100 / 100	30-50 / 30-50	0-500 / 0-60	0-4 / 0-4	.10-.15/.45-.68
Heavy Traffic AREAS:						
Industrial & Commercial Parking Lots,	1st.	100 / 100	30-60 / 30-60	400-600 / 48-72	0-5 / 0-5	.15-.20 / .68-.90
Airfield Taxiways, Service Stations.	2nd.	100 / 100	30-60 / 30-60	400-600 / 48-72	0-5 / 0-5	.15-.20 / .68-.90
Ring Roads or Steep Grades, etc.	3rd.	100 / 100	30-40 / 30-40	0-500 / 0-60	0-4 / 0-4	.10-.15 / .45-.68

4.3 Priming Prior To Sealcoating

4.3.1 Prime Coat - For old, oxidized pavements, a primer coat is recommended. The suggested materials are;

a) STAR-TRITON SUPREME® diluted with clean potable water in 1:3 volume ratio (sealer: water) applied at 0.04 to 0.06 gallons per square yard, 0.18-0.27 liter per square meter (of the concentrated sealer).
b) STAR® GENESIS PRIME™ diluted with clean potable water in 1:2 volume ratio (GENESIS: water) applied at 0.05-0.08 gallons per square yard, 0.23-36 liter per square meter of the mixture.

4.4 Sand Slurry Preparation / Addition Of Sand To The Mix Design

4.4.1 Before the addition of sand/aggregate, add the required amount of water and additives to the sealer in the mixing tank and mix thoroughly.
4.4.2 Sand Slurry Preparation
4.4.3 Keep the mixer running at a moderate rate.
4.4.4 Add the sand in a steady stream of about one 100 lb. bag per minute.

4.4.5 When adding sand, be sure you have firm footing and never place hands and arms in the agitating mixer. Always wear proper protective gear; gloves, eye protection, long sleeves and a breathing mask or respirator.
4.4.6 After adding all the sand, close the lid of the mixing tank and raise the speed of the mixer to “high” setting.
4.4.7 Agitate tank for 10 minutes to allow the contents of the tank to mix thoroughly and break up any sand clumps.
4.4.8 Reduce the agitator speed to “medium” setting and keep running. If the mixer is shut off during transport to the job site, it must be restarted, and the contents mixed for at least 10 minutes before the application begins. Keep the agitation running during the entire application period.
4.4.9 IMPORTANT: The sieve (mesh) size of the sand has an important correlation to the thickness of the cured sealer film. Using a sand that is either too coarse or too fine will not produce the desired results of durability, traction, uniformity of the cured film and if too large can “roll out” of the sealer under traffic. STAR-TRITON SUPREME® is specified to be used with a 50/70 U.S. Sieve size sand gradation for best results.

5.0 APPLICATION OF MATERIAL

5.1 Recommended as A Multi-Coat System Installation

5.1.1 The material shall be applied according to the specifications detailed in Section 4. These systems provide a protective coating that is free of voids, pinholes, and holidays (skips).

5.1.2 The First Coat; The STAR-TRITON SUPREME® sand slurry shall be uniformly applied over the entire surface according to the recommended coverage rate. If the surface temperature is more than 90° F, pre-dampen with a light mist avoiding the creation of puddles of water. There should be no free-standing water on the surface when applying the sealer.

5.1.3 Allow the first coat to dry sufficiently to take light traffic without scuffing. It could take approximately 4-6 hours under ideal drying conditions.

5.1.4 The Second Coat; If the specification calls for a second coat, apply it in a perpendicular direction to the previous coat, if practical to ensure the profile of the asphalt surface is evenly coated on all possible sides.

5.1.5 The completed application will need to be allowed to cure at least for 24 hours and then tested for traffic suitability prior to opening for regular use.

5.1.6 The amount of material needed will vary according to the porosity and texture of the pavement. The mix designs (i.e. STAR-TRITON SUPREME® and other ingredients) expressed in section 4.2.0 are guidelines only.

6.0 METHOD OF APPLICATION

6.1 Hand Tool Application Using Squeegee Or Brush.

6.1.1 Mixing Tank Details; The agitator in the sealer tank should be kept on at all times during application to keep the sealer mix design in proper suspension.

6.1.2 Cut In / Edging; Apply a coating around the edges of the pavement first by pouring a continuous ribbon of STAR-TRITON SUPREME® mix along the pavement edge approximately 6-12 inches from curbing/pavement edge. Draw the STAR-TRITON SUPREME® mix away from the pavement edge by pulling a squeegee or brush through the ribbon of material at a slight angle while walking parallel to the pavement edge. Repeat the process in reverse direction pulling the excess material toward the center of the pavement. For best results use a squeegee followed by a brush.

6.1.3 Sealer Application; Pour more STAR-TRITON SUPREME® mix to maintain a working ribbon of material and continue across the pavement until it is completely and uniformly covered. Continue the process in reverse direction pulling the excess material toward the intended end point of the pavement. For best results use a squeegee followed by a brush.

6.2 Machine Squeegee Application / Self Propelled Driven Unit

6.2.1 When applying by machine, first seal the edges of the pavement by hand as described in 6.1.2. The machine should then be used to apply STAR-TRITON SUPREME® mix to the remaining larger pavement area. A self-propelled machine that squeegees and brushes the sealer into the pores of the pavement is recommended. The machine should be equipped with a fog bar to be used for pre-dampening if the pavement temperature exceeds 90° F.

6.2.2 Care should be taken to ensure that the proper coverage rate is maintained, and frequent quality control checks should be made to confirm that the proper amount of sealer is being applied. Too much or too little sealer on the surface can cause complications in the proper cure out, lead to tire tracking and ultimately reduced durability/longevity of the finished sealcoating system

6.3 Spray Application By Self Propelled Driven Unit Or By Hand Wand)

6.3.1 Mechanical Considerations; If using a traditional diaphragm pump to deliver the sealer to the spray bar, an approximate pressure starting point should be at about 40-80psi. Start out with a lower psi setting and adjust as needed after a test patch is made. In most cases an 80/40 or 80/50 spray tip can be used. Note: the size of the spray tip and the amount of pressure is related, changing one will likely require an adjustment to the other. Spray tips should always be kept clean and free of dried sealer. Store spray tips in a sealed container of water to keep them clear.

6.3.2 HAND SPRAY APPLICATION WITH WAND; Spray application should deposit the material per specified coverage rates. When material is being sprayed the sealcoating spray pattern should be slightly angled (10-20°) and a back-and-forth fanning motion used. As you make each pass from right to left and then back left to right, tilt the angle of the spray in opposite directions so as to apply an even coating on all sides of the pavement profile. As you advance across the pavement you should overlap your application by 1/3 to 1/2 onto the previously applied row/area.

6.3.3 SPRAY APPLICATION WITH DRIVEN MACHINE; Spray application should deposit the material per specified coverage rates. Care should be taken to ensure that the proper coverage rate is maintained, and frequent quality control checks should be made to confirm that the proper amount of sealer is being applied. Too much or too little sealer on the surface can cause complications in the proper cure out, lead to tire tracking and ultimately reduced durability/longevity of the finished sealcoating system.

7.0 STRIPING

7.1 Traffic Marking Paint / Lot Striping

7.1.1 If striping is required, use STAR-BRITE® Latex Traffic Paint (TT-P-1952B) or STAR-BRITE PLUS®, Fast Drying 100% Acrylic Traffic Paint (TT-P-1952DE). Allow the seal coat to dry at least 24 hours before striping. Refer to the paint manufacturers Technical Data Sheet for details.

8.0 PRECAUTIONS

8.1 Storage and Temperature

8.1.1 STAR-TRITON SUPREME® must be protected from freezing. Do no store at temperatures below 32° F. Always store unused sealer in tightly closed containers.

8.2 Application and Temperature

8.2.1 Do not apply STAR-TRITON SUPREME® during rainy or foggy weather. Ground and air temperature must be 50° F and rising prior to and after application.

8.2.2 Drying is retarded by low temperatures and excessive moisture in the air or on the ground. Examples: rain, fog, prolonged humidity and seasonal extremes (early Spring and late Fall). Under such conditions, the use of STAR® branded additives is recommended to obtain optimum and uniform drying. If STAR-TRITON SUPREME® is applied too heavy, the coating will form a film on the very top of the surface and this film will restrict the water evaporation from the rest of the coating slowing down the full curing process.

8.3 Personal Protection and Safety

8.3.1 STAR-TRITON SUPREME® is based on specialty Petroleum Resins which are non-irritating, non-burning and have only a faint odor. Still use all precautions as detailed in the Safety Data Sheets for personal and environmental protection. Always wear full protective clothing and gear when handling
STAR-TRITON SUPREME®.

8.3.2 Keep out of reach of children.

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