

# STAR MICRO-PAVE

## Heavy-duty Asphalt Emulsion System

### Detailed Application Specification

#### 1.0 Objectives:

This specification covers the application of **MICRO-PAVE, a heavy duty protective sealcoating** system for existing, sound asphalt pavements to:

- 1.1 Extend the service life of the asphalt pavement by sealing out:
  - Sun's ultraviolet rays, which result in oxidative decomposition
  - Water and subsequent damage to the sub-base caused by water penetration.
- 1.2 Beautify and enhance the appearance.
- 1.3 Reduce the maintenance costs and extend the service life.
- 1.4 Fill minor surface imperfections and yield an even looking surface.
- 1.5 Provide a limited degree of skid resistance.

#### 2.0 Materials

##### 2.1 Micro Pave: Asphalt Emulsion Sealcoating System

2.1.1 Standards & Specifications: Micro-Pave meets and or exceeds the requirements of the following standards and specifications:

Constants/Property	Min.	Max	Method	Micro-Pave	Status
Weight/Gallon (lb.)	9.0	-	ASTM D244	9.25 Min.	Passes
% Non-Volatile	47	53	ASTM D2929-7849-51		Passes
% Non-Volatile Soluble in 20 carbon disulfide	-		" "	Passes	
% Ash of Non-Volatile	30	40	" "	34-35	Passes
Drying Time, hrs.	8	"	" 1-4	Passes	
Resistance to water	No penetration or loss of adhesion			OK	Passes
Flexibility	No cracking or flaking			OK	Passes
Resistance to impact	No chipping, cracking or flaking			OK	Passes
Well film continuity	Smooth, non-granular, free from coarse particles			OK	Passes
Cured Film color & Viscosity	Black	-	ASTM D562	OK	Passes
	75 Ku.				
Wet track Abrasion	-	35 gm..	ASTM 3910	OK	Passes
Accelerated Weathering	No deterioration		FED. SPEC.- TT-C-555B	OK	Passes

2.1.2 The material shall be homogeneous and show no separation or coagulation components that can not be redispersed with moderate stirring.

2.1.3 The material shall be suitable for application and complete coverage, by brush or by approved mechanical methods, to the bituminous surface at a spreading rate of 0.18-0.45 Gal. (based on the amount of MICRO-PAVE Concentrated) per square yard in a two (2) coat application system.

**2.2 Sand/Aggregate Specifications:** Sand shall be clean hard and irregular silica sand, free of clay, dust, salt, and organic matter. Must meet the following gradation, when tested in accordance with ASTM C136 or Cal tests 202. Sand with AFS rating of 50 to 70, with less than 2% retained on 30 mesh, less than 10% on 140mesh and less than 0.3% retained on 200 mesh screen, is recommended.

U.S. Sieve Size	Percentage Retained	
	Minimum	Maximum
No. 20 or Coarser (0.850 mm)	0	0
No. 30 (0.600 mm)	0	3
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
Finer than No. 200	0	0.3

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

**2.4 Additive - STAR MICRO-LOCK**, is recommended. This specialty additive designed for asphalt emulsion sealcoatings is based on Acrylonitrile/butadiene latex rubber to impart toughness, flexibility and durability. It shall be used per mix design and specification requirements.

**2.5 Crack Fillers:** Must be certified by the supplier for compatibility with the sealcoating material. Cold pour crack fillers, **STAR STA-FLEX** and the premium grade **STA-FLEX SUPREME**, are recommended by S.T.A.R. Hot pour rubberized crack fillers may also be used.

**2.6 Primers:**

2.6.1 **Oil Spot Primers:** Must be certified by the sealcoat manufacturer for compatibility with the sealcoating material. *STAR S.O.S. Primer/Sealer* is recommended.

2.6.2 **Pavement Primer:** Must be certified by the sealcoat manufacturer for compatibility with the sealcoating material.

2.6.3 **Specialty Coatings/Primers** may be recommended by the manufacturer for problematic areas, e.g. rust streaks in the pavement, excessive surface contamination with oil, grease, fat etc. *STAR ONE STEP*, pre-mixed with water (in 1:2 volume ratio; STAR MICRO-PAVE/water) is recommended for fresh laid asphalt patches and polished aggregates.

**3.0 Surface Preparation:**

3.1 For new installations, the pavement surface must be cured at least 30 days in hot weather. Check by spreading some water. If the water does not bead and stays in a continuous film, the pavement is suitable for sealcoating.

3.2 Clean the surface thoroughly to remove all foreign debris (dirt, gravel, silt, etc.) using air blowers or pressure washing with water. Embedded dirt and silt shall be removed with steel bristle hand brooms.

3.3 Mud areas shall be thoroughly scraped and pressure washed with clean water.

3.4 Treat all grease and oil spots by scraping off the excess oil and dirt with a wire bristle broom and coat with **STAR OIL SPOT PRIMER SEALER (S.O.S)** in accordance with directions. **STAR ONE STEP** is recommended for the areas contaminated extensively with oil, grease fuel etc.

3.5 Make all necessary repairs, patch soft spots, and fill all cracks and holes in the pavement. All patched areas must be cured before applying **MICRO-PAVE**.

3.6 On excessively weathered surfaces or areas that cleaning operation leave a film of dust, a tack coat shall be applied. The tack coat shall consist of one (1) part of asphalt emulsion (SS-1-H) mixed with four (4) parts of water by volume or one (1) part of MICRO-PAVE mixed with two (2) parts of clean water. Apply the mixture at a rate of 0.05 to 0.10 Gal./Sq. yard. Allow the primer coat to dry thoroughly prior to sealcoating with **MICRO-PAVE**.

#### 4.0 Recommended Mix Designs and Application Specifications:

**4.1 Mix Designs: MICRO-PAVE** as supplied is in a highly concentrated form and it has to be mixed with water, mineral aggregates and specialty additives, for use as a sealcoating system. The use of an additive is frequently recommended.

##### Standard Mix Design:

MICRO-PAVE	-100	Gals.
Water	-10 to 20	Gals.
Sand or Aggregates	-300 to 500	Lbs.
MICRO-LOCK	-2 to 3	Gals.

Note: MICRO-LOCK must be pre-mixed with an equal volume of water, before adding to MICRO-PAVE, to avoid spot gelling and shocking the system. The water must be added to MICRO-LOCK and not vice-versa. The mixture shall be blended into MICRO-PAVE while mixing.

##### 4.2 Application Specifications:

All application rates are expressed as gallons of the above mixture used/square yard of the pavement.

Typical sealcoating applications require two (2) coats of the above mixture. Each application of the mixture shall be at a rate of 0.14 to 0.22 gallons per square yard per coat, i.e. 0.28-0.44 gallon per square yard for two (2) coats. The coverage rate and the material usage will vary according to pavement porosity, weather conditions and traffic requirements. The mix designs shall be modified to accommodate such conditions for an optimum performance.

**4.2.1 LOW & MEDIUM TRAFFIC areas:** parking lot, home driveways, airfields, bridge decks etc. Apply two (2) coats of the ready to use material. The suggested composition is as follows:

<b>MICRO-PAVE</b>	<b>-100</b>	<b>Gals.</b>
Water	-15	Gals.
Sand	-500	Lbs.
<b>MICRO-PAVE</b>	<b>-2</b>	<b>Gals.</b>

**Coverage rate:** Approx. 0.24 Gal./Square Yard for two (2) coats.

**4.2.2 HIGH TRAFFIC Areas** Service stations, high traffic parking lots (exit and entrance). Apply three (3) sand slurry. The suggested composition is as follows:

<b>MICRO-PAVE</b>	<b>-100</b>	<b>Gals.</b>
Water	-20	Gals.
Sand	-300	Lbs.
<b>MICRO-PAVE</b>	<b>-3</b>	<b>Gals.</b>

**Coverage rate:** Approx. 0.35 Gal./Square yard for three (3) coats.

**4.3 For aged pavements:** For excessively oxidized pavements, a total of three (3) coat system is recommended, the very first coat being a primer coat followed by a standard two (2) coat MICRO-PAVE sand slurry system.

#### **4.4 Sand Slurry Preparation**

-Add the required amount of water to MICRO-PAVE in the mixing tank and mix thoroughly.

-Keep the mixer running at a moderate rate.

-Add the sand in a steady stream of about one 100 lbs. bag per minute. While adding sand be sure of firm footing and never place hands and arms in the agitating mixer.

-After adding all the sand, close the lid of the mixing tank and raise the speed of the mixer to "high" setting.

-Mix for 10 minutes to allow the contents of the tank to mix thoroughly and break any sand clumps

-Reduce the agitator speed to moderate setting and keep running. If the mixer is shut off during transport to the job site, it must be restarted and contents mixed for at least 10 minutes before the application begins. Keep it running during the entire application period.

### **5.0 Application of Material**

5.1 The material shall be mixed according to the specifications detailed in Section 4.2. Quantities of the material will vary according to porosity and texture of the pavement. The mix designs (i.e. **MICRO-PAVE** and other ingredients) expressed in sections 4.2 are for guidelines only.

5.2 MICRO-PAVE must be applied when ambient and pavement temperatures are above 60 °F. Good drying conditions are required during the subsequent 24 hrs. but never below 60 °F. Nighttime application is not recommended.

-The first coat, MICRO-PAVE sand slurry, shall be uniformly applied over the entire surface. If the surface temperature is more than 90 degrees °F, pre-dampen with a light mist. Avoid puddles. There should be no free standing water.

-Allow the first coat to dry sufficiently to take light traffic without scuffing. Under ideal drying conditions, it will take about 1-2 hours. Ideal drying conditions are temperatures of 70-80 °F, sunlight, relative humidity 50% or lower and movement of air. Lower temperatures, high humidity, clouds or shade and lack of air movement retard the cure.

-If the specification calls for a second coat, apply it perpendicular to the previous coat, if practical.

-The completed application shall be allowed to cure at least for 24 hours and tested for trafficability prior to opening for regular use.

### **6.0 Method of Applications**

#### **6.1 Squeegee/Brush (Hand Application) method:**

The agitator in the sealer tank should be kept on to keep the material in suspension at all times. The machine should be equipped with a fog bar to be used for pre-dampening if the pavement temperature exceeds to degrees °F.

Coat the edges first. Pour a continuous ribbon of the **MICRO-PAVE mix** along the pavement edge 6-12 inches from curbing.

Draw MICRO-PAVE mix away from the pavement edge by pulling a squeegee or brush perpendicular through the ribbon of material at a slight angle. Walk 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 squeegee followed by a brush. Pour more MICRO-PAVE mix to maintain a working ribbon of material and continue across the pavement until it is completely covered.

## **6.2 Machine application:**

When applying by machine, seal the edges of the pavement by hand. The machine should then be used to apply MICRO-PAVE mix to remaining area. A self-propelled machine that squeegees and brushes the sealer into the pores of the pavement is recommended.

Spray application should deposit the material according to the coverage rates recommended for the specified job.

## **7.0 Striping**

If striping is required, use **STAR-BRITE Latex Traffic Paint (TT-P-1952b)** or **STAR BRITE PLUS, fast drying-100% Acrylic Traffic Paint**. Allow the seal coat to dry at least 24 hours before striping. Refer to the Technical Data Sheet for details.

## **8.0 Precautions:**

**8.1 MICRO-PAVE** must be protected from freezing. Do not store at temperatures below 32 degrees °F.

8.3 Drying is retarded by excessive moisture in air or ground. Examples: rain, fog, prolonged humidity and seasonal extreme (early Spring - late Fall). Under such conditions, the use of **MICRO-LOCK** is recommended to obtain optimum and uniform drying.

8.4 Follow the recommended coverage rates. If MICRO-PAVE is applied too heavy, the surface will dry and restrict the water evaporation from the rest of the film, slowing down the complete drying process.

**8.5 Keep out of the reach of children.**

8.6 Refer to the Material Safety Data Sheet (M.S.D.S.) for all relevant details.

## **Disclaimer:**

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