

PRODUCT BULLETIN



MICRO-PAVE SUPREME

PREMIUM GRDE ASPHALT EMULSION SEALCOATING

GENERAL DESCRIPTION

MICRO-PAVE SUPREME is an outstanding sealer that is far superior to the conventional asphalt emulsion based sealers. **MICRO-PAVE SUPREME**, as supplied, already **contains the rubber** and specialty chemicals, which impart an outstanding performance. The rubber is hot-blended during the manufacturing process.

HIGHLIGHTED BENEFITS

MICRO-PAVE SUPREME:

1. **Is a unique product** with an unconventional technological approach. It has far superior performance to the conventional asphalt emulsion based sealers.
2. **Does not need excessive amounts of water** in the mix design. The conventional sealers, after adding rubber latex, become excessively thick and require large amounts of water for viscosity control.
3. **Certified** to meet and/ or exceed specifications.
4. **Is highly Cost Effective** & performs better than mix designs where the rubber latex is added on the job.
5. **Savings in Labor Costs.**

MICRO-PAVE SUPREME yields better performance in fewer coats.

APPLICATION NOTES

MICRO-PAVE SUPREME is applied using conventional methods, spray, squeegee, brush, etc.

Dilution -Max 20% by volume on the amount of concentrated.

Mix design, - STAR MICRO-PAVE SUPREME

Sealcoat Type	MICRO-PAVE SUPREME	WATER	AGGREGATE	APPLICATION OF THE MIX.
	GALLONS	GALLONS	LBS.	GAL/SQ.YARD
RUBBERIZED SAND SLURRY	100	20 max.	300-600	0.14-0.17
RUBBERIZED EMULSION	100	20 max.	None	0.10-0.12

PRECAUTIONS

Keep out of reach of children

Follow all safety instructions for handling and storage.

Contains refined coal tar. Read the Material Safety Data Sheet (MSDS).

Keep the partially used containers tightly closed.

DETAILED APPLICATION SPECIFICATION



**MICRO-PAVE SUPREME
SEALCOATING FOR AIRPORT PROJECTS**

1.0 Objectives:

This specification covers the application of MICRO-PAVE SUPREME, is a *premium grade* rubberized protective sealcoating system.

- 1.1 To extend the service life of asphalt pavements by sealing out:
 - The sun’s ultraviolet rays, which result in oxidative decomposition,
 - Deteriorating effects of deicing salts, water and subsequent damage to the sub-base caused by water penetration.
- 1.2 To beautify and enhance the appearance.
- 1.3 To reduce the maintenance costs and extend the service life.
- 1.4 To fill minor surface imperfections and yield an even looking surface.
- 1.5 To provide a limited degree of skid resistance.

2.0 Materials:

2.0 MICRO-PAVE SUPREME, Asphalt/clay Emulsion Based Sealcoating.

2.1.1 Meets and or exceeds the requirements of the following specifications.

Constants/Property	Min.	Max	Method	MP-SUPREME	Status
Weight/Gallon (lb.)	9.0	-	ASTM D244	9.25 Min.	Passes
% Non-Volatile	47	53	ASTM D2939	49-51	Passes
% Non-Volatile Soluble in carbon disulfide	20	-	ASTM D2939	-	Passes
% Ash of Non-Volatile	30	40	ASTM D293	34-35	Passes
Drying Time, hrs.	-	8	ASTM D2939	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
Wet track Abrasion	-	35 gm.	ASTM 3910	OK	Passes
Accelerated Weathering	No deterioration		FED. SPEC.- TT-C-555B	OK	Passes

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

2.1.4 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 - 0.20 gal. (based on the amount of MICRO-PAVE SUPREME Concentrated) per square yard in a two (2) coat application system.

- 2.1 **Sand / Aggregate Specifications:** 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
Finer than No. 200	0	3

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

- 2.3 **Additive** – None required. Fast drying additives, e.g. Macro-fast & Max-Dri may be added, if specified and accepted by the project manager.

- 2.4 **Crack Fillers:** Must be certified by the supplier for compatibility with the sealcoating material. Cold pour crack fillers, *STAR STA-FLEX*, or a hot-pour rubberized crack fillers are recommended.

2.4 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-diluted with water (in 1:2 volume ratio; product: water) is recommended. It is also recommended for fresh laid asphalt patches and polished aggregates.

3.0 Surface Preparation:

The pavement surface to be sealcoated must be sound and surface cured to achieve the optimum performance. Sound pavements are those that;

- Have oil free surface (for additional notes-see under new pavements).
- Are compacted proper over the base and sub-base courses and suitable for the desired traffic loads and
- Are well drained and stable.

- 3.1 **New Asphalt Pavement Surfaces:** Cure new asphalt pavement surfaces so that there is no concentration of oils on the surfaces. A period of at least 90 days at +70 ° F daytime temperature must elapse between the placement of a hot-mixed asphalt pavement and the application of STAR MICRO-PAVE SUPREME. Perform a water-break-free test to confirm that the surface oils have degraded and dissipated. Cast one gallon of clean water over the surface to be tested. If the water sheets out uniformly, without crawling or showing oil rings, the pavement is suitable for sealcoating.

- 3.2 Old and **or badly oxidized asphalt pavement** shall be primed with a primer coat, prior to sealcoating.
Prime coat - The suggested materials are;

- a. MICRO-PAVE SUPREME, diluted with clean potable water in 1:3 volume ratio (sealer: water) applied at 0.04 to 0.06 Gal.(undiluted sealer)/ Square yard.
- b. STAR ONE STEP, diluted with clean potable water in 1:2 volume ratio (STAR ONE STEP: Water), applied at 0.05-0.08 gal. (mixed)/ Square Yard.

- 3.2 **Clean the surface thoroughly to remove all foreign debris** (dirt, gravel, silt, etc.) using air blowers or by flushing with water. Embedded dirt and silt shall be removed with steel bristle hand brooms.
- 3.3 **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 (S.O.S.)** in accordance with directions. **STAR ONE STEP** is recommended for areas contaminated extensively with oil, grease fuel etc.
- 3.4 **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 SUPREME**.

4.0 **Materials and Recommendations:**

4.1 **Materials Calculations:**

For a standard two (2) coat sealcoating system, calculate at the rate of 0.18-0.20 gallons of undiluted sealer per square yard of the asphalt surface to be sealcoated.

Ist. coat requires- 0.10-0.12 gal./square yard,

IInd. Coat requires- 0.08-0.10 gal./square yard.

Other Ingredients (water, sand/aggregates, etc.)-see section 4.2.

4.2 **Recommended Systems:**

Mix Design, using STAR MICRO-PAVE SUPREME

Sealcoat Type	STAR MICRO-PAVE SUPREME	WATER	AGGREGATE	APPLICATION OF THE MIX.
	GALLONS	GALLONS	LBS.	GAL/SQ.YARD
RUBBERIZED SAND SLURRY	100	20 max.	300-600	0.14-0.17
RUBBERIZED EMULSION	100	20 max.	None	0.10-0.12

4.4 **Sand Slurry Preparation**

- Add the required amount of water to the sealer in the mixing tank and mix thoroughly.
- Keeps the mixer running at a moderate rate.
- Add the sand in a steady stream of about one 100 lb. bag per minute. When 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 the 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 applied according to the specifications detailed in Section 4. These systems provide a protective coating that is free of voids, pinholes, and holidays.
- 5.2 The first coat, **STAR MICRO-PAVE SUPREME** sand slurry, shall be uniformly applied over the entire surface. If the surface temperature is more than 90 ° F, pre-dampen with a light mist. Avoid puddles. There should be no free standing water. Do not apply if the ambient and surface temperatures are min. 50 ° F and rising.

- 5.3 Allow the first coat to dry sufficiently to take light traffic without scuffing. It will take about 4-6 hours under ideal drying conditions. If the specification calls for a second coat, apply it perpendicular to the previous coat, if practical.
- 5.4 The completed application shall be allowed to cure at least for 24 hours and then tested for traffic-ability prior to opening for regular use.
- 5.6 The amount of material needed will vary according to the porosity and texture of the pavement, therefore, use mix designs (section 4) for guidelines only.

6.0 Method of Application

6.1 Squeegee/ Brush (Hand Application) method:

- 6.1.1. 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 90 ° F.
- 6.1.2. Coat the edges first. Pour a continuous ribbon of the **MICRO-PAVE SUPREME** along the pavement edge 6-12 inches from curbing.
- 6.1.3 Draw the **MICRO-PAVE SUPREME** 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 a squeegee followed by a brush. Pour more **STAR MICRO-PAVE SUPREME** mix to maintain a working ribbon of material and continue across the pavement until it is completely covered.

6.2 Machine Application:

- 6.2.1. When applying by machine, seal the edges of the pavement by hand. The machine should then be used to apply **MICRO-PAVE SUPREME** mix to the remaining area. A self-propelled machine that squeegees and brushes the sealer into the pores of the pavement is recommended.
- 6.2.2. Spray application should deposit the material according to specified coverage rates.

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 or STAR PERMAILNE, Oil-based Traffic Paint. Allow the seal coat to dry at least 24 hours before striping.

8.0 Precautions:

- 8.1 **MICRO-PAVE SUPREME** must be protected from freezing. Do not store at temperatures below 32 ° F. Do not apply **STAR MICRO-PAVE SUPREME** during rainy or foggy weather. **Ground and air temperature must be 50 ° F and rising prior to and after application.**
- 8.2 Drying is retarded by excessive moisture in the air or ground. Examples: rain, fog, prolonged humidity and seasonal extremes (early spring - late fall). Under such conditions, allow additional time for initial drying and cure
- 8.3 Follow the recommended coverage rates. IF **MICRO-PAVE SUPREME** is applied too heavy, the surface will dry first and restrict the water evaporation from the rest of the film, slowing down full curing process.
- 8.4 Use good sealcoating practices for personal hygiene and safety. Avoid breathing vapors and wear protective clothing and eye protection. See the Material Safety Data Sheet for **MICRO-PAVE SUPREME** for details.
- 8.5 Keep out of reach of children.

Disclaimer:

These specifications report accurate and reliable information to the best of our knowledge, however, no expressed or implied warranties are extended by the manufacturers due to the fact that the conditions of use and workmanship are beyond the controls of the manufacturer. STAR Inc. assumes no responsibility for the use of information presented herein and hereby disclaims all liability in regard to such use.



MICRO-PAVE SUPREME

MATERIAL SAFETY DATA SHEET

Manufacturer: STAR, INC.
1150 Milepost Drive
Columbus, OH 43228

Emergency Phone No. CHEM-TEL 800-255-3924
Information Phone No. 614-870-0744
Effective Date 11/01/05
Supersedes Date -

SECTION I - IDENTIFICATION

Product Name: MICRO-PAVE SUPREME, SPECIALTY ASPHALT EMULSION BASED SEALER.

Chemical Family- Asphalt Emulsion Based Sealcoating.

Chemical Name - Proprietary

Prepared by - G.C. Dubey

H.M.I.S

Health= 0

Fire= 0

Reactivity= 0

SECTION II - INGREDIENTS

<u>Ingredients</u>	<u>CAS NO.</u>	<u>WT%</u>	<u>Exposure Limits</u>	
<u>Hazardous Ingredients</u>			OSHA	ACGIH
			PEL	TLV
ASPHALT	8052-42-4	29-30%	N/A	5.0 mg/m3 (volatiles) (volatiles))

Listed in SARA Title III, Section 313- No.

STEL - N/A*

LC 50 - N/A

LD 50 - N/A

Other Ingredients

Ethoxylated Amine

1 %

Specialty Polymers

Proprietary

3-4%

N/D

N/D

(dust)

BALL CLAY *

1332-58-7

17-19%

N/A

5.0 mg/m3 (dust)

* Ball clays contain crystalline silica as quartz (CAS No. 14808-60-7) up to 30% by dry weight depending upon product.

OSHA PEL for quartz is 0.1 mg/m3.

STEL - 5.0 mg/m3 (dust)

LC 50 - N/A

LD 50 - N/A

Water

7732-18-5

49-50%

N/A

N/A

Listed in SARA Title III, Section 313 - No.

STEL - N/A

LC 50 - N/A

LD 50 - CTI OVER 320,000

LD 50 - N/A

Ingredients total weight % are below 100 % only if all other unlisted ingredients are not considered hazardous by any federal (OSHA, WHMIS,SARA), any state or province or local Right-To-Know regulations.

SECTION III - PHYSICAL DATA

<u>Boiling Point</u>	<u>Vapor Pressure</u> (mm Hg)	<u>Vapor Density</u> (Air=1)	<u>Appearance</u>
Over 212 °F	approx. 25	>1.0	Brownish-black, heavy liquid with asphalt odor.
<u>Evaporation Rate</u> (Water=1)	<u>Specific Gravity</u> by wt.	<u>% Volatile</u>	<u>Freezing Point</u>
1	1.1-1.2	48-50%40	32 °F / 0 °C
<u>Miscibility With Water</u> ppm	<u>Threshold Odor</u>	<u>pH</u>	<u>Water/Oil Distribution</u> Coefficient
Infinite	N/A	7-8	1/1
<u>Pour Point</u>	<u>Cloud Point</u>	<u>Other comments</u>	
N/D	N/D	None additional	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

<u>Flammability Classification</u>	<u>Flash Point</u> (method used)	<u>Flammable Limits</u>	
HMIS Rating- 0	>200 F /PMCC	LEL N/A	UEL N/A
<u>Combustion Products</u>	<u>Extinguishing Media</u>		
CO, CO2, Hydrocarbons	Foam, Dry Chemicals & CO2.		

Unusual Fire and Explosion Hazards: Containers may rupture due to steam pressure build up when exposed to intense heat. Product may splatter if the temperature exceeds the boiling point of water.

Special Fire Fighting Procedures: Cool exposed containers to prevent steam pressure build up. Wear self-contained breathing equipment and protective clothing.

<u>Explosive Power</u>	<u>Burning Rate</u>	<u>UN/NA/PIN#</u>	<u>Static Sensitive</u>	<u>Impact Sensitive</u>
N/A	N/A	N/A	NO	NO

SECTION V- HEALTH HAZARD DATA

Threshold Limit Value : 0.1 mg/m³ FOR RESPIRABLE CRYSTALLINE QUARTZ, WHICH IS NOT EXPECTED UNDER NORMAL CONDITIONS, BECAUSE THE PRODUCT IS SUPPLIED AS A WATER BASED COATING WHERE THE RESPIRABLE PARTICLES ARE ENCAPSULATED IN THE ASPHALT BINDER.

Routes Of Entry Skin, eyes, inhalation, ingestion.

Effects Of Overexposure - Acute: NO Chronic: NO

ACUTE

Eyes - May cause eye irritation.

Skin - May cause irritation of skin.

Inhalation - May cause nausea and headache. Prolonged and repeated inhalation may be harmful to respiratory

system.

Ingestion - May cause nausea, cramps, vomiting, and /or diarrhea.

Unusual Chronic Toxicity: None Known.

Carcinogenic: IARC- NO ACGIH- NO

Emergency and First Aid Procedures

Eyes - Immediately flush with plenty of water for 15 minutes, call a physician, if condition persists.

Skin - Wash thoroughly with plenty of water and soap. Remove and wash contaminated clothing.

Inhalation - Move to fresh air, Restore breathing if required. Treat symptomatically. Consult a physician.

Ingestion - Do not induce vomiting. Immediately drink 1 or 2 glasses of milk. Do not attempt to give anything by mouth to an unconscious person. Seek physician immediately and show M.S.D.S. or label.

SECTION VI- REACTIVITY DATA

<u>Stability</u>	<u>Conditions to Avoid</u>	<u>Incompatibility</u> <u>(materials to avoid)</u>
Stable	Keep from freezing.	Strong oxidizing agents

Hazardous Decomposition Products - N/A

Hazardous Polymerization - Will not occur.

Conditions to Avoid - N/A

SECTION VII - SPILL OR LEAK PROCEDURES

SARA Title III

302 - No # 304 CERLA - No # 313 - No. RCRA-No.

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Ventilate the area. Wear approved respiratory protection. Wear suitable protective clothing, gloves and eye / face protection. Contain and pick up waste material. Put in a sealed approved container. Dispose of in accordance with federal, state, and local regulations.

For Small Spills: Absorb with an inert material and place in containers.

For Large Spills: Contain material and pump into tanks or other suitable containers. Spills over 45 gallons should be reported to national, state and local emergency response agencies. The telephone number for the National Response Center is 800-424-8802.

Do not flush into sewers or bodies of water. The material will suffocate fish until it settles to bottom.

WASTE DISPOSAL

This material is not a hazardous waste in either liquid (emulsion) form or as dried material. Recommended disposal by land filling (dry) or incineration shall be selected in accordance with the local, state and federal regulations.

Reportable Quantity - N/A

Regulations - WHMIS, SARA, State and province.

Hazardous Waste - N/A

TPQ (lb.) - N/A

SECTION VIII - SAFE HANDLING AND PROTECTION INFORMATION

Ventilation: Local Exhaust – Recommended controlling mists or vapors when using this product.
Mechanical (General) - Recommended
Special: N/A Other: N/A

Respiratory Protection (Specify type): Use only with adequate ventilation. If ventilation is inadequate, wear appropriate respiratory equipment.

Protective Gloves: Rubber gloves, chemically resistant.

Eye Protection: Wear safety glasses, goggles or face shield.

Other Protective Equipment: Wear suitable protective clothing. Remove and wash contaminated clothing before re-use. A source of clean water shall be available for washing eyes and skin.

Hygienic Practices: Wash hands before eating , smoking or using washrooms. Smoke only in designated areas.

Estimated LD50, MG/KG : N/A

Estimated LC50, PPM : N/A

Sensitization: N/A

Irritants : Yes, mild skin & lungs

SECTION IX - SPECIAL PRECAUTIONS

1. Keep out of reach of children.
2. For professional and industrial use only.
3. Do not handle until manufacturer's safety precautions have been read and understood.
4. Use only with adequate ventilation.
5. Do not take internally.
6. Avoid contact with eyes and skin.
7. Wash thoroughly after using. Practice safe hygiene principles.
8. Additional Technical Data Sheets and/or M.S.D.S.'s are available upon request.
9. Store between 50 - 100 °F. Keep the containers tightly closed after each use.

THE RECOMMENDATIONS AND INFORMATION PROVIDED HEREIN ARE BELIEVED TO BE ACCURATE AS THE DATE HEREOF. HOWEVER, SUCH INFORMATION AND RECOMMENDATIONS ARE PROVIDED WITHOUT WARRANTY OF ANY KIND AND S.T.A.R., INC. DISCLAIMS ANY AND ALL LIABILITY OR LEGAL RESPONSIBILITY FOR USE AND RELIANCE UPON THE SAME.