

# PRODUCT INTRODUCTION

# STAR FAA SEALCOATING FORMULATION AVIATOR



## SEALCOATING FOR AIRPORT PROJECTS



*This is the **First** product of its kind in our business.*

## **STAR AVIATOR;**

- Far superior in performance than conventional mix designs where rubber is mixed on the job.
- Meets &/ or exceeds FAA performance tests & Specs.
- **STAR AVIATOR** contains FAA required rubber. No on the job blending of rubber latex & excessive amounts of water.
- Minimal time needed for sealer preparation.
- No on-the-job inspection (for rubber amounts) is needed.
- Pre-shipment certification for FAA performance tests issued by STAR.
- Independent lab test certification.

## PRODUCT BULLETIN



### SEALCOATING FOR AIRPORT PROJECTS SPECIFICATION: FAA P-627

#### GENERAL DESCRIPTION

**STAR AVIATOR** is an outstanding sealer that is dramatically superior to the conventional FAA mix design sealers. **STAR AVIATOR** as supplied, already *contains the rubber* per FAA specifications. The rubber is hot blended during the manufacturing process. The superiority in performance has been established in field performance & by independent testing laboratories.

#### HIGHLIGHTED BENEFITS

##### **STAR AVIATOR, SEALCOATING FOR AIRPORT PROJECTS;**

1. **Is a unique product with unconventional technological approach.** No similar products in the industry.
2. **Has far superior performance** to the conventional FAA, mix designs.
3. **Allows mix design control-** Rubber is the most critical component in FAA mix designs. Factory blending of the rubber in **STAR AVIATOR** assures the accuracy of the mix.
4. **Certified** to meet &/ or exceed FAA specifications.
5. **Is Cost Effectiveness** & performs better than mix designs containing much higher rubber latex e.g. at 7% & 10% levels.
6. **Savings in Labor Costs.**
  - Better performance with STAR AVIATOR
  - In fewer coats,
  - No need for special equipment, e.g. drag box, etc.
  - Time saved by not adding rubber on the job.

#### APPLICATION NOTES

**STAR AVIATOR**, is applied using conventional methods, spray, squeegee, brush, etc. Consult FAA P-627 Specification for details.

#### PRECAUTIONS

##### **Keep out of reach of children**

Follow all safety instructions for handling & storage.

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

Keep the partially used containers tightly closed.



March 15, 2002

**To Whom It May Concern:**

This is to certify that;

- A. **STAR AVIATOR**, meets &/ or exceeds the requirements of FAA Specification P-627.
- B. **STAR AVIATOR** contains 4% rubber (Acrylonitrile/butadiene). The product shall be diluted with water at a rate not exceeding 20% by volume of the product.

**Test Data & Specification Compliance:**

**STAR AVIATOR meets &/ or exceeds the requirements of FAA P-627.**

| <b>Properties</b>           | <b>FAA P-627 SPEC.</b>      | <b>TEST DATA</b>                   | <b>COMMENTS</b> |
|-----------------------------|-----------------------------|------------------------------------|-----------------|
| <b>Brookfield Viscosity</b> | <b>Visual Compatibility</b> | <b>Materials appear compatible</b> | <b>Passed</b>   |
|                             | <b>10-90 Poises</b>         | <b>44.4 Poises</b>                 | <b>Passed</b>   |
| <b>Scuff Resistance</b>     | <b>&gt;100 in-Lbs.</b>      | <b>8 hrs., 165 in-Lbs.</b>         | <b>Passed</b>   |
| <b>&gt; 8 Hr. Torque</b>    | <b>24 hrs. 175 in-Lbs.</b>  | <b>Passed</b>                      |                 |
| <b>Freeze Thaw</b>          | <b>1 Max.</b>               | <b>5 cycles 0</b>                  | <b>Passed</b>   |
| <b>3 Max.</b>               |                             | <b>10 Cycles 2</b>                 | <b>Passed</b>   |
| <b>Adhesion</b>             | <b>5A</b>                   | <b>5 A</b>                         | <b>Passed</b>   |

Please contact the undersigned if you have any questions.

Sincerely,  
S.T.A.R, INC.

Girish C. Dubey  
President



**soil and materials engineers, inc.**

43980 Plymouth Oaks Blvd. Plymouth, MI 48170-2584 (734) 454-9900 FAX (734) 454-0629

Kenneth W. Kramer, PE  
Frank A. Henderson, PG  
Timothy H. Bedenis, PF  
Gerald M. Bellan, PC  
Larry P. Jedele, PE  
Star D. Kohn, PhD, PE  
Mark K. Kramer, PC  
Edward S. Lindow, PE  
Gerard P. Mardej, PE  
Truman F. Maxwell, CPA  
Robert C. Rabeler, PE

J. William Coberly, CET  
Sheryl K. Fountain  
Chuck A. Gemayel, PE  
David J. Harlbart, PE  
Cheryl Kehres Dietrich, CGWP  
Michael S. Meddock, PE  
Timothy J. Mitchell, PE  
Thomas P. Rozman, Ph. CHM  
John C. Zarzcki, CWI  
Paul Byczkowski, CT  
Christopher R. Byrum, PhD, PE  
Michael E. Gasc, CWI  
Julie A. Hartner  
T. Laney Hosson  
Herbert A. Hoskins, CHMM  
Joel A. Johnson, CE-I  
Laurel M. Johnson, PF  
Jeffery M. Krusinga, PF  
James M. Less, CIH  
Mark L. Michener  
Michael J. Neuman, PE  
Thomas M. Post, PE  
Rohan W. Porca, PhD, PE  
Thomas M. Powell  
Daniel O. Roesser  
Thomas H. Skotzke  
Larry W. Shock, PE  
R. Scott Steiner, CI  
Michael J. Tholen, PE

February 26, 2002

Mr. Gurish Dubey  
STAR, inc.  
1400 Walcutt Road  
Columbus, OH. 43228

Re: Coal Tar Sealer Mix Design  
FAA P-625  
Columbus, Oh.  
SME Project No. PP 40879

Dear Mr. Dubey:

We have completed the Coal Tar Sealer Mix Design you requested using the blended coal tar and latex, sand and water samples we received. The mixture was prepared using the FAA P-627 procedure you transmitted to us. We understand the sample of sealer we received was comprised of coal tar emulsion and latex additive added at a rate of 4% by volume. We blended the mixture with aggregate and the water sample we received. The materials were combined and tested in accordance to the FAA P-627 specifications. The mix design and test results completed to date are as follows:

**Mix Design**

| Material          | Proportion  | Specified    |
|-------------------|-------------|--------------|
| Coal-tar Emulsion | 100 gallons | 100 gallons  |
| Mix Water         | 20 gallons  | 65 gal. max. |
| Latex Additive    | 4 gallons   | 3-6 gal.     |
| Sand Aggregate    | 300 pounds  | 300-800 LBS. |

| Test Property        | Test Results                               | Criteria                             |
|----------------------|--|--------------------------------------|
| Brookfield Viscosity | Materials appear compatible<br>44.4 poises | Visual Compatibility<br>10-90 poises |
| Scuff Resistance     | 8 hrs. 165 in-LBS.<br>24 hrs. 175 in-LBS.  | >100 in-LBS.<br>>8 hr Torque         |
| Freeze Thaw          | 5 Cycles 0<br>10 Cycles 2                  | 1 Max.<br>3 Max.                     |
| Adhesion             | 5 A  | 5 A                                  |
| Fuel Resistance      | No Penetration                             | No Penetration                       |



Detroit  
Bay City  
Kalamazoo  
Lansing  
Toledo  
Grand Rapids

Consultants in the geosciences, materials, and the environment

Mr. Gurish Dubey  
STAR, Inc.  
February 26, 2002  
Page 2

The materials used in the mix design were the products you submitted for our testing.

Based on the FAA P-627 criteria, all materials and mix properties as reported to date, meet the FAA P-627 criteria.

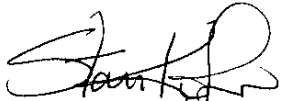
If you have any questions regarding these test results please do not hesitate to contact us.

Very truly yours,

**SOIL AND MATERIALS ENGINEERS, INC.**




Thomas M. Powell  
Materials Consultant



Starr D. Kohn P.E.  
Vice President

t:/proj/pp40879t1.ltr

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# PROJECT REPORT



## SEALCOATING FOR AIRPORT PROJECTS COMPARATIVE STUDY AGAINST CONVENTIONAL FAA SPECIFICATIONS.

### OBJECT

To perform a comparative study of **STAR AVIATOR** STAR AVIATOR against the Conventional FAA (P-627 & P-628) compositions.

### SUMMARY & CONCLUSIONS

1. **STAR AVIATOR** was found to be demonstrably superior in performance to all the Conventional FAA mix designs.
2. Amongst the conventional grade, the scrub resistance properties generally deteriorated with the increase in the amount of the rubber content.

### MATERIALS

**STAR AVIATOR** is a special proprietary sealcoating composition, specifically developed for FAA projects. As supplied, the product contains 4% Acrylonitrile/ Butadiene Rubber (the polymer meets the requirements of FAA P-627), on the total volume of the sealer. *No latex rubber or polymer shall be mixed with the product prior to application.* Just mix with;

- The desired amount of sand, per FAA specifications for the project &

### EVALUATION PROCEDURES

**STAR AVIATOR** was compared against;

- The conventional FAA mix compositions, using; STAR SEAL (ASTM 5727-00, formerly Fed Std. RP-355 e.)
- Rubber Additive- Macro-Flex Acrylonitrile/ Butadiene Rubber Latex
- Sand.

Three (3) samples were made by post adding **STAR MACRO-FLEX**, to the diluted samples of STAR SEAL (50% by Volume) at;

- a. Five (5)%,
- b. Seven (7)% and
- c. Ten (10) % percent by volume on the volume of the sealer.

No sand was mixed with any of the samples for this study.

#### 1. Scrub Resistance Under Water

The samples that were tested are;

- A. **STAR AVIATOR**: Applied at 20 Mils wet film thickness.
- B. **Conventional FAA mixtures** i.e. compositions where rubber was post added to the sealer according to the FAA mix design recommendations. Post added samples (5,7,10%) were applied at 30 mils wet film thickness on white mylar panels. The difference in the wet film thickness of the post added samples (30 mils) versus 20 mils for STAR SEAL STAR AVIATOR Grade was to allow all the samples to dry to the same thickness, prior to scrub testing. The panels were allowed to cure for four (4) days. After the cure the panels are covered with water containing silica sand as an abrasive medium & scrub tested with a brass bristle brush. This test method is a modification of the standard

ASTM D-2468, but more torturous (the standard method uses a nylon brush & detergent/water solution as scrub medium).

The test is stopped when a solid line goes across the width of the swatch down to the panel. The cycles are noted at this point & reported as cycles to failure. The panels were further tested for softness & re-emulsification resistance.

## **2. Water Absorption / Desorption Characteristics**

The wet samples were applied in 30 mils wet film thickness on brushed aluminum panels (pre weighed) & allowed to cure at ambient room temperatures (77 ° F, 50% relative humidity) for one (1) week. The coated panels are weighed again to determine the weight of the coating material.

The cured panels are weighed after one weeks cure to determine the weight of the dry sample on the panels. The cured panels are then suspended in distilled water & taken out after 3, 6, 24, 48, hours, & one week, then dried to remove surface moisture. The panels are weighed after each period & the percentage of water absorbed is calculated from the dry sample weight.

After the completion of one weeks water absorption period, the panels are removed from the water & allowed to release the remaining water. During this period the panels are weighed after 3, 6, 24, & 48 hours or longer to determine the time taken to release all the absorbed water.

## **Results & Discussions**

### **1. Wet Scrub Resistance Test (Table II)**

1. **STAR AVIATOR** was found to have better scrub resistance; Than all the three (3) conventional FAA mix designs.
2. Also, the scrub resistance amongst the conventional mix designs deteriorated with the increasing amounts of rubber.
3. The resistance to softening (hardness) & re-emulsification under water was found to be generally comparable. Only in one case (for FAA -7% rubber), the hardness & resistance to re-emulsification suffered.

### **Water absorption / Desorption Characteristics (Table III)**

The following inferences were made:

#### **ABSORPTION CYCLE:**

1. **STAR AVIATOR** had much lower tendency to absorb water, especially in the first 6 hr. of immersion. It was less than 50% of the best FAA- post add. specimen (with 5% rubber).
2. Amongst the FAA post add. Specimens the tendency to absorb water increased with the increasing amounts of the rubber additive; i.e. 5% was the best & 10% the worst.



**MATERIAL SAFETY DATA SHEET**



**SEALCOATING FOR AIRPORT PROJECTS  
SPECIFICATION: FAA P-627**

**Manufacturer:**  
S.T.A.R., INC.  
1400 Walcutt Road.  
Columbus, Ohio 43228

**Emergency Phone No.**  
Information Phone No.  
Date Of Preparation  
Date Supersedes

**CHEM-TEL 800-255-3924**  
800-759-1912  
July 24, 2002

**SECTION I - IDENTIFICATION**

**Product Name:** STAR AVIATOR- Sealcoating for airport projects.  
**Chemical Family:** - Refined Coal Tar Pitch Emulsion  
**Chemical Name:** - Proprietary  
**Prepared by:** - G.C. Dubey

H.M.I.S  
Health = 1  
Fire = 1  
Reactivity = 1

**SECTION II- INGREDIENTS**

| <u><b>Ingredients</b></u>                   | <u><b>CAS NO.</b></u> | <u><b>WT%</b></u> | <u><b>Exposure Limits</b></u> |                          |
|---|-----------------------|-------------------|-------------------------------|--------------------------|
|   |                       |                   | <b>OSHA<br/>PEL</b>           | <b>ACGIH<br/>TLV</b>     |
| <u><b>Hazardous Ingredients</b></u>         |                       |                   |                               |                          |
| Coal Tar Pitch                              | 65996-93-2            | 27-29%            | 0.2 mg/m3<br>(Volatiles)      | 0.2 mg/m3<br>(Volatiles) |
| Listed in SARA Title III, Section 313- No.  |                       |                   |                               |                          |
| STEL  | - N/A*                |                   |                               |                          |
| LC 50                                       | - N/A                 |                   |                               |                          |
| LD 50                                       | - N/A                 |                   |                               |                          |
| <u><b>Other Ingredients</b></u>             |                       |                   |                               |                          |
| Ethoxylated Amine                           |                       | 1 %               |                               |                          |
| Specialty Polymers                          | Proprietary           | 4-5%              | N/D                           | N/D                      |
| Clay  | 1332-58-7             | 18-20%            | N/A                           | 10mg/m3<br>(dust)        |
| STEL  | - 5 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    |                   |                               |                          |

\* N/A = NOT AVAILABLE OR APPLICABLE

Total weight percentage of all the listed ingredients could be below 100, indicating other unlisted ingredients that are not considered hazardous by any federal (OSHA, WHMIS, SARA), any state or province or local Right-To-Know Regulations.



### SECTION III, PHYSICAL DATA

|                                      |                         |                      |                                       |
|--------------------------------------|-------------------------|----------------------|---------------------------------------|
| <b>Boiling Point</b>                 | <b>Vapor Pressure</b>   | <b>Vapor Density</b> | <b>Appearance</b>                     |
| Over 212 F                           | (mm Hg)<br>approx. 25   | (Air=1)<br>1         | Dark Brown Liquid with Coal Tar odor. |
| <b>Evaporation Rate</b><br>(Water=1) | <b>Specific Gravity</b> | <b>pH</b>            | <b>Freezing Point</b>                 |
| 1                                    | 1.20 - 1.25             | 7.00-8.00            | 32 Deg F/ 0 Deg C                     |
| <b>Miscibility</b>                   | <b>Threshold Odor</b>   |                      | <b>Water/Oil Dist Coeff</b>           |
| Dilutable with water                 | ppm-<br>N/A             |                      | 1/1                                   |

### SECTION IV- FIRE & EXPLOSION HAZARD DATA

|                                    |                    |                            |            |
|------------------------------------|--------------------|----------------------------|------------|
| <b>Flammability Classification</b> | <b>Flash Point</b> | <b>Flammable Limits</b>    |            |
|                                    | (method used)      | <b>LEL</b>                 | <b>UEL</b> |
| N/A                                | N/A                | N/A                        | N/A        |
| <b>Combustion Products</b>         |                    | <b>Extinguishing Media</b> |            |
| CO, CO2, Hydrocarbon compounds     |                    | Foam, dry chemical, CO2    |            |

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

**Unusual Fire & Explosion Hazards:** Containers may rupture due to steam pressure build-up.

**Explosive Power**

N/A

**Burning Rate**

N/A

**UN/NA/PIN#**

N/A

**Static Sensitive**

NO

**Impact Sensitive**

NO

### SECTION V- HEALTH HAZARD DATA

**Threshold Limit Value** - 0.2 mg/ m3, coal tar pitch volatiles.

**Routes Of Entry-** Skin, eyes, inhalation, ingestion.

**Effects Of Overexposure** - Acute: YES Chronic: YES

**Eyes** - Overexposure of vapors can cause eye irritation, burning, redness &/or corneal changes, which in absence of recommended first aid may result in severe burns.

**Skin** - Contact with skin can result in irritation which when accentuated by sunlight may result in phototoxic skin reaction (similar to sunburn). Prolonged &/or repeated contact with the product or volatiles may result in more serious skin disorders including cancer.

**Inhalation-** The product has very low vapor pressure, therefore, harmful effects are not anticipated. Chronic inhalation overexposure to vapors. Repeated &/or prolonged contact to high levels of vapor concentration may result in respiratory problems, central nervous system (CNS) effects, & cardiovascular collapse.

**Ingestion-** May cause nausea, cramps, vomiting, diarrhea or acute effects. May be fatal in large amounts.

**Unusual Chronic Toxicity:** May cause cancer of the skin, lungs, kidney & bladder. Prolonged or repeated contact over many years in the absence of good hygiene & personal protection may lead to changes in skin pigmentation & skin tumors.

**Conditions aggravated by exposure & additional health hazards:** The test results reported in Koppers Industries, Inc. publication "Using Refined Coal Tar Emulsion Safely" conclusively establish that emissions during the manufacturing, as well as application, of sealcoatings based on refined coal tar are well below the OSHA exposure limits. Refined coal tar is a complex mixture of thousands of chemical compounds, a majority being closed ring, polynuclear aromatic compounds (PNAs) which range from single ring structure to multiple (30-40) rings in their molecular structure. According to NTP, IARC, or OSHA, some of these PNAs have been found to induce cancer in animals under laboratory conditions.

Cancer warning statements for materials derived from coke oven tar, which includes refined coal tar RT-12, are based primarily on crude (unrefined) tars. No data has been established on refined coal tars or sealcoatings based on refined coal tars as potential carcinogens. The cancer warnings are, therefore, affixed on all coal tar derived products, due to the lack of specific data on these products.

Respirable crystalline silica, also used in conjunction with this product is a suspected carcinogen, however, no exposure is expected through the use of this material. This product & sealcoatings in general, have not been tested for chronic exposure effects.

**Carcinogenic:** IARC- YES ACGIH- YES

## EMERGENCY & 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 & soap.

Inhalation- Move to fresh air, administer oxygen & call a physician.

Ingestion- Do not induce vomiting. Seek physician immediately & show M.S.D.S. or label.

### SECTION VI- REACTIVITY DATA

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

|   |                   |
|---|-------------------|
| <b>Hazardous Decomposition Products</b> | - N/A             |
| <b>Hazardous Polymerization</b>         | - Will not occur. |
| <b>Conditions to Avoid</b>              | -N/A              |

### SECTION VII- SPILL OR LEAK PROCEDURES

#### SARA Title III

# 302 - No

# 304 -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 & eye / face protection. Contain & pick up waste material. Put in a sealed approved container. Dispose of in accordance with federal, state, & local regulations.

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

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

### WASTE DISPOSAL

***This material is not a hazardous waste in either liquid (emulsion) form or as a dried material, according to TCLP (Toxic Characteristic Leaching Procedure) results (EPA method 1311). Recommended disposal by land filling (dry) or incineration shall be selected in accordance with the local, state, & federal regulations.***

|                            |                                  |
|----------------------------|----------------------------------|
| <b>Reportable Quantity</b> | - N/A                            |
| <b>Regulations</b>         | - WHMIS, SARA, State & province. |
| <b>Hazardous Waste</b>     | - N/A                            |
| <b>TPQ (lb.)</b>           | - N/A                            |

### SECTION VIII- SAFE HANDLING & PROTECTION INFORMATION

**Ventilation:** Use local exhaust ventilation to control mists or vapors generated when using this product.

**Special-** N/A    **Other-** N/A

**Respiratory Protection:** Use only with adequate ventilation. If ventilation is inadequate, wear approved respiratory equipment.

**Protective Gloves:** Rubber Gloves, chemically resistant.

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

**Other Protective Equipment:** Wear suitable protective clothing.

**Estimated LD50, MG/KG:** N/A

**Estimated LC50, PPM:** N/A

**Sensitization:** N/A

**Irritants:** YES

### SECTION IX- SPECIAL PRECAUTIONS

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

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

**DETAILED APPLICATION SPECIFICATION**



**SEALCOATING FOR AIRPORT PROJECTS  
SPECIFICATION: FAA P-627**

**1.0 Objectives:**

This specification covers the application of STAR AVIATOR, is a *premium grade* rubberized protective sealcoating system, especially designed for airport asphalt pavements requiring compliance to FAA P-627.

- 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, oils, gasoline, & grease, water & subsequent damage to the sub-base caused by water penetration.
- 1.2 To beautify & enhance the appearance.
- 1.3 To reduce the maintenance costs & extend the service life.
- 1.4 To fill minor surface imperfections & yield an even looking surface.
- 1.5 To provide a limited degree of skid resistance.

**2.0 Materials:**

**2.0 Coal Tar Pitch Emulsion.**

- 2.1.1 Coal Tar Pitch Emulsion must meet or exceed ASTM D 5727-00 (formerly Federal specification RP-355e), U.S. Air Force & F.A.A. requirements. The Coal Tar Pitch Emulsion shall also be in compliance with ASTM Specification D 3320-90.
- 2.1.2 The material shall be prepared from straight run high temperature coke-oven tar meeting the requirement of ASTM D 490- 92.
- 2.1.3 The material shall be homogeneous & 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 & 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 STAR AVIATOR) per square yard in a two (2) coat application system.  
**STAR AVIATOR** meets & or exceeds the requirements, as detailed above.

2.1 **Sand / Aggregate Specifications:** Sand shall be clean hard & irregular silica sand, free of clay, dust, salt, & 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 **Additive** – None required. Acrylonitrile/butadiene latex rubber (meeting the FAA Specifications) are hot-blended during the manufacturing process.

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

#### 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.

### 3.0 **Surface Preparation:**

The pavement surface to be sealcoated must be sound & 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 & sub-base courses & suitable for the desired traffic loads &
- Are well drained & 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 & the application of STAR AVIATOR.

Perform a water-break-free test to confirm that the surface oils have degraded & 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 Clean the surface thoroughly to remove all foreign debris (dirt, gravel, silt, etc.) using air blowers or by flushing with water. Embedded dirt & silt shall be removed with steel bristle hand brooms.

3.3 Treat all grease & oil spots by scraping off the excess oil & dirt with a wire bristle broom & coat with **STAR OIL SPOT PRIMER (S.O.S.)** in accordance with directions. Make all necessary repairs, patch soft spots, & fill all cracks & holes in the pavement. All patched areas must be cured before applying **STAR AVIATOR**.

3.5 Old & or **badly oxidized asphalt pavement** with a primer coat of diluted **STAR AVIATOR**, one (1) part by volume thoroughly mixed with Three (3) parts of clean water. Apply the primer at 0.04 to 0.06 Gal./ Sq. yard (based on undiluted sealer). Allow the primer coat to dry thoroughly, about 2-4 hours under normal drying conditions, prior to sealcoating with **STAR AVIATOR**.

### 4.0 **Materials & Recommendations:**

#### 4.1 **Materials Calculations:**

STAR AVIATOR- For a standard two (2) coat sealcoating system, calculate at the rate of 0.18-0.20 gallons of 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 **Sand Slurry Preparation**

- Add the required amount of water to the sealer in the mixing tank & mix thoroughly.
- Keep 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 & never place hands & arms in the agitating mixer.
- After adding all the sand, close the lid of the mixing tank & raise the speed of the mixer to “high” setting.
- Mix for 10 minutes to allow the contents of the tank to mix thoroughly & break any sand clumps.
- Reduce the agitator speed to moderate setting & keep running. If the mixer is shut off during transport to the job site, it must be restarted & 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, & holidays.  
The first coat, **STAR AVIATOR** 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.
- 5.1 Allow the first coat to dry sufficiently to take light traffic without scuffing. It will take about 4-6 hours under ideal drying conditions.
- 5.3 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 & then tested for traffic-ability prior to opening for regular use.
- 5.6 The amount of material needed will vary according to the porosity & texture of the pavement. The mix designs (i.e. **STAR AVIATOR** & other ingredients) expressed in section 4 are 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 **STAR AVIATOR** along the pavement edge 6-12 inches from curbing.
- 6.1.3 Draw the **STAR AVIATOR** 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 AVIATOR** mix to maintain a working ribbon of material & 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 **STAR AVIATOR** mix to the remaining area. A self-propelled machine that squeegees & brushes the sealer into the pores of the pavement is recommended.
- 6.2.2. Spray application should deposit the material per specified coverage rates.

## 8.0 Precautions:

- 8.1 **STAR AVIATOR** must be protected from freezing. Do not store at temperatures below 32 ° F. Do not apply **STAR AVIATOR** during rainy or foggy weather. Ground & air temperature must be 50 ° F & rising prior to & after application
- 8.2 Drying is retarded by excessive moisture in the air or ground. Examples: rain, fog, prolonged humidity & seasonal extremes (early Spring - late Fall). Under such conditions, allow additional time for initial drying & cure
- 8.3 Follow the recommended coverage rates. IF **STAR AVIATOR** is applied too heavy, the surface will dry first & restrict the water evaporation from the rest of the film, slowing down full curing process.
- 8.4 **STAR AVIATOR** is based on coal tar pitch. Prolonged &/or repeated contact may cause skin irritation. A protective cream should be used. Avoid breathing vapors. Wear protective clothing. See the Material Safety Data Sheet for **STAR AVIATOR** for details.
- 8.5 Keep out of reach of children.

### Disclaimer:

These specifications report accurate & 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 & workmanship are beyond the controls of the manufacturer. STAR Inc. assumes no responsibility for the use of information presented herein & hereby disclaims all liability in regard to such use.