

BLACK DIAMOND PAVEMENT SEALER

DETAILED APPLICATION SPECIFICATION

1. Scope:

This recommended practice covers the application of mineral-colloid-stabilized emulsified petroleum based pavement sealer. This application serves as weather protection, beautification of surface, and aliphatic-solvent (petroleum distillates such as gas, oil and diesel) resistant seal for asphaltic concrete pavements of airport ramps, taxiways and fueling aprons, parking lots and driveways.

2. References:

NOTE: As of the date of this writing, ASTM standards pertaining to pavement sealing application and performance generally refer to coal tar based sealers, which has been an industry standard for many years. Black Diamond pavement sealer **does not** contain coal tar. The standards listed below are solely for the purpose of referencing industry standards.

- 2.1. ASTM D 140 Standard Practice for Sampling Bituminous Samples
- 2.2. ASTM D 5727 Standard Specification for Emulsified Refined Tar (Mineral Colloid Type) {replaces Federal Specification R-P-355e
- 2.3. ASTM D 6945 Standard Specification for Emulsified Refined Tar (Ready to Use, Commercial Grade)
- 2.4. ASTM D 6948 Standard Practice for Application of Refined Tar (Ready to Use, Commercial Grade)
- 2.5. ASTM D-3423 Standard Practice for Application of Emulsified Refined Tar Pitch
- 2.6. ASTM D-2939 Standard Methods of Testing Emulsified Bitumen Used as Protective Coatings
- 2.7. ASTM D-4866 Standard Performance Specification for Refined Tar Pitch Emulsion Pavement Sealer Formulations Containing Mineral Aggregates and Optional Polymeric Admixtures
- 2.8. FAA Advisory Circular 150/5370-10B, Item P-630 Refined Tar Emulsion, Without Additives Slurry Seal Surface Treatment; and Item P-631 Refined Tar Emulsion, With Additives Slurry Seal Surface Treatment
- 2.9. FAA Engineering Brief No. 46 Item P-625 and No. 46A, Item P-627 - Refined Tar Pitch Emulsion Seal Coat

3. Materials:

3.1 GemSeal Black Diamond petroleum-based pavement sealer will conform to the following requirements:

3.1.1 Non-Volatiles shall be 47 – 50%.

3.1.2 Percent ash content shall be 36 – 39%.

3.1.3 The **emulsion shall be produced using a colloid mill** to ensure homogeneity and appropriate size of the particles in suspension.

3.1.4 The contractor and/or his supplier will provide a certification with each bulk emulsion delivery indicating compliance with the above requirements. Further, the certificate will indicate the non-volatiles (solids) content and ash content of that particular transport lot as determined by results of tests performed on material loaded. Such certifications shall be subject to verification by testing samples of the emulsion received for use on the project. Costs of verification testing should be borne by the Project Administrator.

3.2. Dilution water shall be potable and free of excessive minerals and contaminants. Water will be provided by the Project Administrator and available within a reasonable distance from the job site.

3.3. Sand will be washed and graded silica sand, or crushed, washed, and graded slag, free of all contaminants, and conforming to the following gradation:

Sieve Size	% Passing	Note: Gradations outside these ranges may be used provided past history shows evidence of a durable surface.
#8	100	
#16	95-100	
#30	63-93	
#50	10-40	
#100	0-10	
#200	0-2	

3.4. Latex additive compounds shall conform to the following general specifications*:

Product:	Ultra	AQS	RapidSet	GuardFlex
Chemical name:	Nitrile Rubber	Proprietary	Proprietary	Proprietary
Solids content:	40% minimum	40% minimum	40% maximum	20% minimum
Particle size:	0.1 -0.5 microns	0.1-0.5 Microns	0.5 – 5.0 microns	0.1-0.5 Microns
Viscosity, cps:	100 maximum	75 minimum	250 maximum	75 minimum
Specific gravity:	1.01	0.99- 1.02	1.04, 1.14 on residue	0.99- 1.02

*Note: Ultra, AQS, and GuardFlex should not be mixed together. If you are uncertain about combinations, please consult with a GemSeal representative.

4. Equipment: All tools and equipment necessary to perform the contract in accordance with the specified terms and conditions, such as brushes, hand squeegees, pumps and hose equipment, storage tanks, mixing tanks, water distributors, power sweepers, blowers, barricades and applicator equipment shall be provided as required by the contractor. All methods employed in performing the work and all equipment necessary for executing any part of the work shall be subject to approval by the Project Administrator before work is started and during job execution, and when found unsatisfactory will be corrected. All equipment will be in good working condition.

4.1. Spray equipment used on the job shall have mechanical mixing devices incorporated in their construction to assure homogeneous mixing of the emulsion and required additives. The pumping system must be adequate to apply a uniform coating at the specified rates of application. Equipment requiring pressurization of the mixing tank for distribution will not be used.

4.2. Motorized squeegee application equipment used on the job will have two or more devices such as squeegees and/or drag broom assemblies to assure even distribution of the sealer emulsion. Mechanical mixing devices will be incorporated into the construction of the applicator to assure homogeneous mixing of the emulsion and required additives and sand.

4.3. Mixing or agitating equipment may be either portable powered or a tank-type power mixer. In any case, mixers shall be of sufficient capacity to assure homogeneous mixing of the emulsion and required additives and to maintain complete suspension of mineral aggregate until the emulsion system is applied to the pavement. All storage tanks or drop tankers shall be equipped with mechanical agitators or circulation systems sufficient to keep the refined tar emulsion homogenous during storage.

5. Preparation of Surfaces:

5.1. Allow new asphalt to cure. Cure time varies with type of asphalt, aggregate, weather conditions, and construction procedures. New hot mix asphalt pavement should not be sealed for 90 days after installation to enable asphalt to cure. Cold mix pavements should have at least 90 days to cure before applying sealcoat. Required cure time should be determined by the Project Administrator, and a written order to proceed will be furnished to the contractor.

5.2. Wide cracks, extensive alligator cracking patterns, soft or sunken spots indicate that the pavement and/or base should be repaired or replaced. Extensive patching shall be allowed to cure prior to seal coating in accordance with 5.1.

5.3. Thoroughly inspect the pavement for minor cracks and other imperfections. Ignore hairline cracks. Cracks of approximately 1/4 - 3/4-inch wide should be cleared of debris and filled with an approved crack sealant in accordance with manufacturer's application specification. GemSeal can provide specification and crack sealing materials upon request. (RECOMMENDED)

5.4. Remove oil and grease spots that have not permanently damaged or softened the pavement by scrubbing with a detergent and flushing with water until a water-break-free surface is obtained. Oil and grease spots with deeper penetration will be treated by burning with hand held propane torch, and then coating the spot with an approved oil spot primer such as GemSeal Multi-Prime. If the oil spot is so severe as to cause permanent deterioration of the pavement, or if the pavement has failed due to other causes, the pavement shall be removed to the full depth of the damage and replaced with new asphalt pavement in accordance with paragraph 5.1.

5.5. Old traffic control lines may be blackened with black epoxy or black acrylic coatings. Excessive build-up of lines should be abraded before any prime coats of asphalt or tar emulsion are applied. (OPTIONAL)

5.6 Highly oxidized or weathered surfaces shall be primed. Prime with SS-1, SS-1h, CSS-1, CSS-1h asphalt emulsions or with GemSeal Multi-Prime acrylic primer. Asphalt emulsions used as primers shall be diluted one (1) part asphalt emulsion to five (5) parts potable water and uniformly applied to the pavement at a rate of 0.10 + 0.02 gallon per square yard. Multi-Prime shall be diluted one (1) part Multi-Primer to two (2) parts water and applied at a rate of 0.07 -0.10 gallons per square yard. The primer shall be allowed to cure for 24 hours before applying pavement sealer. (OPTIONAL)

5.7. Immediately before application of sealer, clean the surface of all loose dust, dirt, leaves, and any other foreign materials by sweeping, blowing, flushing with water, or any combination of the three methods.

6. Mix Design and Application Rates:

6.1.

Use	Coats	Concentration Gallons	Water Gallon	Sand** 100lbs	Ultra-3***, Rapid Set***; AQS; Guard Flex Gallon	Application Mix Gal/Sq. YD	Application Mix Ft ² /Gal
Low Traffic	1st	100	30 - 45	3 - 5	0 - 4	0.10 - 0.15	60 - 90
	2nd	100	25 - 40	0 - 4	0 - 4	0.10 - 0.12	75 - 90
Moderate Traffic	1st	100	25 - 40	3 - 5	2 - 4	0.12 - 0.15	60 - 75
	2nd	100	25 - 40	0 - 4	2 - 4	0.10 - 0.12	75 - 90
High Traffic	1st	100	25 - 40	3 - 5	2 - 4	0.12 - 0.15	60 - 75
	2nd	100	25 - 40	3 - 5	2 - 4	0.12 - 0.15	60 - 75
	3rd	100	25 - 45	0 - 4	2 - 4	0.10 - 0.12	75 - 90

- * 1st Coat is applied to entrances, exits, traffic lanes and turning radii.
- ** Sand should be added to the final coat when skid resistance is needed.
- *** Ultra-3 and RapidSet range should be 1 – 2.

- NOTE:** 1. Seal coating is not recommended for enclosed or permanently shaded parking areas such as underground parking garages; absence of sunlight will dramatically increase drying and cure times.
2. Approximately 20 pounds of sand displaces 1 gallon of liquid.

WARNING:

Sealcoats, when improperly applied and/or under certain environmental conditions, may become slippery. As with any paint-like coating, repeated applications reduce texture. Skid resistance can be improved with additions of three (3) to five (5) pounds of sand per gallon. CAUTION MUST BE EXERCISED, particularly when skid resistance is a major safety factor.

6.2. Latex additives: The latex additive will be added at the specified rate as indicated in the job mix formula \pm 0.25%. Undiluted latex will first be diluted with an equal volume of water and added slowly to the emulsion after mix water and prior to the addition of any sand. Latex will be added while the mixer is in operation to assure uniform dispersion and no coagulation of the latex. Diluent water added to the latex will be considered part of the mix water required in paragraph 6.1.

6.3. Sand will be slowly added after the mix water and any required latex additives have been dispersed into the sealer emulsion. Again, the mixer will be in operation during the addition of the sand to assure uniform dispersion and to prevent overloading of the mixing device. Additional amounts of water may be added, if necessary, should the Black Diamond emulsion system become too thick to be uniformly applied. Additional water will be added only after the Project Administrator has been notified, and additions will not exceed those amounts expressly stipulated by the Project Administrator, who reserves the right to take samples of finished emulsion at the job site for verification testing.

6.4. Slow mixing shall be continuous from the time all materials are placed into the mixer until the pavement sealer mix is applied by the application equipment. During the entire mixing process, no breaking, segregating, or hardening of the emulsion, and no balling or lumping of the aggregate shall be permitted.

6.5. The coating shall be applied uniformly over the entire pavement surface and free of voids and pinholes.

6.6. When pavement temperatures exceed 120°F, fog spraying of pavement with clean water is recommended to cool the pavement so that the sealer achieves better bond and material spreads evenly. Fog spray shall dampen pavement without leaving puddles.
(OPTIONAL)

6.7. Subsequent coats will be applied only after the previous coat is dried, preferably 24 hours later, but no less than 4 hours under ideal conditions. Ideal conditions are temperatures in excess of 70°F, sunshine, and less than 60% relative humidity. Marginal conditions can require curing times greater than 24 hours. Subsequent coats should be applied at right angles to the previous coat, if possible.

6.8. Sealer will not be applied unless the ambient temperature is a minimum 50°F and rising and pavement temperature is 60°F and rising. Work will be completed so that there is a minimum of two hours of direct sunlight remaining after completing the day's work. Sealer will not be applied under rainy or wet conditions such as an overcast sky with high humidity. UNDER NO CIRCUMSTANCES will work, be performed under cold and/or wet conditions, nor will Black Diamond emulsion be used if it has been subjected to freezing weather.

7. Incidentals:

7.1. The contractor and Project Administrator will coordinate their activities with each other to ensure the availability of the work area so as not to delay the execution of the project, to maintain traffic flow, and to minimize activities that might be detrimental to the work in progress such as automatic sprinkler systems, other customer or construction traffic, etc.

7.2. The contractor will notify the Project Administrator of pavement areas that he feels have so deteriorated or have other outside factors such as poor drainage, improper construction, etc., that will render the application of a seal coat ineffective.

7.3. Striping will be completed with a lot marking paint approved by the manufacturer. No striping will commence until the seal coat to be striped has cured for at least 24 hours. GemSeal can provide a detailed lot marking application specification and suitable lot marking paints upon request.

7.4. The contractor shall submit with his proposal at least three references of previously completed projects, proof of workers compensation and liability insurance coverage, and all local business licenses and permits as required by local authorities.

7.5. The contractor will provide a performance and payment bond to the Project Administrator -OR- waivers of lien from suppliers will be provided with each invoice for payment. (OPTIONAL)

8. Job Site Location and Scope of the Project: See Exhibit "A". (To be drawn and attached by Project Administrator, property owner or manager, or architect/engineer).

9. Basis of Payment: These prices shall be full compensation for furnishing materials, preparation, mixing, and applying materials in compliance with this specification, and for all the tools, equipment, labor, and incidentals necessary to complete this project.

The proposal shall indicate by line item:

1. The approximate square yards or square feet and cost of patching to be performed.
2. The approximate lineal feet and cost of crack sealing to be performed.
3. The approximate square yards or square feet and cost of the seal coating to be performed.
4. The approximate lineal feet and cost of the traffic striping to be performed. -OR-A lump sum cost when performed in accordance with painting diagrams provided by the Project Administrator.
5. Total cost of project. (State and local taxes shall be identified by type and amount.)

10. WARNINGS and Miscellaneous Notes:

10.1. Skid Resistance: Sealcoats, when improperly applied and/or under certain environmental conditions, may become slippery. As with any paint-like coating, repeated applications reduce texture. Skid resistance can be improved with additions of 3 to 5 pounds of sand per gallon. CAUTION MUST BE EXERCISED, particularly when skid resistance is a major safety factor. GemSeal does not recommend seal coating asphalt pavements with the following characteristics; main thoroughfares, runways, steep inclines, poor drainage, and vehicles traveling at speeds in excess of 25 mph that are subject to rapid stops or hydroplaning. GemSeal recommends applying petroleum-based emulsion to asphalt pavement surfaces only.

10.2. Container Warning: Containers, regardless of being empty, half full, or full of product, may retain a residue of liquid and/or vapor and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Do not attempt to clean since residue is difficult to remove. "Empty" drums should be completely drained, properly bunged, and promptly returned to a drum re-conditioner. Empty pails should have a hole punched in the pail bottom to prevent drowning of small children. All other containers should be disposed in an environmentally safe manner and in accordance with governmental regulations. For work on tanks refer to OSHA regulations, ANSI Z49.1, and other governmental and industrial references pertaining to cleaning, repairing, welding, or other contemplated operations.

**Container refers to any vessel, can, drum, tanker, distributor tank, etc., that may be used for handling and/or storing any of the products covered by this guideline specification or any product of unknown origin.

10.3. Health and Environmental: Black Diamond sealer is not considered a hazardous waste and meets all current Federal requirements for industrial waste. AS AN APPLICATOR you should be familiar with all potential hazards prior to entering the workplace. Toxicity Characterization Leaching Procedure information and Safety Data Sheets will be provided upon request. In case of accidental spill, contain with absorbent material, allow drying; and disposing of according to local, state and federal regulations. Precautions should be taken to prevent surface runoff from entering storm drainage system or ponds.

10.4. Maintenance of pavement and Black Diamond coating can prolong its life and attractive appearance. Sand, gravel and other debris should be removed as they accumulate. Oil drippings, antifreeze, etc. can be scrubbed with mild detergents and flushed with clean water.

10.5. Technical assistance available upon request.

10.6. Do not allow to freeze. Freezing shall void any warranty.

LIMITED 1 YEAR PRODUCT WARRANTY FROM DATE OF PURCHASE:

GemSeal Pavement Products warrants that for a period of one (1) year from date of purchase this product shall be free from manufacturing defects and shall meet or exceed performance standards listed in the technical data sheet for the product at the time of sale, if used as directed and within the stated shelf life. This Limited Warranty applies only if the product is stored, used, and applied over a properly prepared substrate in strict accordance with applicable specifications and instructions issued by GemSeal Pavement Products. The Limited Warranty will not apply if the product is altered, modified, or misused after it has left the control of GemSeal Pavement Products. GemSeal Pavement Products will not be responsible for defects caused by factors beyond its control, including but not limited to workmanship, application equipment, weather, acts of God, structural failure, condition or movement of substrate, improper additives, poor drainage, ponded water, improper maintenance, damage from snow removal equipment, and normal wear and tear. GemSeal Pavement Products does not warrant that the product or any method of use or application would be suitable for any particular site conditions.

All warranty claims must be submitted in writing, with proof of purchase, to the following address: GemSeal Pavement Products, Attn: CFO, 3700 Arco Corporate Dr, Suite 425, Charlotte, NC 28273. Unused portions of product must be returned upon request. Replacement of defective product or, at GemSeal Pavement Products' option, refund of the purchase price of defective product shall be the buyer's sole remedy under this Limited Warranty. In no event shall GemSeal Pavement Products be liable for any damages in excess of the purchase price of the defective product. This Limited Warranty does not cover labor costs for product application, replacement, or repair. GEMSEAL PAVEMENT PRODUCTS SHALL IN NO EVENT BE LIABLE FOR CONSEQUENTIAL,

INCIDENTAL, OR SPECIAL DAMAGES, INCLUDING BUT NOT LIMITED TO DAMAGES FOR LOST SALES OR PROFITS, BUSINESS INTERRUPTION, DELAYS, PHYSICAL DAMAGE TO OTHER MATERIALS OR PROPERTY, OR LOSS OF USE OF PROPERTY.

THIS LIMITED WARRANTY IS PROVIDED IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. GEMSEAL PAVEMENT PRODUCTS EXPRESSLY DISCLAIMS ANY OTHER WARRANTIES, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No modification or extension of this Limited Warranty shall be valid unless given in writing and signed by an authorized officer of GemSeal Pavement Products. Sales personnel and product distributors are not authorized to modify or extend this Limited Warranty.

CAUTION:

Can be a skin irritant. Keep out of reach of children. Do not take internally. Avoid prolonged or repeated contact with skin or breathing of vapors. In case of contact with eyes, flush with plenty of water, and seek immediate medical attention. Use with adequate ventilation. Do not use in confined areas.

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