PRESERVATIVE SEAL and SEALCOATING FOR ASPHALT CONCRETE

718.1 GENERAL

Asphalt Concrete preservative seal shall be one of the following types or equal, with typical application rates. Sealcoating material shall meet the requirements of section 718.3

TYPE A - Asphalt rejuvenating agent shall be an emulsion composed of a petroleum resin oil base uniformly emulsified with water. Each supplier must submit a certified statement from the asphalt rejuvenator manufacturer showing that the asphalt rejuvenating emulsion conforms to the required physical and chemical requirements. They also must provide documentation of tests that determine the acceptable range of application of the product. Typical application rates are .07 to .18 gallons per square yard.

TYPE B - Petroleum Hydrocarbon emulsion. Applied at .05 to .20 gallons per square yard, diluted.

TYPE C - Tire modified surface sealer (TRMSS) or equal not diluted, and applied at a rate of .10 to .20 gallons per square yard.

TYPE D - Acrylic polymer modified emulsion. Diluted to the manufacture's recommendation and applied at a rate of .08 to .20 gallons per square yard.

TYPE E - Polymer, modified rejuvenating emulsion. (PMRE) Diluted to the manufacture's recommendation and applied at a rate of .08 to .20 gallons per square yard.

718.2 TEST METHODS AND REQUIREMENTS PRESERVATIVE SEAL

Preservative seal for asphalt concrete material, shall meet type A, B, C, D or E on Table 718-1 by certification from the manufacturer.

Tests shall be performed by AMRL accredited laboratory, accredited in the specified test being performed.

TABLE 718-1

PRESERVATIVE SEAL SPECIFICATIONS

Properties * (note 2)	Method	Type-A	Type-B	Type-C	Type-D	Type-E
Saybolt Viscosity @77°F (sfs)	AASHTO T72	15-40	25-150	45-75 (KU)[1]	15-40	50-150
Sieve test %	AASHTO T59	0.1 max	0.1 max	0.1 max	0.1 max	0.1 max
Storage Stability, 24 hours, %	AASHTO T59					1.0 max
Settlement test, 5 days, %	AASHTO T59		2.0 max		5.0 max	
Test on residue by:		**AASHTO T59 Evaporation To** 138°C	**AASHTO T59 Evaporation To** 138°C	**AASHTO T59 Evaporation To** 138°C	**AASHTO T59 Evaporation To** 138°C	**AASHTO T59 Distillation To** 350°F
Residue Content, %	AASHTO T59	60 min	62 min	30 min	53 min	65 min
Oil Distillate, % by volume	AASHTO T59					0.5 max
Flash point [2] °F	AASHTO T48	400°F	450°F	450°F	450°F	

Softening point, °F	AASHTO T53			140 min.	130 min	
Viscosity [3], 60C, Poise	AASHTO T315					5000 max
Elastic Recovery [4], 10C, %	AASHTO T301					50 min
Ductility, 25C, 5 cm/min, cm	AASHTO T51			.	20 min	
Penetration, 25C, 100g/5 sec, dmm	AASHTO T49				20-80	
Penetration, 4C, 200g/60 sec, dmm	AASHTO T49					20-70
Kinematic Viscosity, 140°F, cSt	AASHTO T201	100-200	1,000-9,500			
Accelerated Weathering test [5]	ASTM D4799				Plant certification within 12 months	
Test on		Evaporative Residue	Evaporative Residue			Rejuvenating Agent Base
Asphaltenes, % w	D2006	1.0 max	10.0 Max.			1.0 max
Maltene Dist. Ratio $(PC+A_1)/(A_2+S)$	D2006	0.3-0.6	0.2-1.4			
PC/S Ratio[45] (Note 4)	D2006	0.5 min	0.5 min.			
Saturated Hydrocarbons,S[5(note 4)]	D2006	28 max	28 max.			30 max
Kinematic Viscosity, 140°F, cSt	AASHTO T201					50-175
Flash point °F	AASHTO T48					375 min
Test on residue from RTFO:	AASHTO T240					Rejuvenating Agent Base
Mass Change, %,	AASHTO T240					6.5 max
Kinematic Viscosity, 140°F, cSt	AASHTO T201					Report
Kinematic Viscosity, Ratio [6]						3.0 max

Notes:
1. Kreb units (ASTM D562)
2. Flash point on residue may be waived by the engineer during production sampling and testing provided manufacturer submits results performed in the previous 12 months in compliance.

3. Viscosity in poise may be determined using AASHTO T315 by converting the Complex Dynamic Shear Viscosity to Viscosity in poise.
4. Elastic Recovery molds shall have straight sides as shown in Fig. 1 of AASHTO T301
5. Other Accelerated Weathering test procedures may be presented for acceptance by the engineer prior to project start. These results shall be provided at no additional cost to the agency.
6. Kinematic Viscosity Ratio will be determined by dividing the viscosity of the material after RTFO aging by the original viscosity.
A full set of tests shall be performed by as specified by the special provisions in the undiluted condition. These tests and any other specified will be performed at the contractor's expense.
Only residue by evaporation shall be run on diluted samples. Specification limits should be diluted rate times minimum residual value of concentrate.

718.3 TEST METHODS AND REQUIREMENTS SEALCOATING

Sealcoating material for asphalt concrete pavement, shall be a concentrate product "ready to use" from the manufacturer. No product dilution will be allowed at the project site during application. Sealcoating shall consist of two applications across full width of pavement surface. Edge application treatment shall also be two separate coats. Each applied coat shall be at the following application rates. First coat shall be applied at a minimum application rate of 0.20 gallons per square yard, followed by a second coat applied at a minimum rate of 0.16 gallons per square yard.
Material, applied as sealcoating, shall meet the requirements on table 718-2 by certification from the manufacturer.

Tests shall be performed by AMRL accredited laboratory, accredited in the specified test being performed.

TABLE 718-2

SEALCOATING SPECIFICATIONS

Properties * (note 2)	Method	Specification
Weight per Gallon, 25C, lbs/gal	ASTM D2939.07	10.5 min
Residue Content by Evaporation, %	ASTM D2939.08	50 min
Asphalt Content by Weight, %	ASTM D2939.21	17 min
Wet Track Abrasion Test [1], 1 hour, grams/sq. ft.	ASTM D3910	15 max
Wet Track Abrasion Test [1], 6 day, grams/sq. ft.	ASTM D3910	15 max

Notes
1. Wet track abrasion patties shall be produced by two applications of sealcoat material dried to constant weight between each coat.

- End of Section -