CRF® Product Data Sheet

Description and Physical Properties

CRF® water-based cationic emulsion is formulated with a petroleum oil engineered to restore and seal deteriorating asphalt pavements. CRF emulsion can be used for two purposes: as a Cold Pour Crackfiller and a Restorative Seal. Its chemistry restores aged, cracked and raveled asphalt, prolonging pavement life. . When used full-strength, CRF emulsion is an easy-to-use, fast and effective cold pour crack and pothole filler. It bonds with the existing pavement, creating a permanent repair that prevents water intrusion. Diluted with water and covered with sand, CRF is a restorative pavement surface seal product. CRF restorative seal is designed for structurally sound pavements with moderate surface distresses, such as alligator cracking, voids, and/or raveling. It fills and seals cracks and voids, and it restores surface flexibility and resiliency.

Physical Properties:

- Boiling Point (F): 212ºF
- Specific Gravity (H20=1): 1
- Percent Volatile: 0
- Solubility In Water: Soluble
- Appearance And Odor: Brown liquid, faint petroleum odor
- Flammability: Non-flammable in water-based state

Recommended Use

Early crack repair extends pavement life and reduces further deterioration. Cracks should be cleaned to within 1/2" of the surface; or deep cracks should be filled with sand to 1/2" from the surface to provide a reservoir for the sealant. The CRF can be applied at almost any temperature with all types of equipment, or simply poured into the crack. After an application of a light coat of sand, the pavement is ready for traffic, which kneads the sand into the CRF filler. CRF is also an excellent pothole filler. Aggregate is placed in the pothole, the CRF is applied, followed by a final layer of aggregate.

CRF Restorative Seal is designed for aging pavements that exhibit moderate distresses. It remains flexible and resilient to create a "seal in depth". The CRF emulsion is diluted 2:1 (2 parts product to 1 part water) or 1:1. Typical cure time is 20 minutes to one hour with minimum ambient temperature of 50°F (10°C) and rising. There are several methods of application, which offer excellent results:

- *RESTORATIVE SEAL:* The CRF emulsion is applied by a distributor truck at a predetermined spread rate, allowed to cure, then covered with sand.
- *BROOM SEAL/ SCRUB SEAL:* The above restorative seal, followed by brooming to work the emulsion and sand into cracks.
- *SQUEEGEE SEAL:* The CRF emulsion is applied by a distributor, followed by a rubber blade to work the product into surface distresses. A second application can be made, if required, after the first has cured. The surface is then sanded and rolled with a rubber-tired roller. This is low cost pavement preservation, repairing cracks and sealing the surface.

Specifications:

Property	Test Procedure	Min	Max
Viscosity, Saybolt Furol, 77°F (25°C), ssf	T72	25	150
Sieve test, %	T59 (mod) [1]	–	0.1
Particle Charge Test	T59	Positive	
Cement Mixing	ASTM D-244		2.0
Pumping Stability	[2]	Pass	
5-day Settlement Test, % weight	ASTM D-244		5.0
Residue, % weight	T59 (mod) [3]	64	
Tests on residue from distillation:			
Viscosity, 140°F (60°C), cSt	D-445	1,000	4,000
Asphaltenes, % w[4]	D-2006-70		11.0
Maltene Distribution Ratio (PC +A_1)/(S + A_2) [4]	D-2006-70	0.7	1.1
PC/S Ratio[4]	D-2006-70	0.5	

[1]Test procedure identical with ASTM D-244 / AASHTO T 59 except that distilled water shall be used in place of 2%t sodium oleate solution.
[2]Pumping stability is determined by charging 450 ml of emulsion into one-liter beaker and circulating the emulsion through a gear pump (Roper 29.B22621) having ¼" inlet and outlet. The emulsion passes if there is no significant oil separation after circulating ten minutes.
[3]ASTM D-244/ AASHTO T59 modified by heating 50-gram sample to 149°C (300°F) until foaming ceases, then immediate cooling and reweighing.
[4]Chemical composition by ASTM Method D-2006-70: PC = Polar Compounds, A_1 = First Acidaffins. A_2 = Second Acidaffins, S = Saturated Hydrocarbons.
Product shall be freeze stabilized; if freezing has occurred, the thawed material should be thoroughly mixed until homogeneous.

Storage and Handling

The emulsion is a chemically stabilized system, so care should be taken not to upset the chemical balance with contamination by chemicals, over-exposure to air, or adverse mechanical or thermal conditions. Before being filled, tanks and trucks should be examined for possible contaminants. The crack filler may be applied over a wide range of temperatures, but the surface seal should be applied at temperatures greater than 50°C and rising.

Martin Asphalt Quality

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