HFRS-2 Product Data Sheet

Description and Physical Properties

HFRS-2 is a high float, anionic water-based emulsified asphalt designed for use as a bituminous binder for chip seals. It is supplied in bulk. High Float is accomplished by a special emulsifying chemical that serves not only to emulsify the asphalt in water, but to give a gel structure to the residue on the pavement. The cured high float residue resists flow at high temperature and therefore is less susceptible to temperature fluctuations and bleeding.

- C.A.S. Number: 8052-42-4
- Boiling Point (F): 212ºF
- Specific Gravity (H_20=1): 1.01
- Percent Volatile: 0
- Solubility In Water: Soluble
- Appearance and Odor: Brown Liquid, Faint Petroleum Odor
- Flammability: Non-flammable in water-based state

Recommended Use

HFRS-2 emulsions should be applied with well-calibrated distributors. The distributor nozzles and spray bar should be sized and set to deliver the desired shot rate. The shot rate should be determined by a laboratory chip seal design with the project aggregate and the conditions of the existing pavement. The air and pavement temperatures should be sufficiently high to allow the emulsion to fully cure. Item 316 of the TxDOT Standard Specifications requires that seal coats and surface treatments be placed when the air temperature is above 50°F and rising. HFRS-2 should not be applied when the air temperature is below 60°F and falling. TxDOT further states that no asphalt binders should be applied during rain or imminent threat of rain. If an unexpected shower arises during operations, the asphalt distributor should be shut off immediately and placement of aggregate continued until all asphalt has been covered. This area should be rolled well and watched carefully after opening to traffic. After a rain, operations should always be suspended until the pavement has completely dried.

Specifications HFRS-2 Conforms to Texas Department of Transportation Specifications-Item 300.2:

Properties	Test Procedure	Minimum	Maximum
Viscosity, 122° F, seconds Saybolt Furol	T72	150	400
Sieve Test, %	T59	-	0.10
Demulsibility, 35 ml of 0.02 N $CaCl_2$, %	T59	50	-
Storage Stability, 1 day, %	T59	-	1.0
Distillation Test:	T59	-	-
▪ Residue by Distillation , % by weight	T59	65	-
▪ Oil distillate, by volume of emulsion, %	T59	-	0.5
Tests on Residue from Distillation:	-	-	-
▪ Penetration, 77 °F, 100 g., 5 sec.	T49	100	160
▪ Solubility in Trichloroethylene, %	T44	97.5	-
▪ Ductility, 77 °F, 5 cm./min., cm.	T51	100	-
▪ Float Test, 140 °F, sec.	T50	1200	-

Storage and Handling

The water-based emulsion should not be exposed to freezing temperatures or overheating. 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. Rapid-setting emulsions are formulated to be stable during storage and transport, but to break immediately on application to the road surface. As such, they are the least stable of asphalt emulsions. Typically, HFRS-2 should not be diluted with water. Before being filled, tanks and trucks should be examined for possible contaminants. Tanks may be circulated top to bottom with a pump, but over-pumping is to be avoided. Recommended use and storage temperatures are given in the table.

Recommended Temperatures	Min	Max
Storage	50ºF	185ºF
Application	110ºF	160ºF

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