HIND EMULSION A/C/P

PRODUCT DATA SHEET

COLD APPLIED ANIONIC/ CATIONIC/POLYMER MODIFIED BITUMINOUS EMULSIONS

DESCRIPTION

Hind Emulsion A/Hind Emulsion C/Hind Emulsion P are classified as cold applied Anionic/Cationic/ Polymer Modified Bituminous Emulsions each available in three grades **Rapid Setting (RS), Medium Setting (MS) and Slow Setting (SS). Hind Emulsions** is very effective for **CMA (Cold Mix Asphalt) concrete.**

Hind Emulsion A is an Anionic Emulsion and is used most effectively in coating positively charged aggregates such as lime stone and marble and performs best in warm and dry conditions. It also has application in soil stabilization and patching road surfaces.

Hind Emulsion C is a Cationic Emulsion, and is very popular since it possesses the ability to absorb on to a wider range of mineral aggregates other than its Anionic Emulsion. It has better results for adhesion to mineral aggregates, sets readily on all but the most electro-positive aggregates and is effective for use in all weather conditions.

Hind Emulsion P is a Polymer Modified Bituminous Emulsion which is used to improve physical properties, performance and durability over normal Hind Emulsion A and Hind Emulsion C.

Rapid Setting (RS) grade of **Hind Emulsion** is so designed that it react quickly with aggregate and revert from the emulsion state to bitumen. It is used primarily for tack coat application and in spray applications, such as aggregate (chip) seals, surface treatments, asphalt penetration macadam and grouting.

Medium Setting (MS) grades of **Hind Emulsion** is designed for mixing with coarse aggregates and is ideal in premix. Since this grade do not break immediately in contact with aggregate, MS grade used in aggregates remain workable for a few minutes. The MS grade have high viscosity to prevent runoff. This type of emulsion is highly recommended for surface dressing work.

Slow Setting (SS) grade is designed for maximum mixing stability. This is used with very high fine dense - grade aggregates. Slow setting grade have low viscosity that can be further reduced by adding water. This blend can be diluted (up to 50%) for prior coats, fog seals, slurry surfacing and dust palliatives.

USES

- Largest use of **Hind Emulsion** is surface dressing. Important properties of **Hind Emulsion** are stability, viscosity, breaking and adhesiveness.
- **Hind Emulsion** is used as a tack coat / grouting, lean mix curing, patching, sealing of formations and sub bases.
- It is stable under storage and transport conditions and will break on application leading to the bitumen content adhering strongly to the road / patches and/or chippings.
- It has low viscosity for easy application and handling.
- **Hind Emulsion** flows to minimize irregular spraying but will not flow due to road irregularities, cambers or gradients.
- Emulsifiers change surface dependent properties like rate of breaking and the adhesive property.

ADVANTAGES

- Economical, Eco & user friendly, free from pollution and non-toxic in nature.
- Since it is cold applied, there is no requirement of special equipment like boiler, pre-mix plant, etc. Fuel and labour are saved for heating and avoids fire hazard.
- Application can be done in all weather conditions including rain but not to be applied in frost and heavy downfall.
- Retains fluidity until the penetration in the aggregate mass is completed and, hence, no possibility of using excess bitumen, which weakens the binder.

APPLICATION

- **Hind Emulsion** is applied cold at ambient temperature. Two bitumen particles in a **Hind Emulsion** will coalesce if they come into contact. The contact of two particles is prevented by electric charge repulsion and the mechanical protection offered by the emulsifier. Any effect that overcomes these forces will induce flocculation and coalescence. Flow of the **Hind Emulsion**, caused by pumping, heating (convection currents) or transport is one such effect. Some emulsifiers have a tendency to foam, which is, itself, a potential cause of coalescence since bitumen particles in the thin film of a bubble are subjected to the forces of surface tension.
- The surface should be cleaned of loose aggregates and dust before application. For better results, the surface should be slightly dampened with clean water immediately before application. Fluidity remains until penetration is completed and no additional material is required to ensure penetration.
- Brush, spray and other tools are recommended for application and should be cleaned with water prior to, and after their use to avoid contamination/breaking of **Hind Emulsion** on them. No brushing over **Hind Emulsion** to be done till its colour is changed turned black. Workers should not be allowed to walk over uncovered area where **Hind Emulsion** has been applied till it breaks and forms a black surface.

PROPERTIES

Characteristics for Hind Emulsion A
Specification : IS – 3117/2004

Characteristic	Grade of Emulsions		
	Rapid Setting	Medium Setting	Slow Setting
Viscosity by SFS Unit (Saybolt Furol viscometer, seconds at 25^0 C	20-100	20-100	20-100
Bitumen Content (% by mass) Min.	65	65	57
Settlement in 5 days (% by mass) Max.	3	3	3
Demulsibilty as per IS: 3117/2004	60	NA	NA
Coagulation in 2 Hrs in water	NA	NA	NA
Modified miscibility in water difference in Bitumen content, Max	NA	NA	4.5
Cement Mixing test, %, Max	NA	NA	2
Coating ability and water resistance • Dry aggregate • After spraying • Wet Aggregate • After Spraying	-	Good Fair Fair Fair	-
Sieve Test, %, Max	0.10	0.10	0.50
Charge	Negative	Negative	Negative
Drying time set to touch at 21^0 C , Minutes	15-20	35-45	NA

Characteristics for Hind Emulsion C
Specification : IS – 8887/2004

Characteristic		Grade of Emulsion			
	RS-1	**RS-2**	**MS**	**SS-1**	**SS-2**
Residue on 600 micron, Sieve, percent by mass, Max	0.05	0.05	0.05	0.05	0.05
Viscosity by Saybolt Furol viscometer, seconds:					
• At 25^{0}C	-	-	-	20-100	30-150
• At 50^{0}C	20-100	100-300	50-300	-	-
Coagulation of emulsion at low temperature	NIL		NIL	NIL	NIL
Storage stability after 24 hr, %	2	1	1	2	2
Coating ability and water resistance:					
• Coating, dry aggregate	-	-	Good	-	-
• Coating, after spraying	-	-	Fair	-	-
• Coating, wet aggregate	-	-	Fair	-	-
• Coating, after spraying	-	-	Fair	-	-
Particle Charge	+ve	+ve	+ve	Weak +	+ve
Stability to mixing with cement (percentage coagulation), Max	-	-	-	2	2
Miscibility with water	No	No	No	-	No
Tests on residue:					
• By evaporation, %, Min	60	67	65	50	60
• Penetration at 25 OC, 100 grm, 5 sec.	80-150	80-150	60-150	60-350	60-120
• Ductility 25 OC C/Cm, Min	50	50	50	50	50
•Trichloroethylene Solubility, mass, Min	98	98	98	98	98
Distillation in percent, by volume at,					
• 190 ^{O}C	-	-	-	20-55	-
• 225 ^{O}C	-	-	-	30-75	-
• 260 ^{O}C	-	-	-	40-90	-
• 315 ^{O}C	-	-	-	60-100	-
Water content, percent by mass, max	-	-	-	20	-

Characteristics of Hind Emulsion C
Specification : ASTMD 2397 – 02

Property	Rapid Setting			Medium Setting				Slow Setting				Quick Setting		
	CRS 1	CRS 2		CMS 2		CMS 2h		CSS 1		CSS 1h		CQS 1h		
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
Test on Emulsions: Viscosity, Saybold Furoll @ 25^0 C SFS									20	100	20	100	10	100
Viscosity, Saybold Furoll @ 50^0 C SFS	20	100	100	400	50	450	50	450						
Storage stability test, 24 hr, % A		1		1		1		1		1		1		
Demulsbility, 35 mL, 0.8 % dioctyl Sodium Sullfossuccinate, %	40	-	40	-										
Coating ability and water resistance coating: Dry aggregate After spraying Wet aggregate After spraying					Good Fair Fair Fair	Good Fair Fair Fair								
Particle charge test	+ve		+ve		+ve		+ve		+ve		+ve		+ve	
Sieve test, % A		0.10		0.10		0.10		0.10		0.10		0.10		0.10
Cement mixing test, %								2.0		2.0		2.0		N/A
Distillation: Oil distillate, by volume		3		3		12		12						
Residue, %	60		65		65		65		57		57		57	
Test on residue from distillation test: Penetration, 25 ^{0}C, 100 gm, 5s	100	250	100	250	100	250	40	90	100	250	40	90	40	90
Ductility, 25 ^{0}C, 5 cm/min, cm	40		40		40		40		40		40		40	
Solubility in tricholoroethylent, %	97.5		97.5		97.5		97.5		97.5		97.5		97.5	

Characteristics of Hind Emulsion P

Properties	Unit	Testing Method	Rapid Setting Specification	Medium Setting Specification	Slow Setting Specification
Polarity of particles		**EN1430**	Positive	Positive	Positive
Value at Breaking		**EN 13075-1**	70-130	50-100	120-180
Content in Binder (from content in water)	% in mass	**EN 1428**	58 - 62	63-67	58-62
Content in recovered Binder (By Distillation)	% in mass	**EN 1431**	≥ 58	≥63	≥ 58
Content in fluidiser by Distillation)	% in mass	**EN 1431**	≤ 2.0	≤ 2.0	≤ 2.0
Creep Time , 2 mm at 40^0 C	S	**EN 12846**	15 - 45	10 - 45	35 - 80
Sieving residue, 05mm sieve	% in mass	**EN 1429**	≤ 0.1	≤ 0.1	≤ 0.2
Tendency for Sedimentation	% in mass	**EN 12847**	≤ 10	≤ 10	≤ 10
Adhesiveness	% in mass	**EN 13614**	≥ 90	≥ 90	≥ 90

Method of Recovery by Evaporation (EN 13074)

Penetration at 25 ^{0}C	0.1mm	**EN1426**	≤330	≤330	≤150
Softening Point	^{0}**C**	**EN1427**	≥35	≥35	≥43
Pendulum Testing Cohesion	J/ Cm²	**EN 13588**	≥ 0.5	≥ 0.5	≥ 0.5
Elastic Recovery at 25 ^{0}C	%	**EN 13398**	≥ 30	≥ 30	≥ 30

PACKING

Hind Emulsion A/C/P is available in 200 Kg HDPE Container / Steel (Second Hand) drums.

SHELF LIFE

Best before 12 months from the date of manufacture. Should be stored in a cool and dry place covered from direct sunlight and at temperature ranging between 5^0 C (Min.) and 35 ^{0}C (Max.). It should be protected from frost.

HANDLING PRECAUTION

Hind Emulsion A/C/P is non-toxic but ingestion is to be avoided. Any splashes to the skin must be washed with water. If contact with eyes occurs, wash well immediately with water and seek medical advice.

NOTE:

- **Hindcon Chemicals** maintains a team of technically trained professionals to provide full support to your problems in construction, and recommend the correct product to suite your specific requirements. Our authorized applicators can attend your site for application of the products.
- The content of the Technical datasheet are for general information and guideline. The result shown here are generated from our laboratory or from our site experiences.
- Quality of our products are maintained as per ISO9001:2008 recommendations and continuous researches. The behavior can change as per the prevailing conditions at the time of applications.
- Since **HINDCON CHEMICALS LIMITED** has no control over the use to which the users may put the material, it does not claim or warrant that in the user's particular circumstances, the result that the user will obtain from the product will be the same as those described in this communication or that the user will find the information or recommendations complete, accurate or useful. The client must test and ascertain the safety and fitness for the product for use.
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