POLYMER MODIFIED BITUMEN

Styrelf® PMB PG GRADING

A technology of TotalEnergies

APPLICATIONS:

The STYRELF® PMB group of binders comprising a range of elastomerically modified bitumen. It is developed to provide high performance over a range of different applications and different conditions. Styrelf® PMB Bitumen is modified with elastomeric polymers using a TotalEnergies innovative cross-linking technology which gives them exceptional properties in terms of storage stability, cohesiveness, elongation capacity and resistance to aging. The Styrelf® PMB is homogenous and superior quality PMB; which enhances life of the pavement.

PRODUCT CERTIFICATIONS: Bureau of Indian Standards (BIS): CM/L-No-3269160

AVAILABLE GRADES:

- STYRELF® PMB 64-10 S/H/V/E
- STYRELF® PMB 70-10 S/H/V/E
- STYRELF® PMB 76-10 S/H/V/E
- STYRELF® PMB 82-10 S/H/V/E
- STYRELF® PMB 76-22 S/H/V/E

BENEFITS:

- Resistance at higher temperatures surface against rutting and ambient temperatures against fatigue.
- Higher resistance at low temperatures (-10°C) against thermal cracking because of viscoelastic nature.
- Better stripping resistance and ITSR (Indirect Tensile Strength Ratios).
- Better resistance against aging and oxidation compared to normal VG grades.
- Proven record of longer life of pavement.
- Saves natural resources and reduced pollution levels by deferring the frequency of overlays and period maintenance.
- Suitable as per Indian geography of moderate to extreme temperatures with lower susceptibility to temperature variation.
- Recommended for national/ state highways/ city roads/ fly overs/ round about etc. with overall improved mix performance.
- PMB grades available from selection criteria of standard (S) to extremely heavy (E) traffic condition as per IS 15462:2019.

PACKING: STYRELF® PMB is available in Bulk.

FOR TECHNICAL QUERIES, PLEASE CONTACT:

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IndianOil

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TABLE 1 REQUIREMENTS OF POLYMER MODIFIED BITUMEN (PMB) IS 15462:2019

(Clause 6.5 and 9.5.3)

Characteristics	Grades and Requirements					Method of Test, Ref to	
	PMB 64-10	PMB 70-10	PMB 76-10	PMB 82-10	PMB 76-22	Annex	IS/ASTM
(A) Tests to be Carried out on Original Binder							
Softening Point (R & B), °C, Min.	60	65	70	80	75	–	IS 1205
Elastic recovery of half thread in ductilometer at 15 °C, Min.	70	70	70	85	80	Annex A	–
Flash Point, COC, °C, Min.	230	230	230	230	230	–	IS 1209
Viscosity at 150 °C, Pa.s, Max	1.2	1.2	1.2	1.6	1.5	–	ASTM D 4402
Complex modulus (G*) divided by Sin delta (G*Sin δ) as Min 1.0kPa,25mm Plate,1mm Gap, at 10 rad/s, at a temperature, °C, Min.	64	70	76	82	76	Annex B	–
Phase Angle (δ), Degree Max.	75	75	75	75	75	Annex B	–
Separation, difference in softening point (R & B), °C, Max	3	3	3	3	3	Annex C	–
FRAASS breaking point, °C, Max.	-10	-10	-10	-10	-22	–	IS 9381
B)Tests to be carried out on Rolling Thin Film Oven (RTFO) residue[2]							
Loss in mass, %, Max.	1.0	1.0	1.0	1.0	1.0	–	IS 9382
Complex modulus (G*) divided by Sin delta (G*Sin δ) as Min 2.2kPa, 25mm Plate,1mm Gap, at 10 rad/s, at a temperature, °C	64	70	76	82	76	Annex B	–
MSCR TEST							
a) Standard Traffic (S) Jnr 3.2 Max 4.5 kPa-1, Jnrdiff Max75 percent Test Temperature, °C	64	70	76	82	76	Annex D	–
b) Heavy Traffic (H) Jnr 3.2 Max 2 kPa-1, Jnrdiff Max75 percent Test Temperature, °C	64	70	76	82	76	Annex D	–
c) Very Heavy Traffic (V) Jnr 3.2 Max 1 kPa-1, Jnrdiff Max75 percent Test Temperature, °C	64	70	76	82	76	Annex D	–
d) Extremely Heavy Traffic (E) Jnr 3.2 Max 0.5 kPa-1, Jnrdiff Max75 percent Test Temperature, °C	64	70	76	82	76	Annex D	–
C)Tests to be carried out on Pressure Vessel (PAV) residue[3]							
Complex modulus (G*) multiplied by Sin delta (G*sin δ) as Max 6000 kPa, 8mm Plate, 2mm Gap, at 10 rad/s, at a temperature	31	34	37	40	31	Annex C	–

1) FRAASS Breaking Point only to be evaluated in case the project site has subzero temp conditions.
2) Method for Preparation of Rolling Thin Film Oven (RTFO) Residue is given in Annex E.
3) Method for Preparation of Pressure Aging Vessel (PAV) Residue is given in Annex F.

Procedure	Recommended Temperature Range
Mixing / Coating with Aggregates	170 - 185 °C
Laying of Mix	150-170 °C
Beginning of Compaction	Over 140 °C
End of Compaction	110-120 °C