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Viscosity Grade Bitumen VG-40

Viscosity grade bitumen has a thermoplastic property which causes the material to soften at high temperatures and to harden at lower temperatures. This unique temperature/ viscosity relationship is important when determining the performance parameters such as the adhesion, rheology, durability and application temperatures of bitumen. In the Viscosity Graded Bitumen specifications, further special emphasize is placed on the Bitumen ductility.

The viscosity grading system is more rational than the penetration grading system. Viscosity is defined as the inverse of fluidity. Viscosity thus defines the fluid property of the bituminous material. Viscosity is the general term for consistency and it is a measure of resistance to flow.

To compare the specification of each grading system, it is necessary to find the equivalent grade of another system. The following table shows the equivalent penetration grades of viscosity grades with their general application.

Standard	Grades Minimum Of Absolute	Viscosity, Poises@60°C	Equivalent Penetration grade
IS73: 2013	VG-10	800	85-100
	VG-20	1600
	VG-30	2400	60-70
	VG-40	3200	30-40 , 40-50

Property	Units	Results	Test method
Penetration at 25°C, 100g, 5sec, Min	0.1 mm	35	IS 1203
Absolute viscosity at 60°C	P	3200-4800	IS 1206 (Part 2)
Kinematic viscosity at 135°C, Min	cSt	400	IS 1206 (Part 3)
Flash point (Cleveland open cup), Min	°C	220	IS 1448 [p : 69]
Solubility in trichloroethylene, Min	%Wt.	99	IS 1216
Softening point (R&B), Min	°C	50	IS 1205
Tests on residue from thin-film oven test			
Viscosity ratio at 60°C, Max	P	4	IS 1206 (Part 2)
Ductility at 25°C, Min	CM	25	IS 1208

According to viscosity (degree of fluidity) grading system, higher the grade, stiffer the bitumen, VG-40 BITUMEN is widely used in spraying applications such as surface dressing and paving in very cold climate in lieu of old 80/100 Penetration grade. It is also used to manufacture Bitumen Emulsion and Modified Bitumen products. Viscosity grade bitumen such as VG-10, VG-20, VG-30, VG-40 are produced as per IS73: 2013 standards.

Accredited: ISO9001:2015 | ISO 14001:2015 | ISO45001:2018