

VG Asphalt Cement — IS 73 Viscosity Grade

VG-10 · VG-20 · VG-30 · VG-40

In accordance with IS 73:2013 (fourth revision) — Paving Bitumen, Bureau of Indian Standards

1. Description

VG asphalt cement is a binder classified under Indian Standard IS 73, widely required in tenders in India, the Middle East, the Persian Gulf and East Africa. The designation is based on absolute viscosity at 60 °C and each grade is associated with a design maximum air temperature range.

Grade	Seven-day average maximum air temperature (°C)
VG-10	< 30
VG-20	30 – 38
VG-30	38 – 45
VG-40	> 45

Selection guidance in accordance with clause 5 of IS 73:2013.

2. Applications

- Hot mix asphalt in accordance with MoRTH and South and East Asian road authority specifications.
- Surface dressings, bituminous macadam and dense-graded mixes.
- Production of emulsions and modified binders within the region.

3. Specifications

Property	Method	VG-10	VG-20	VG-30	VG-40
Penetration at 25 °C, 100 g, 5 s (0.1 mm), min.	IS 1203	80	60	45	35
Absolute viscosity at 60 °C (poises)	IS 1206 (2)	800–1,200	1,600–2,400	2,400–3,600	3,200–4,800
Kinematic viscosity at 135 °C (cSt), min.	IS 1206 (3)	250	300	350	400
Flash point, Cleveland open cup (°C), min.	IS 1448 [P:69]	220	220	220	220
Solubility in trichloroethylene (%), min.	IS 1216	99.0	99.0	99.0	99.0
Softening point, ring and ball (°C), min.	IS 1205	40	45	47	50
Tests on residue from RTFOT — IS 9382					
Viscosity ratio at 60 °C, max.	IS 1206 (2)	4.0	4.0	4.0	4.0
Ductility at 25 °C, 5 cm/min (cm), min.	IS 1208	75	50	40	25

Values from Table 1 of IS 73:2013. Important notes: (i) the required flash point is 220 °C, not the 230 °C of the AASHTO standards; (ii) IS 73 contains no elastic-recovery requirement — that parameter belongs to IS 15462 for modified bitumen; (iii) in the fourth revision penetration changed from a range to a minimum value and absolute viscosity changed from a minimum value to a range, relative to IS 73:2006.

4. Storage and transport

Bulk storage shall be in clean tanks to avoid product contamination. The tank must have a heating system distributed along its length and an agitation and/or recirculation system that guarantees thermal homogeneity of the product. Transport from the production plant is carried out hot and in bulk, in tank trucks with adequate heating systems and thermometers located in visible places.

At 130 °C the product behaves as a stable liquid and its road transport presents no risk in transit. It is stable at plant or site working temperature (130 to 170 °C); however, above 230 °C the vapours emitted may ignite in the presence of a flame. Handling the product above 195 °C is not recommended, both because of the risk of toxic vapour emission and because of the loss of its physico-chemical properties.

5. Packaging and logistics

In bulk in heated tank trucks from 9 to 35 t · steel drums of 180–200 kg · Bitubags (thermally lined big bags) of 1,000–1,300 kg · 25 kg block packaging with anti-adhesive film for dry-container export. HS code: 2713.20 (petroleum bitumen).

6. Quality control

Every batch shipped is accompanied by a laboratory-issued quality certificate reporting the tests required by the applicable standard, with traceable batch identification. Additional testing or independent third-party inspection (SGS, Bureau Veritas, Intertek, Cotecna) at origin or destination can be arranged at the customer's request.

Consult the product Safety Data Sheet (SDS) before handling.

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