

Hot-Climate Bitumen Selection & Procurement Checklist

Use this form to qualify binder grade for high pavement temperatures, heavy/slow traffic and rutting risk. Do not convert PG, VG and penetration grades by name alone.

1. Project design basis

- Project location, pavement layer and road function identified.
- Governing binder specification and edition identified.
- High and low pavement design temperatures documented using the agency-approved method and reliability.
- Design traffic / ESAL basis, axle loading and design life documented.
- Traffic speed classified; standing/slow zones such as intersections, ports, toll plazas and bus stops identified.
- RAP/RAS percentage and recycled-binder contribution identified.
- Mixture type, nominal maximum aggregate size and structural layer identified.

2. Binder grading framework

System	Required entry	Project value	Verified
AASHTO M 320 PG	High/low PG based on pavement temperature		■
AASHTO M 332 MSCR	PG plus S/H/V/E traffic class as specified		■
IS 73 viscosity grade	VG 10 / 20 / 30 / 40 exactly as specified		■
Penetration grade	Exact grade and governing ASTM/EN/local standard		■
Modified binder	Performance target, modifier restrictions and storage controls		■

3. Binder laboratory requirements

Property / test	Method / standard	Requirement	COA result	Pass
Grade identity / supplier lot	Project specification			■
DSR high-temperature rheology	AASHTO T 315 / specified equivalent			■
MSCR Jnr / traffic class	AASHTO T 350 + M 332 if applicable			■
RTFO short-term aging	AASHTO T 240 / specified equivalent			■
Rotational / kinematic viscosity	Applicable PG/VG specification			■
Penetration at 25 C	Applicable VG/penetration specification			■
Softening point	Applicable VG/penetration specification			■
Low-temperature PG compliance	Applicable PG specification			■

4. Traffic and rutting risk review

- Slow/standing traffic requirement has been applied separately from climate grade where the specification uses MSCR.
- Intersection / port / climbing lane / bus lane has been checked as a separate pavement zone.
- A harder binder has not been selected solely to compensate for excessive binder content or weak aggregate structure.
- RAP/RAS stiffness has been included before selecting the virgin binder.
- Cracking/workability consequences of any high-temperature grade increase have been reviewed.

5. Mixture-level validation

Check	Project method	Requirement	Result	Pass
Volumetrics / air voids / VMA				■
Binder content and effective binder				■
Hamburg wheel-track or approved rutting test				■
Asphalt Pavement Analyzer if specified				■
Moisture susceptibility				■
Cracking / balanced mix design criterion				■
Compaction temperature and density window				■
Field trial / plant-produced verification				■

6. Procurement and supplier controls

- Purchase order states exact grade, governing standard and edition.
- Batch-specific COA and lot traceability required.
- Supplier / refinery approval status confirmed where the project requires an approved source.
- Independent sampling and verification rights included.
- For modified binder: formulation/site change notification, storage stability and circulation requirements documented.
- Delivery basis, quantity, tank/packaging, loading point and temperature controls defined.
- Supplier TDS is treated as typical guidance, not a substitute for batch release data.

7. Receiving and storage release

Check	Acceptance evidence	Status
Identity / batch	Grade, supplier, lot and documents match the purchase order	■
COA	All project-required tests reported with correct methods/units	■
Sampling	Representative sample taken under the project sampling procedure	■
Temperature	Delivery/storage temperature within approved handling range	■
Homogeneity	No abnormal separation, contamination, water ingress or foaming	■
Modified binder	Required circulation/storage stability controls maintained	■
Release	Binder and mixture QA results accepted before unrestricted production	■

8. Red flags - stop and investigate

Red flag	Why it matters
Grade chosen from maximum air temperature only	Pavement design temperature and reliability are missing.
VG 40 described as automatically equal to PG 76 or 40/50	The grading systems use different test frameworks and are not one-to-one equivalents.
Rutting failure addressed only by harder binder	Aggregate structure, binder content, compaction or weak layers may be the controlling cause.
Polymer percentage specified without a performance target	Modifier content alone does not prove high-temperature performance.
Slow/standing traffic ignored	Longer load duration raises deformation demand even at the same climate temperature.
Only rutting is checked after grade hardening	Cracking and workability can become unacceptable.
Supplier TDS accepted without batch COA	Typical values do not prove delivered-lot compliance.

Approval record: Project _____ Binder system / grade _____ Supplier _____ Lot _____ Mixture ID _____
 Reviewer _____ Date _____