



COMPLETE BITUMEN GRADE COMPARISON

A practical procurement and project-selection reference covering penetration, viscosity, performance, polymer-modified, oxidized, cutback and emulsion bitumen.

QUICK RULE	WHAT IT MEANS
Lower penetration number	Harder binder; generally preferred as pavement temperature and loading increase.
Higher viscosity grade	Stiffer binder at the specified test temperature; commonly selected for hotter or heavier-duty service.
PG xx-yy	High and low pavement design temperatures under the Superpave system; traffic level still matters.

Prepared from product and technical information published on [Aljabalglobal.com](https://www.aljabalglobal.com)

Edition: September 2026

1. Master Comparison by Bitumen Family

This table compares what each grading family actually controls. Grades from different systems are not automatic substitutes; final selection must be checked against the project specification, climate, traffic and approved test certificate.

Family	How it is designated	Relative behavior / selection logic	Typical uses	Key tests / reference	Al Jabal website coverage
Penetration grade	Penetration range at 25 C in 0.1 mm (dmm), e.g. 60/70	Lower number = harder binder. Broadly: hard grades for hotter/heavier service; soft grades for colder/lighter service.	Hot-mix asphalt, bases, wearing courses, roads, runways, roofing and industrial binders	ASTM D5 / EN 1426; ASTM D946; EN 12591	ASTM and EN series; detailed values for 40/50, 60/70, 80/100, 100/200 and 200/300
Viscosity grade (VG)	Viscosity class, e.g. VG-10, VG-20, VG-30, VG-40	Higher VG = stiffer binder. VG-10 is positioned for colder conditions; VG-30/VG-40 for hotter or higher-traffic service.	Highways, expressways, heavy traffic zones, industrial floors, dams	Viscosity-based specification, commonly tested at 60 C and 135 C	VG-10, VG-20, VG-30 and VG-40 named
Performance grade (PG)	Design pavement temperature range, e.g. PG 64-22	First number = high pavement design temperature; second number = low pavement design temperature below zero.	Climate- and traffic-specific pavements; extreme seasonal ranges	Superpave binder testing and project climatic design	PG system explained; PG 64-22 and PG 70-10 examples
Polymer modified (PMB)	Polymer / project specification, e.g. SBS, EVA or crumb rubber	Improved elasticity, rutting resistance, fatigue life and cracking resistance versus conventional binder.	Heavy-duty highways, airports, urban roads, bridge decks	ASTM / EN property limits; elastic recovery and storage stability	PMB-SBS, PMB-EVA and PMB-CR with typical property table
Oxidized / blown	Typically penetration/softening-point style industrial grade	Harder, higher softening point, stable under heat, water and chemical exposure.	Roofing, membranes, pipe coating, carpet backing, cable insulation, soundproofing	Project/product-specific penetration and softening point	Family and industrial applications described
Cutback	Curing family + viscosity class, e.g. RC70 or MC250	Petroleum solvent lowers application viscosity. RC sets fastest; MC intermediate; SC slowest. VOC controls may apply.	Prime coats, patching, surface dressing and cold-weather work	ASTM D2170, D3143, D95, D402 and residue tests	MC30/70/250/3000 and RC30/70/250/3000 numeric tables
Emulsion	Charge and setting class, project-specific	Water-based system; applicable at lower temperature and on damp surfaces; lower VOC alternative to cutback.	Tack coats, fog seals, surface treatments and maintenance	Residue, viscosity, storage stability and breaking behavior per local standard	Family, composition and uses described

Procurement principle

Specify the grading system, exact grade, governing standard, test methods, packing, destination and inspection requirements. A grade name alone is not a complete purchase specification.

2. Penetration Grade Portfolio

Penetration grading measures consistency at 25 C. Within the same grading system, higher penetration values indicate a softer binder. The two standards below use overlapping but not identical bands.

Standard / market series	Grades published on the Al Jabal website	Hard to soft direction	Practical positioning
ASTM D946 series	40-50; 60-70; 85-100; 120-150; 200-300	40-50 -> 200-300	Harder grades toward hot/heavy-duty paving; softer grades toward colder conditions and applications needing greater workability.
EN 12591 series	20/30; 30/45; 35/50; 40/60; 50/70; 70/100; 100/150; 160/220	20/30 -> 160/220	Select the exact EN band stated by the pavement design or tender. Do not replace an ASTM-named band solely by apparent numeric similarity.
Commercial grades highlighted	20/30; 40/50; 60/70; 80/100; 100/200; 200/300	20/30 -> 200/300	60/70 is the mainstream medium-hard paving grade; 80/100 is softer; 20/30 and 40/50 are harder.

Published Technical Snapshot

Grade	Penetration @25 C	Softening point	Flash point	Ductility @25 C	Viscosity	Other published data / interpretation
20/30	20-30 dmm by designation	Not stated on product page	Not stated	Not stated	Not stated	Very hard penetration paving grade; hot-mix asphalt for bases and wearing courses.
40/50	40-50 dmm; published result 43	Min 49 C; result 51.3 C	Min 230 C; result 320 C	Min 100 cm; result >100 cm	475 cSt @135 C	Density result 1.036; solubility 99.9%; retained penetration after TFOT 61%.
60/70	60-70 dmm	49-56 C (main table); 48-56 C on dedicated page	Min 232 C / >230 C	Min 100 cm / >100 cm	Not stated in main 60/70 table	Specific gravity 1.01-1.06; loss on heating max 0.2%; solubility min 99%.
80/100	80-100 dmm; published result 95	Min 42 C; result 47 C	Min 232 C; result 318 C	Min 100 cm; result >100 cm	276 cSt @135 C; 105 Pa.s @60 C	Density result 1.022; solubility result 99.99%; TFOT penetration drop 4.5%.
100/200	Published result 110 dmm	Published result 40 C	Published result 260 C	Not stated	Published result 250 (site labels unit as C; confirm unit on COA)	Sulphur result 5.9 mass%. Website table presents indicative result values, not a full limit specification.
200/300	Published result 220 dmm	Published result 37 C	Published result 215 C	Not stated	Published result 200 (site labels unit as C; confirm unit on COA)	Sulphur result 5.9 mass%. Softest grade in the highlighted commercial series.

Important: Numeric values above reproduce or normalize the website's published tables. Where the site gives a laboratory result, it is labeled as a result rather than a guaranteed limit. Contract acceptance must use the approved product specification and batch Certificate of Analysis (COA).

3. Viscosity, Performance and Modified Grades

Grade / type	Relative position	Climate / traffic fit	Primary applications	What to confirm before order
VG-10	Lowest viscosity in listed VG series	Colder conditions; light-duty or spray-related uses where specified	Cold-region paving and selected surface applications	Governing national standard, viscosity limits, mixing and compaction temperatures
VG-20	Between VG-10 and VG-30	Moderate conditions; project-specific traffic	General paving where this intermediate class is specified	Exact standard and full COA limits
VG-30	High viscosity	Hotter weather and heavy traffic	National highways, expressways and heavy-duty asphalt	Viscosity at 60 C and 135 C, aging requirements
VG-40	Highest viscosity in listed VG series	Very hot and/or severe loading where design permits	Heavy traffic zones and high-stress pavement	Workability, plant temperature and rutting performance
PG grade (example PG 64-22)	Temperature-design grade	Design high of 64 C and design low of -22 C; traffic adjustment may be required	Superpave-designed pavement	Climate data, traffic speed/load, virgin vs modified binder, AASHTO/agency requirements
PMB-SBS	Elastomer modified	High traffic, temperature swings, fatigue and cracking risk	Highways, airports, bridge decks	Polymer content, elastic recovery, storage stability, RTFOT performance
PMB-EVA	Plastomer modified	Aging and oxidation resistance	Durable paving and specialty asphalt	Blend compatibility, softening point, viscosity and storage stability
PMB-CR	Crumb-rubber modified	Noise/skid and sustainability objectives; local specification dependent	Urban roads and specialty surfacing	Rubber source/size, viscosity, settling and environmental requirements
Oxidized / blown	Hard industrial binder	High heat stability and chemical/water resistance	Roofing, coating, insulation and membranes	Penetration/softening designation, application temperature and packaging
Emulsion	Water-based low-temperature binder	Maintenance, damp surfaces and lower-VOC projects	Tack coat, fog seal and surface treatment	Cationic/anionic charge, rapid/medium/slow set, residue %, viscosity and aggregate compatibility

PMB Typical Property Range Published by Al Jabal

Property	Test method	Typical range
Penetration @25 C	ASTM D5 / EN 1426	40-60 dmm
Softening point (R&B;)	ASTM D36 / EN 1427	>=60 C
Elastic recovery @25 C	EN 13398	>=60%
Ductility @25 C	ASTM D113	>=100 cm
Viscosity @135 C	ASTM D4402	1000-3000 cP
Fraass breaking point	EN 12593	<=-10 C
Storage stability @163 C	EN 13399	<=5 C difference
Flash point	ASTM D92	>=230 C

Performance factor	Conventional	PMB
Temperature susceptibility	High	Low
Rutting resistance	Moderate	Excellent
Fatigue resistance	Low	High
Elastic recovery	Poor	Superior
Crack resistance	Moderate	High
Website-stated service life	5-8 years	10-15 years

4. Cutback Grade Comparison

Cutbacks are grouped by solvent evaporation rate. Al Jabal publishes numeric data for Medium Curing (MC) and Rapid Curing (RC) grades. Slow Curing (SC) is named on the site but no numeric SC table is published there.

Family	Grade	Kinematic viscosity @60 C	Flash point	Residue to 360 C	Residue penetration @25 C	Best-fit use / handling
MC	MC30	30-60 cSt	38 C	50 vol%	120-150 dmm	Low-viscosity prime coat and cold application where MC is permitted
MC	MC70	70-140 cSt	38 C	55 vol%	120-150 dmm	Prime coat, patching and surface work
MC	MC250	250-500 cSt	66 C	67 vol%	120-150 dmm	Heavier surface treatment / patching
MC	MC3000	3000-6000 cSt	66 C	67 vol%	120-150 dmm	High-viscosity MC application
RC	RC30	30-60 cSt	Not stated	50 vol%	80-120 dmm	Fast-setting, low-viscosity spray work where RC is permitted
RC	RC70	70-140 cSt	Not stated	55 vol%	80-120 dmm	Fast-curing surface treatment
RC	RC250	250-500 cSt	27 C	65 vol%	80-120 dmm	Higher-viscosity rapid-curing treatment
RC	RC3000	3000-6000 cSt	27 C	75 vol%	80-120 dmm	Highest-viscosity RC grade listed

Published Distillation and Residue Checkpoints

Distillation checkpoint	MC30	MC70	MC250	MC3000	RC30	RC70	RC250	RC3000
Distillate @225 C	10	10	10	10	55	50	35	10
Distillate @260 C	40-70	25-65	15-55	15-75	75	70	60	25
Distillate @315 C	75-93	75-87	60-87	>=80	90	85	80	70
Water max, vol%	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Residue ductility @25 C	100 cm	100 cm	100 cm	100 cm	100 cm	100 cm	100 cm	100 cm
Residue solubility in TCE	99 wt%	99 wt%	99 wt%	99 wt%	99 wt%	99 wt%	99 wt%	99 wt%

Environmental note

Cutbacks contain petroleum solvent and may face VOC restrictions. For many maintenance applications, emulsion is the lower-VOC alternative. Confirm local transport, handling and environmental rules before purchase.

5. Selection Matrix and Ordering Checklist

Project condition	First family to evaluate	Likely grade direction	Critical confirmation
Hot climate + heavy traffic	Hard penetration, VG-30/VG-40, suitable PG or PMB	Lower penetration / higher viscosity; PMB if rutting risk is severe	Pavement temperatures, axle loads, traffic speed and rutting criteria
Mild climate + general paving	60/70 or project-specified equivalent system	Medium-hard paving binder	Tender standard, aggregate compatibility and asphalt mix design
Cold climate / thermal cracking risk	Softer penetration, VG-10, suitable low-temperature PG or PMB	Higher penetration / lower low-temperature PG limit	Minimum pavement temperature and cracking performance
Airport / bridge / severe cyclic load	PMB or traffic-adjusted PG	High elastic recovery and fatigue resistance	Fuel resistance, storage stability, RTFOT/PAV and agency approval
Prime coat / patching / surface dressing	Cutback or emulsion	Viscosity and setting rate matched to surface/weather	VOC rules, surface moisture, curing window and aggregate charge
Roofing / coating / insulation	Oxidized bitumen	Higher softening point and industrial stability	Exact penetration-softening grade, flow resistance and end-use standard

Order field	What to state
Product	Family + exact grade (example: penetration 60/70, MC250, PMB-SBS, or project PG grade)
Standard	ASTM, EN, AASHTO, national standard or employer specification, including edition if required
Quantity	Metric tonnes and permitted shipment tolerance
Packing	Steel drum, jumbo bag, bulk tanker / bitutainer, or destination-specific format
Destination	Named port and country; requested Incoterm such as FOB, CFR or CIF
Quality evidence	Pre-shipment COA, MSDS/SDS, inspection company and sampling protocol
Commercial	Payment method, delivery window, target price and validity period

Published packing / logistics	Website detail
Steel drums	180 kg net / 190 kg gross stated generally; separate steel-drum table gives 182 +/- 3 kg net and 192 +/- 3 kg gross.
150 kg drums	Produced for selected markets, particularly Bangladesh.
Jumbo bags	Approximately 1 metric tonne.
Container guidance	Website states 20 ft containers in cold season and 40 ft containers in hot season for jumbo-bag loading.
Other export forms	Bulk containers / ISO tankers, bitutainers and bitumen bags are also described.

Source Pages

[aljabalglobal.com/bitumen/](#) | [aljabalglobal.com/penetration-grade-bitumen/](#) | [aljabalglobal.com/bitumen-penetration-grade-20-30/](#) | [aljabalglobal.com/bitumen-60-70-supplier/](#) | [aljabalglobal.com/polymer-modified-bitumen-pmb/](#) | [aljabalglobal.com/ultimate-guide-to-bitumen-grades-and-export-standards-2025-update-aljabal-holding/](#)

Technical disclaimer: This document is a structured comparison and sales-support reference based on information displayed on Aljabalglobal.com as reviewed in September 2026. It is not a project design, product warranty or substitute for the governing tender specification. Some website tables report example laboratory results rather than contractual limits, and a few entries contain unit/method labels that should be confirmed. Final supply must be governed by the agreed specification, current batch COA, SDS/MSDS, destination regulations and independent inspection requirements.