

Low Temperature Bitumens



Special binders



Allow a **handling temperature** (manufacture and installation) that is lower than conventional bitumens with similar penetration.

Repsol has recently made great efforts in the research and development of these new binders which, once applied, offer the same, or even greater, performance than conventional binders.

This range of products, due to the reduction in temperature during their manufacture (between 20 and 40 °C), provides the following advantages:

- **Reduction of emissions in the atmosphere**
- **Energy efficiency**
- **Improvement in working conditions**

/ PRODUCT CHARACTERISTICS

• ECOBET IP range

CHARACTERISTICS		UNE EN	UNIT	ECOBET RANGE	
				35/50 ECOBET	50/70 ECOBET
Penetration at 25°C		1426	0,1 mm	35-50	50-70
Softening point		1427	°C	50-58	46-54
Durability-Resistance to ageing UNE EN 12607-1	Change of mass	12607-1	%	≤ 0,5	≤ 0,5
	Retained penetration	1426	%	≥ 53	≥ 50
	Increase in softening point	1427	°C	≤ 8 [sev 1] ≤ 11 [sev 2]	≤ 9 [sev 1] ≤ 11 [sev 2]
Penetration ratio		12591 13924 Anexo A	-	- 1,5 a +0,7	-1,5 a +0,7
Fraass breaking point		12593	°C	≤ -5	≤ -8
Flash point		ISO 2592	°C	≥ 240	≥ 230
Solubility		12592	%	≥ 99,0	≥ 99,0

• Gama ECOBET IP

The ECOBET IP products, in addition to reducing the possibility of temperature reduction in the mix, provide improved mechanical properties compared to a conventional bitumen of the same penetration.

CHARACTERISTICS		UNE EN	UNIT	ECOBET IP RANGE	
				35/50 ECOBET IP	50/70 ECOBET IP
Penetration at 25°C		1426	0,1 mm	35-50	50-70
Softening point		1427	°C	≥ 70	≥ 65
Durability-Resistance to ageing UNE EN 12607-1	Change of mass	12607-1	%	≤ 0,8	≤ 0,8
	Retained penetration	1426	%	≥ 60	≥ 55
	Increase in softening point	1427	°C	≤ 5	≤ 5
Penetration ratio		12591 13924 Appendix A	-	≥ 2,5	≥ 2,5
Fraass breaking point		12593	°C	≤ -10	≤ -12

• BT MODIFIED BITUMENS RANGE

CHARACTERISTICS	UNE EN	UNIT	BT	
			PMB 45/80-60 BT	PMB 45/80-65 BT
Ensayos sobre el betún original				
Penetration at 25°C	1426	0,1 mm	45-80	45-80
Softening point	1427	°C	≥ 60	≥ 65
Cohesion. Strength-ductility	13589 13703	J/cm ²	≥ 2 a 5°C	≥ 3 a 5°C
Fraass breaking point	12593	°C	≤ -12	≤ -15
Elastic recovery at 25°C	13398	%	≥ 50	≥ 70
Stability in storage	Difference in softening point	13399 1427	°C	≤ 5
	Difference in penetration point	13399 1426	0,1 mm	≤ 9
Flash point	ISO 2592	°C	≥ 235	≥ 235
Durability-Resistance to ageing EN 12607-1				
Change of mass	12607-1	%	≤ 1,0	≤ 1,0
Retained penetration	1426	%	≥ 60	≥ 60
Increase in softening point	1427	°C	≤ 10	≤ 10

CHARACTERISTICS	UNE EN	UNIT	PMB 45/80-75 AV BT	
Tests on original bitumen				
Penetration at 25°C	1426	0,1 mm	45-80	
Softening point	1427	°C	≥ 75	
Cohesion. Strength-ductility	13589 13703	J/cm ²	≥ 3 a 5°C	
Fraass breaking point	12593	°C	≤ -15	
Elastic recovery at 25°C	13398	%	≥ 80	
Stability for storage	Difference in softening point	13399 1427	°C	
	Difference in penetration point	13399 1426	0,1 mm	
Flash point in open cup	ISO 2592	°C	≥ 235	
Durability-Resistance to ageing EN 12607-1				
Change of mass	12607-1	%	≤ 1,0	
Retained penetration	1426	%	≥ 60	
Increase in softening point	1427	°C	≤ 10	
Decrease in softening point	1427	°C	≤ 5	

/ RECOMMENDATIONS FOR USE

The recommended temperatures for use are as follows:

	35/50 ECOBET	50/70 ECOBET	35/50 ECOBET IP	50/70 ECOBET IP
Storage	160 °C	150 °C	140 °C	135 °C
Mixing	130-135 °C	125-130 °C	130-135 °C	125-130 °C
Start of spreading and compaction	Min. 120 °C	Min. 120 °C	Min. 120 °C	Min. 120 °C
Final compaction	Min. 100 °C	Min. 100 °C	Min. 100 °C	Min. 100 °C

	PMB 45/80-60 BT	PMB 45/80-65 BT	PMB 45/80-75 AV BT
Storage	150 °C	150 °C	160 °C
Mixing	135-140 °C	135-140 °C	145-150 °C
Start of spreading and compaction	125-130 °C	125-130 °C	135-140 °C

Indicative data, not contractual and not subject to specifications. Temperatures depend on the specific viscosity curves of each product.

/ APPLICATION AND BEHAVIOUR OF PRODUCT IN THE MIX

The low temperature Repsol bitumens are applied in all kinds of mixes and with the usual bitumen applications, from the manufacturing of conventional asphalt mixtures with 35/50 or 50/70 ECOBET to anti-cracking mixes with PMB 45/80-75 AV BT, through discontinuous mixes with PMB 45/80-60 BT and PMB 45/80-65 BT bitumens.

These provide the following advantages:

- **Increased durability of the mix** due to reduced manufacturing temperature, which contributes to less ageing.
- **More eco-friendly** due to a reduction in emissions.
- **Reduction in energy** due to lowering (approx 30 °C) the manufacturing temperature, involving a cost saving in the manufacturing plant of the asphalt mix.
- **Improved working conditions** for operators during manufacturing and installation.

All these advantages mean better results for our customers, thanks to lower costs by reducing energy consumption, increased security and productivity and the social benefit deriving from the increased durability of the surfaces.