

**Comparing High-Performance Asphalt mixes:**

**A Product is not a Specification**

**GB5 is not a replacement for EME2**

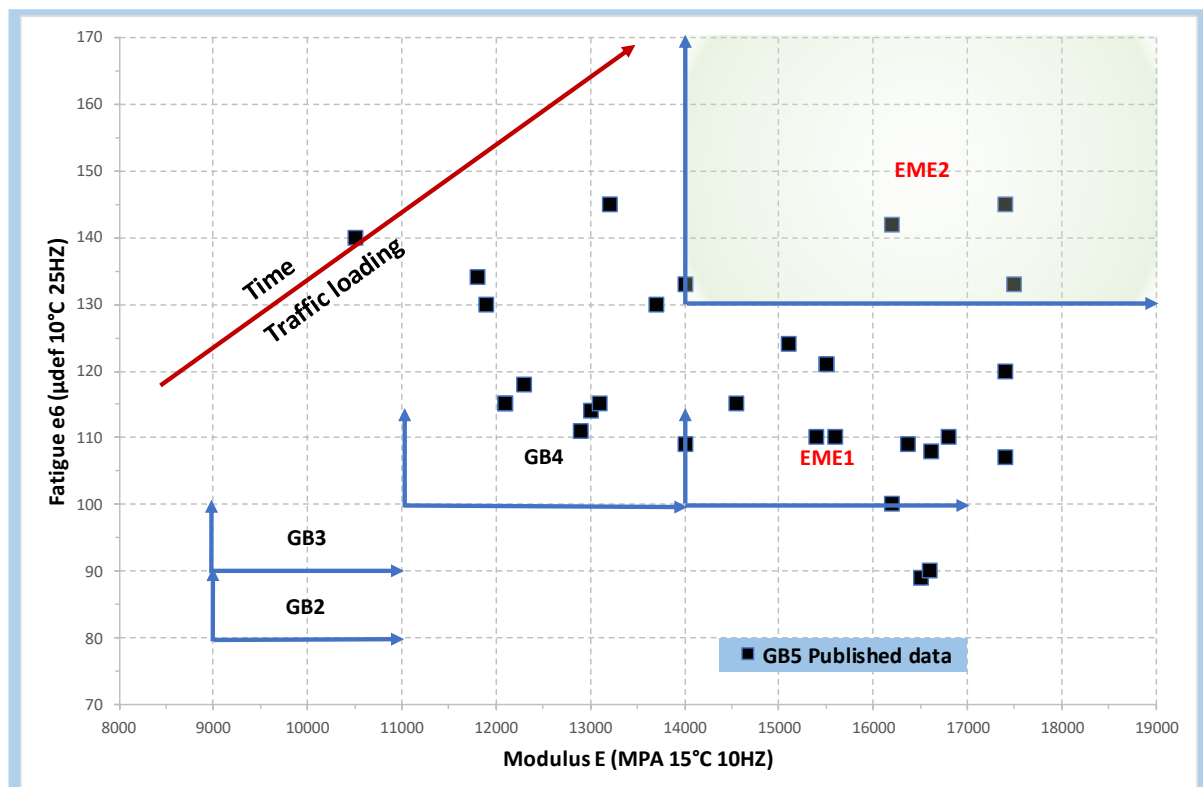
**EME2: A Well-Defined Specification, Tried and Tested**

EME2 is a specification for high-performance asphalt originally developed in France over 30 years. It requires that the mix must meet a set of laboratory performance criteria. Below is a summary of the key performance criteria for fatigue and modulus according to the French Standard reference (NF EN 13108-1), two essential performance indicators:

EME2		
Flexural Modulus	$E^*$ @ 15°C (MPa), 10Hz	<b>14,000 (min)</b>
Fatigue Resistance	E6 @ 10°C ( $\mu\epsilon$ )	<b>130 (min)</b>

**GB5: A proprietary product with a wide range of performance results**

As opposed to EME2, GB5 is not a specification but a proprietary product. The graph below shows actual fatigue and modulus results for GB5 gathered from published technical papers and plotted against the French specification framework. See Appendix A for all the details on the source of the data points used in the graph. It shows that a large spread in the modulus and fatigue values with a few possibly meeting EME2 requirements, and many others clearly outside the EME2 performance criteria.



## At SAMI, we believe performance should not be a gamble

As a supplier of EME2 bitumen, we will ensure that the binder supplied for your EME2 asphalt will achieve the performance criteria for EME2 asphalt as prescribed by the Australian performance-based specifications.

As we have done for several hundred thousand tonnes already placed on Australian roads, we will also work with our customers to ensure their EME2 mixes meet these tried and tested performance criteria.

### Appendix A: Summary of all published modulus and fatigue results for GB5

N°	Date	Source	RAP	Binder	Total Binder content	GB5 Published Data	
						Modulus E (MPa 15°C 10HZ)	Fatigue e6 (µdef 10°C 25HZ)
1	2010	GB5 Patent	10	35/50 + 2.5% SBS	3.9	15400	110
			0	35/50 Multigrade	4.2	12100	115
			0	35/50 + 2.5% SBS	4.2	16610	108
			25	35/50 Multigrade	4.8	11900	130
			25	35/50 + 2.5% SBS	4.8	15100	124
			25	35/50 Multi + 2.5% SBS	4.8	11800	134
			25	35/50 Multi + 6% SBS	4.8	10500	140
			20	35/50 + 2.5% SBS	4.2	16800	110
			15	35/50 Multigrade	4.0	13000	114
			15	35/50 + 2.5% SBS	4.0	14000	109
2	2010	RGRA N°888	15	35/50 Multigrade	4.1	12300	118
			15	35/50 + 2.5% SBS	4.1	12900	111
			0	Multigrade 35/45	4.2	12100	115
			0	Biprene 41 (SBS)	3.9	17400	107
3	2011	ERR N°18	25	Biprene 41 IPE (SBS)	4.6	13200	145
			0	35/50	3.9	16500	89
			10	35/50	3.9	16600	90
			0	35/50 + 2.5% SBS	3.9	15600	110
			0	35/45B (semi blown)	3.9	13100	115
4	2011	Travaux N°885	0	35/45B + 2.5% SBS	3.9	13700	130
			not known	35/50 SBS (2.5%)	4.0	17400	120
5	2012	AAPA Masterclass	not known	35/50 SBS (6%)	4.0	17400	145
6	2012	AAPT conference	Same values as N°3 except for binder content of 4%				
7	2012	PIARC Congress	Same values as N°5				
8	2012	ERR N°20	Same values as N°3				
			15	Biprene (2.5 % SBS)	4.3	17500	133
9	2012	Eurobitume congress	15	Orthoprene (7% SBS)	4.3	11000	205
10	2012	RGRA N°899	Same values as N°5				
11	2012	RGRA N°904	Same values as N°4				
12	2013	SABITA Seminar	Minimum value for fatigue : 130 for GB5 Multigrade - 140 for GB5 Biprène				
13	2015	Mines et Carrières N°225	Same values as N°5				
14	2015	RGRA N°925	Same values as N°4 except 130 for epsilon6				
			0	Multigrade	4.2 ou 4.6	15500	121
15	2016	RILEM Conference	0	Biprene 41 IPE	4.2 ou 4.6	16200	142
16	2017	AAPA Conference	Same values as N°14 but without fatigue data				
17	2019	AAPA Conference	Same values as N°8				
18	2019	RGRA N°967	Only stiffness modulus values presented				
19	2019	Journal of Cleaner Production	20	PMB	4.8	14000	133
			50	50/70 + rejuvenator	4.49	14540	115
			50	Biobinder Biophalt	4.44	16200	100
			50	50/70 + rejuvenator	4.36	16360	109