

European Asphalt Standards - A UK Purchasers Perspective

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SCI
13th March 2008

The missing link?

PD 6691:2007

PUBLISHED DOCUMENT

Guidance on the use of BS EN 13108 Bituminous mixtures – Material specifications

ICS 93.080.20

BSi
British Standards

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BS 594987:2007

BRITISH STANDARD

Asphalt for roads and other paved areas – Specification for transport, laying and compaction and type testing protocols

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MANUAL OF CONTRACT DOCUMENTS FOR HIGHWAY WORKS
VOLUME 1 SPECIFICATION FOR HIGHWAY WORKS

SERIES 900
ROAD PAVEMENTS - BITUMINOUS
BOUND MATERIALS

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Amendment - November 2006

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Manual of Contract Documents for Highway Works

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Timetable

- Interim Advice Note 101/07 containing complete new 900 series was published on 15th November 2007
- Interim Advice Note 102/07 on implementation was also published on 15th November 2007
- Implemented on 1st January 2008
- IAN 101/07 Amendment 1 was published in February 2008

Timetable

- Interim Advice Note ??/08 containing NG900 Notes for Guidance and Example Appendices 7/1 and 1/5 due to be released on 11th April 2008
- Full publication in MCHW for 900, NG900 and Specification Appendices in August Update

Approach

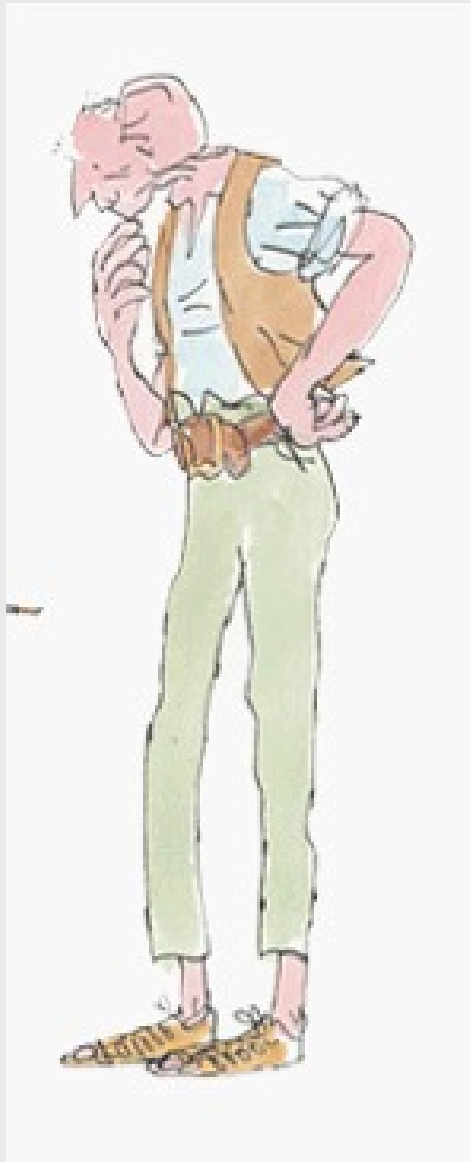
- Strong collaboration with industry
- Combined with other suggested changes from HA/QPA/RBA collaborative project on improving asphalt durability

Typical BFG progress meeting.....

I need to
update the
SHW.....



More
research
required....



The easy bits!

- Change in nomenclature
- Full list of materials in every Clause

906 Dense Base and Binder Course Asphalt Concrete (Recipe Mixtures)

1 Dense base and binder course asphalt concrete (formerly macadam) recipe mixtures shall be asphalt concrete conforming to BS EN13108-1, the detailed requirements from BSI PD 6691 Annex B and requirements specified in Appendix 7/1. The mixture designation shall be one of the following:

- (i) AC 32 dense base 40/60 rec
- (ii) AC 32 dense base 100/150 rec
- (iii) AC 32 dense base 160/220 rec
- (iv) AC 32 dense bin 40/60 rec
- (v) AC 32 dense bin 100/150 rec
- (vi) AC 32 dense bin 160/220 rec
- (vii) AC 20 dense bin 40/60 rec
- (viii) AC 20 dense bin 100/150 rec
- (ix) AC 20 dense bin 160/220 rec

The easy(ish) bits!

- European test methods

925 Testing of Bituminous Mixtures

1 The sampling and testing of bituminous mixtures shall comply with BS EN 12697, except where otherwise specified in this Series.

- Wheeltracking requirements still to be confirmed

The easy(ish) bits!

- Clause 942
- HAPAS still required as EN is “back of lorry”
- Installation still a fundamental aspect of these materials

The easy(ish) bits!

- Manufacturers can describe proprietary materials in EN terms
- No plans to introduce EN TAC and SMA surface courses for HA network

Fundamental changes

- CE Marking (Clause 901.2)

“All mixtures supplied in accordance with BS EN 13108 shall be CE marked.”



Fundamental changes

- Type testing
- Factory production control

Type testing

- Mixture design for Clause 929 covered by Annex B.3.2 (Base) and B.3.3 (Binder course) of PD 6691
- Job Mixture Approval Trial no longer required
- Protocol for trial strips for Type Testing covered by Annexes C and D BS 594987
- Requirements for properties from trial strips covered by PD 6691 Annex B

Permanent works requirements remain in SHW

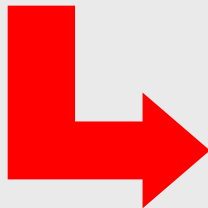


- Permanent works specification requirements in MCHW Volume 1 Clause 929
 - core pairs from the wheel-tracks every 1000 metres
 - average in situ air voids shall not exceed 7%
 - a further core pair shall be taken every 250 metres centred 100mm from the final joint position on any unsupported edge
 - average in situ void content for each of these pairs shall not exceed 9%

Clause 929

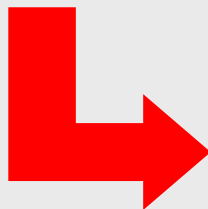
- November 2004 edition - 3,096 words
- IAN 101 edition - 909 words!

Guidance on the use of BS EN 13108 Bituminous mixtures – Material specifications



Annex B: Asphalt Concrete - example specification

Asphalt for roads and other paved areas – Specification for transport, laying and compaction and type testing protocols



Annex C: Type testing protocol for voids

Annex D: Type testing protocol for deformation resistance

SHW 900 - Permanent Works requirements

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VOLUME 1 SPECIFICATION FOR HIGHWAY WORKS

SERIES 900
ROAD PAVEMENTS - BITUMINOUS
BOUND MATERIALS

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915	Current Categories for Application to Permanent Surfings	10	942	(0501) Thin Surface Class Systems	53
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918	(0501) Design, Testing and Compliance of Performance-Specified Base and Binder Class	10	945	(0501) Surface Condition for Laying of Bituminous Materials	57
919	Surface Design, Range Specifications	14	946	(0501) Class Chip Road Asphalt Base	58
920	(0501) Road Crew, Test Crew and Other Minimum Types	16	947	(0501) Stone Mastic Asphalt	59
921	(1102) Surface Measurement of Bituminous Surface Courses on High Speed Roads	17	948	(0501) Cold Recycled Bitumen Bound Material	60
922	(0501) Surface Design, Design, Application and End Product Performance	17	949	(0501) Repetitive Protection	60
923	(1102) Binder Recovery using the Rapid Extraction Test (RET) and related Aggregating Thin Film Oven Test (ATFT)	20	950	(0501) Repetitive	66
924	High Purity Surface	24	951	(0501) Parting	66
925	Testing of Bituminous Mixtures and Their Component Materials	25	952	(0501) Intermediate Substrate for Bituminous Courses and Base	66
926	In Situ Sampling, Test Results and Report Formats	25	953	(1104) Durability of Bituminous Mixtures - Determination of Dynamic Modulus (DMT) Test	67
927	(0501) Not Used	26			

Amendment - November 2006

Clause 930

- EME2 Base and Binder Course
Asphalt Concrete (Design Mixtures)



930 EME2

- Detailed mix design requirements given in PD 6691 Annex B.3.4
- Protocol for trial strips for Type Testing covered by Annex E BS 594987
- Permanent works specification requirements in MCHW Volume 1 Series 900
- Binder properties taken from BS EN 13924 UK National Foreword + additional requirements in 930



Permanent works requirements in SHW



- Permanent works specification requirements in MCHW Volume 1 Clause 930
 - core pairs from the wheel-tracks every 1000 metres
 - average in situ air voids shall not exceed 6%
 - a further core pair shall be taken every 250 metres centred 100mm from the final joint position on any unsupported edge
 - average in situ void content for each of these pairs shall not exceed 8%

PD 6691:2007

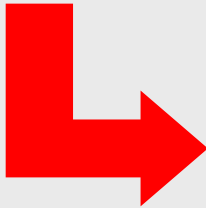
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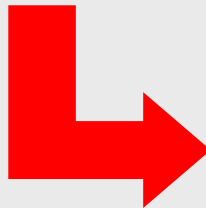
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Annex B: Asphalt Concrete - example specification

Annex E: Type testing protocol for EME



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SERIES 900 ROAD PAVEMENTS - BITUMINOUS BOUND MATERIALS

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906	(1104) Design Mixtures: Dense Base and Binder Course Mixtures with Spring Circle Screens	7	933	(1104) Not Used	34
907	Repeating Course	8	934	(1104) Not Used	34
908	(1104) Not Used	8	935	(1104) Not Used	34
909	(1104) Dense Modified Surface Course (MS-C)	8	936	(1104) Not Used	34
910	(0503) Rolled Asphalt Surface Course (Single Mix)	8	937	(1104) Not Used	34
911	(0503) Rolled Asphalt Surface Course (Single Mix)	9	938	(0502) Stone Matrix Asphalt (SMA) Surface Course and Repeating Course	34
912	(0503) Close Graded Modified Surface Course	9	939	Former Asphalt Surface Course	38
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926	In Situ Monitoring: The British and Region Processes	25	953	(1104) Durability of Bituminous Mixtures: Determination of Resilient Modulus (DMT) Test	67
927	(0501) Not Used	26			

Amendment - November 2006

SHW 900 - Permanent Works requirements

Deformation Resistance

- 937 selects deformation requirements from PD 6691 Table D2
- 943 selects deformation requirements from PD 6691 Table C3
- Clause 952 Deformation Resistance - no longer required as incorporated into relevant Clauses (929, 930, 937 and 943)



Deformation resistance

- Work under way to populate table for UK mixtures
- Parallel testing with BS 598-110 method

Table D.2 Limiting wheel-tracking recommendations for site classifications

Classification		Test temperature	Category WTS_{AIR}	Category PRD_{AIR}	Requirements when tested to BS 598-110	
		Test method	BS EN 12697-22:2003 Small device procedure B	BS EN 12697-22:2003 Small device procedure B		
No.	Description	°C	Wheel track slope mm/1 000 cycles	Maximum proportional rut depth %	Max rut rate mm/hr	Max rut depth mm
1	Moderate to heavily stressed sites requiring high rut resistance	45	WTS_{AIR}	PRD_{AIR}	2	4
2	Very heavily stressed sites requiring very high rut resistance	60	WTS_{AIR}	PRD_{AIR}	5	7
3	Other sites	N/A	$WTS_{AIR NR}$	$PRD_{AIR NR}$	—	—

Factory Production Control

- "...ensure that a mix formulation which has previously been type tested is produced consistently..."
- Culture change?
- Loss of control for client?

Factory Production Control

- Culture change? YES!
- Loss of control for client? NO!
- A different way of dealing with processes
- May require a new approach for auditing

Need help?



- Call me now on.....

0898 900 0901 (for general requirements)

0898 900 0903 (for laying and compaction)

0898 900 0929 (for asphalt concrete)

0898 900 0930 (for EME2)

0898 900 0953 (for SATS)

Calls cost £50 per min - make sure you ask permission from a responsible adult before phoning these numbers

Thank You

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Highways Agency

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