Materials and Conformity

August 2007

The process of implementation of European Standard Specifications (EN's) for asphalt in the UK is well underway and the BSI Committee and Working Party responsible for drafting guidance on implementation and supporting Standards have been working hard to ensure that the EN's are made easy to understand and use. The whole package of European Specifications and Test Methods for asphalt, together with the National Guidance Documents and revised standard for asphalt laying will be implemented on **1 January 2008**.

The fundamental aim of the implementation process is to ensure that, as far as possible, traditional UK asphalt mixtures are retained unchanged. However, the implementation process will result in a number of changes to the way in which asphalt materials are specified and, more specifically, in the way in which the materials are described and designated.

The Standards

Asphalt materials have traditionally been specified in the UK by British Standards BS 594 for Hot Rolled Asphalt, BS 4987 for Coated Macadam and BS 1447 for Mastic Asphalt. These Standards will be withdrawn in favour of the BS EN 13108 series, which currently incorporates seven material specifications, one constituent material specification and two standards relating to Evaluation of Conformity.

Table 1 highlights the BS EN 13108 family of standards and their relevance to UK implementation.

Table 1

EN 13108 Part	Relates to	Relevance to UK
1	**Asphalt concrete**	**Major importance** includes coated macadams, DBM, HDM etc.
2	**Asphalt concrete for very thin layers**	**Important** but in practice thin surfacings will be dealt with by BBA HAPAS system certification
3	**Soft asphalt**	**No relevance** soft asphalt is not used in the UK
4	**Hot rolled asphalt**	**Major importance** covers all HRA
5	**Stone mastic asphalt**	**Important** for 'specified' SMA although most SMA type thin surfacings will be covered by BBA HAPAS certification.
6	**Mastic asphalt**	**Important** but guidance to be provided by Mastic Asphalt Council
7	**Porous asphalt**	**Limited relevance** because of dwindling use of porous asphalt on highways
8	**Reclaimed asphalt**	**Important** for classification of reclaimed asphalt when used as a constituent material in fresh asphalt
20	**Initial Type Testing**	**Very important** in relation to determination of material properties and declaration of compliance
21	**Factory production control**	**Very important** in relation to quality assurance and declaration of conformity

The National Guidance Document on the use of BS EN 13108 is published by BSI as Published Document PD 6691 and has been drafted to contain all the relevant information required for specifying and producing asphalt materials. This includes guidance on constituent materials, performance classes for specified mixture characteristics e.g. temperature, void content, stiffness etc., as well as a series of Appendices containing example specifications for 'traditionally' specified UK asphalt materials. The materials which are explicitly considered in PD 6691 in view of their importance in the UK are: Asphalt Concrete, Hot Rolled Asphalt, and Stone Mastic Asphalt.

PD 6691 will be of as much, if not more, relevance to specifiers and producers of asphalt as the material EN's themselves.

A second BSI Published Document, PD 6692, provides guidance on the use of the EN Test Methods for asphalt which are called up by BS EN 13108.

The conformity requirements of FPC and Type Testing have been integrated into Sector Scheme 14.

The Materials

While the intention is that implementation of the EN13108 series **will not significantly change the mixtures themselves**, there are some necessary changes to be adopted, notably in product descriptions and mixture nomenclature. Product descriptions are broken down to identify the mixture type, maximum (nominal) aggregate size, the pavement layer in which it is used, and the binder grade used in the mixture, as indicated in Table 2 above.

Table 2

Mixture type	Size	Pavement layer	Bitumen grade e.g. 40/60
AC	D	base/bin/surf	binder (xx/yy)
HRA	grading designation	base/bin/reg/surf	binder (xx/yy)
SMA	D	base/bin/reg/surf	binder (xx/yy)

Key

AC	denotes	Asphalt Concrete
HRA	denotes	Hot Rolled Asphalt
SMA	denotes	Stone Mastic Asphalt
D	denotes	aggregate size
base	denotes	base (course)
bin	denotes	binder course
reg	denotes	regulating course (for HRA and SMA)
surf	denotes	surface course
binder	denotes	full bitumen grade designation

PD 6691 retains some of the traditional BS nomenclature including additional mixture descriptors for Asphalt Concrete that better describe the grading or texture of many of those (macadam-type) materials i.e. dense, open, medium (graded), heavy duty etc., and in the case of HRA, the mixture designations have reverted to those used in BS594 before the 2003 revision, removing the % descriptor. For all materials, the "bottom-end" sieve has been removed from material descriptions.

The full range of material options recommended in PD 6691 is shown in Table 3 opposite. Materials shown in **bold** are preferred mixtures as highlighted in BS 4987 & 594.

Table 3

Material description	EN 13108 designation	Bitumen Grade options
Asphalt concrete mixtures complying with EN 13108-1		
4mm Fine graded surface course	AC 4 fine surf	**160/220** 250/330
6mm Medium graded surface course	**AC 6 med surf**	**160/220** 250/330
6mm Dense surface course	**AC 6 dense surf**	70/100 **100/150** 160/220 250/330
10 mm Open graded surface course	AC 10 open surf	**160/220** 250/330
10mm Close graded surface course	**AC 10 close surf**	70/100 **100/150** 160/220 250/330
14mm Open graded surface course	AC 14 open surf	**160/220** 250/330
14mm Close graded surface course	**AC 14 close surf**	70/100 **100/150** 160/220 250/330
20mm Open graded binder course	AC 20 open bin	**160/220** 250/330
20mm Dense, heavy duty and high modulus binder course	**AC 20 dense bin** **AC 20 HDM bin** **AC 20 HMB bin**	40/60 70/100 **100/150** 160/220 **40/60** **30/45**
32mm Dense, heavy duty and high modulus binder course	AC 32 dense bin AC 32 HDM bin AC 32 HMB bin	40/60 70/100 **100/150** 160/220 **40/60** **30/45**
32mm Dense, heavy duty and high modulus base	**AC 32 dense base** **AC 32 HDM base** **AC 32 HMB base**	40/60 70/100 **100/150** 160/220 **40/60** **30/45**
10mm EME2	AC 10 EME2 base/bin	10/20 **15/25**
14mm EME2	AC 14 EME2 base/bin	10/20 **15/25**
20mm EME2	AC 20 EME2 base/bin	10/20 **15/25**