



European Standards for Asphalt EN Harmonisation



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What this means:

- **NEW PRODUCT DESCRIPTIONS**
- **NEW TESTING METHODS**
- **NEW CE MARKING**
- **THE PRODUCT REMAINS THE SAME**

From January 2008, European Standards will apply for the harmonisation of the specifications and test methods applied to individual companies for asphalt products.

Currently, 27 countries, including the UK, are represented and bound to implement the European Standards.

This will not affect the product, but will give more confidence in the products supplied, and will eliminate barriers to trade.

The standards are composed of two groups, Material Specifications and Test Methods, for which Published Documents (PD's) have been produced.

The most visible change to our customers will be the new product descriptions. To conform with the new European legislation, product descriptions will be made up of 6 elements:

- Mixture type: AC (Asphaltic Concrete), SMA, HRA, PA (Porous Asphalt)
- Nominal size of material in mm, e.g: 32, 20, 14 etc.
- Description of grading characteristics: Dense, Open, Close, Med (Medium), Fine
- Pavement layer: base, bin (binder), surf (surfacing), reg (regulating)
- Binder Grade: e.g. 40/60
- Description of the type of aggregate or the PSV required

PROPRIETARY PRODUCT DESCRIPTIONS:

The brand names remain unchanged, however, minor adjustments will be made to ensure consistency with standard mixes eg 14mm Smatex Carriageway 50P PSV 65 becomes 14 Smatex Carriageway 40/60 PSV 65

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Frequently asked questions concerning the implementation of the European Standards for Asphalt in January 2008.

1. **What are the main similarities between asphalts produced in accordance with the BS EN 13108 family of standards and the BS 4987 and 594 standards?**

The asphalt mixtures will not fundamentally change in terms of their visual appearance, grading and composition and their laying characteristics and performance in situ.

2. **What are the main differences between BS EN 13108 and the BS 594 and 4987 standards in respect to specifying and supplying asphalt?**

The BS EN standards require the supplier to select and nominate his target mixture composition, validate its properties according to BS EN 13108-20 "Type Testing" and CE mark the mixture against the appropriate compositional and performance requirements.

The production supply specification is added and asphalt is produced in accordance with the requirements of BS EN 13108-21 "Factory Production Control" and industry Sector Scheme 14, which has been amended to bring it into line with the new standards.

3. **The BS EN 13108 series of standards grading specifications are very wide and they contain multiple categories from which to select the various mixture properties. How do I interpret these standards for use in the UK?**

PD 6691, a Published Document titled: "Guidance on the use of BS EN 13108 Bituminous mixtures – material specifications", has been written to interpret the requirements of the three main BS EN 13108 mixture standards covering Asphalt Concrete, Hot Rolled Asphalt and Stone Mastic Asphalt when specified for use in the UK. The selected requirements and performance categories take full account of the climate, traffic and important safety requirements applicable to the UK and provides, in its annexes, example specifications which are very similar in composition to the mixtures they replace. The procedure for determining the declared grading and binder specification is fully described, including worked examples, in Section 13 of PD 6691.

4. Are there documents, other than the European Standards, to which I need refer?

Yes, in addition to PD 6691 British Standard BS 594987 "Asphalt for roads and other paved areas – Specification for transport, laying and compaction and type testing protocols" has been published and contains important Type Testing protocols that apply to the laying of trial strips and the sampling and testing of specimens taken by coring from these trial strips. Both of these publications are available from BSI publications at Chiswick. Web address: <http://www.bsonline.bsi-global.com/server/index.jsp>

5. What is meant by Type Testing?

It is the procedure used to select, identify and confirm the mixture ingredients, target composition and mixture performance against the specific requirements of the BS EN 13108 family of standards. For the UK, these mixture tests and performance requirements are identified in PD 6691.

6. Do Asphalt product descriptions change under BS EN 13108 materials standards?

Yes, each product description starts with "AC" for Asphalt Concrete, "HRA" for Hot Rolled Asphalt and "SMA" for Stone Mastic Asphalt to identify the mixture type. This is then followed by the nominal size, the construction layer and the binder grade. For some mixtures the PSV of the aggregate used may be stated. Two typical example Asphalt Concretes (formerly called macadams under BS 4987) would be: "AC 10 surf 100/150 PSV60" – "AC 20 dense bin 40/60 NS" (The NS stands for No Specific aggregate required therefore no PSV requirement has been specified).

7. Why are product descriptions for asphalt no longer prefixed by "O/D"?

It was felt appropriate by TC 227 WG1, the European Committee for Asphalt, that, for clarity, the EN's for Asphalt should revert to the use of the nominal size designation rather than the designations which were utilised under the 2005 editions of BS4987/594.

8. **How will customers and sales staff be able to relate the new product descriptions to the old?**

In the tear-off section of this leaflet we have identified the top 50 asphalt products supplied showing the new product description compared to those used currently (prior to 1st January 2008). Any queries on product descriptions should be directed to your local Technical Manager.

9. **What difference will supplying asphalts according to the BS EN 13108 family of standards make to a contract?**

Product compliance was previously part of the contract whereas now Product Quality Control, conformity and compliance, the elements of Factory Production Control (FPC), are now covered under the BS EN 13108 family of standards.

10. **Where do I now find the information on transporting, supplying and laying asphalt?**

A new British Standard BS 594987 has been published which covers all the previous information contained within the Parts 2 of BS 594 and 4987 (to be withdrawn) with information on SMA and EME2 not previously covered. A number of annexes contain "Type Testing" protocols which replace a number of site trial and testing procedures previously found within the Specification for Highway Works and TRL reports.

11. **Where do I find guidance on EME2 which is specified in the Design Manual for Roads and Bridges?**

Example specifications for EME2 are contained within Annex B of PD 6691 which covers Asphalt Concrete, with the protocol for determining voids and stiffness contained within Annex E of BS 594987. Reference may also be made to the Specification for Highway Works.

12. **What happens if customers want to order asphalt by reference to the old National (BS) standards?**

As a result of the changes to the methods of mix declaration, testing and product designation, the Asphalt Industry can only take orders and supply against one set of National asphalt standards and this will be the BS EN 13108 series for standards for asphalt.

13. **What will happen to the Bardon Aggregate proprietary materials such as Superflex, Prodrive etc?**

Whilst product compositions and proprietary names remain unchanged, for consistency we have taken the opportunity to align elements of the description eg binder grade, with the format used of European standard mixes.

14. What happens to Proprietary Thin Surfacing Systems certified under the BBA/HAPAS system?

These will continue to be supplied as previously, with documentation ultimately being amended to refer to the new BS EN 13108 materials standards and the new BS EN 12697 testing standards. To ensure the widest acceptance of these materials, they may also be CE marked.

15. What is the difference between the asphalts covered by BS EN 13108-2 and BS EN 13108-5?

BS EN 13108-2 titled "Asphalt Concrete for very thin layers" covers AC type surface course mixtures, where the compacted thickness is restricted to 20mm to 30mm, necessitating the use of either 6mm or 10mm nominal sized mixtures. BS EN 13108-5 covers Stone Mastic Asphalt with no restriction on compacted thickness, and can therefore be a 14mm, 10mm or 6mm nominal size asphalt. 20mm nominal sized material in addition to the sizes previously stated can also be used as binder or regulating courses, and are currently called up by CI 937 of the Specification for Highway Works.

16. Will HAPAS certificates be required even though Thin Surfacing are covered by both BS EN 13108-2 and BS EN 13108-5 (depending on compacted thickness and mixture type) with CE certification?

Yes, they will as it is the "Thin Surfacing System" which covers production through to laying, and includes the performance of the asphalt surface in situ on the road, which is subject to BBA/HAPAS certification, and not just the Asphalt mixture.

17. Does EN 13108-5, which covers Stone Mastic Asphalt, supersede local authority SMA specifications?

Yes, as local authorities, as well as the Highways Agency, are obliged under the Public Procurement Directive to purchase materials in conformity with a European Standard when they are available, taking due account of National best practice advice applicable to the UK, which for Asphalts is contained within PD 6691. Industry is awaiting a guidance note from DCLG (Department of Communities and Local Government) giving more information and advice on this matter.

18. What will happen to the current edition of the Specification for Highway Works?

This is being amended to bring it into line with the requirements of the BS EN 13108 family of standards, with all appropriate references to mixture validation, transportation, laying and testing being brought into line with BS 594987 and the BS EN 12697 family of testing standards.

19. What new EN test methods have been introduced, and what are their implications?

- i) There are 44 new asphalt testing standards in the BS EN 12697 family of standards applicable across the 27 member states of Europe, of which only a few will apply within the UK, with a few of these replacing the tests covered by the various parts of BS 598. To ensure that excessive testing is not specified, the tests that should be selected for use in the UK are referenced in PD 6691 under Section 13 "Evaluation of Conformity".
- ii) In most cases the test methods are similar to their equivalents in BS 598, however, there are a couple of important differences. For BS EN 12697-22 "Wheel Tracking" there are three alternative types of device which can be used, the selection of which, along with the test conditions, depends on the type and nominal size of the asphalt being tested. The recommendation in PD 6691 is that for AC, HRA and SMA we continue to use BS 598 Part 110 and the specification limits based on this test, until there is sufficient correlation data against the appropriate method in BS EN 12697-22 to be able to set new limits based on this test method.
- iii) All BS 598 standards that have been superseded by a equivalent test within BS EN 12697 will be withdrawn just prior to the implementation of the European Standards for Asphalt in January 2008.

20. Are there any significant changes associated with the new specifications and testing standards that could effect analysis results and therefore compliance?

Within BS EN 12697 parts 1 and 2 which cover the determination of binder content and particle size distribution, there is no methodology for adjusting the binder and filler contents to allow for sampling bias. This therefore places greater emphasis on the person responsible for sampling the asphalt to ensure that representative and unbiased samples are taken.

21. **What are the different ways/formats for expressing the target binder content in BS EN 13108 and PD6691, and when will they be used?**

In the UK, when declaring the binder content of the mixture, we use the target binder content found on analysis. The European Standard, however, requires the use of a formula to correct the target binder selected from the European Standard before it is applied to the mixture, to allow for the Relative Density of the aggregate being used, thereby ensuring that the binder volume in the mixture is appropriate to the type of aggregates used. The UK experience with asphalt mixtures is that the nature of the aggregate rather than its relative density, can be more important when selecting an appropriate binder content to provide performance and durability. Within PD 6691 the binder contents are expressed as B_{act} , and have already been adjusted to allow for the nature and density of the aggregate types quoted in the example specifications. However, under the regulations for CE marking, the target binder content used when the material is produced has to be corrected back to B_{min} using the formula described in the appropriate clauses in annexes B, C and D of PD 6691, and this binder content declared on the CE mark certificate.

22. **How will a customer or client know which target binder content should be used when assessing compliance of analysis results and conformity of the mixture under FPC?**

The Type Testing documentation will declare the target binder content as found on analysis, and the CE mark certificate will also identify this same target binder content within the "Additional Information" section of the CE mark certificate. It is this target binder content that is used for manufacture of the material and to formulate the FPC compliance specification. The target binder content declared under CE marking regulations, and therefore prior to adjustment allowing for the nature/density of the aggregate, is declared as B_{min} directly underneath the target grading values in the mandatory section of the CE mark certificate, and must not be used to formulate the compliance specification.

23. **What is an OCL (Operating Compliance Level) and how is this different to a Q Value?**

The OCL replaces Q level and is calculated using a combination of asphalt compliance calculated on the last 32 results and the Mean Deviation, a new method of assessing product consistency and the proximity of FPC results to the target composition.

24. **What happens with contracts quoted against BS 4987 and 594?**

DCLG and the Highways Agency are drafting an advice note which will be made available to clients and the industry covering the transition to the BS EN 13108 series of standards. This can be accessed from the Aggregate Industries website at www.bardon-aggregates.com when it has been published.

25. **How will performance clauses such as cl 929 and cl 943 of SHW be covered in the new specifications?**

The protocols for Type Testing asphalt products, including those for the design and testing of Design DBM mixtures (CI 929) and performance-related Hot Rolled Asphalt (CI 943), can be found in BS 594987, and the product descriptions will continue to identify the appropriate types of mixture.

26. **There does not appear to be any method of specifying stability in EN13108-4. Does this mean that stability requirements for HRA mixes will be dropped?**

There is no specific requirement within BS EN 13108-4 to categorise HRA in terms of its Marshall Stability. Hot Rolled Asphalt will be designed to determine its optimum binder content in accordance with the protocol in Annex H of BS 594987 utilising the BS EN 12697-34 Marshall test, and thereafter tested for resistance to permanent deformation using, initially, both BS 598 Part 110 and the BS EN 12797-22 Wheel Tracking test.

27. **What is a CE certificate and why do customers/clients need to obtain one?**

The CE Mark is a document with legal standing confirming conformity with the requirements of the appropriate European Standard.

The current policy applicable to the Public Procurement bodies in the UK is that CE marking is not mandatory. However the Asphalt industry has made the commitment

to CE mark asphalts. Working in conjunction with the requirements for Type Testing and FPC, the use of the CE mark should remove the need for individual contract trials to validate materials and demonstrate performance requirements. It will also provide an increased level of confidence in all asphalt products supplied against a European Standard. The requirements in the European Standards for Asphalt apply, and are identical, whether or not CE marking is applied.

28. Which mixtures will need to be CE marked?

All asphalts supplied in accordance with the requirements of Parts 1, 2, 4, 5, and 7 of BS EN 13108. BS EN 13108-3 Soft Asphalt will not be supplied in the UK and BS EN 13108-6 Mastic Asphalt is outside the scope of this advice. Proprietary mixtures which are outside the scope of BS EN 13108 and/or are not supplied in accordance with BS EN 13108 will not need to be CE marked.

29. How can I obtain more information on the BS EN 13108 (PD 6691) asphalt mixtures and specifications?

There are a number of briefings being given across the country by the Quarry Products Association, who have produced industry briefing notes/bulletins which are available on their website: www.QPA.org. There will be seminars and events arranged by your local Aggregate Industries business: Bardon Aggregates; Yeoman Asphalt; Express Asphalt; Mid Essex Asphalt; Kennedy Asphalt and Rand Asphalt, for customers and clients. These will give the opportunity to obtain further information on these important changes. Details can be obtained from your local sales office. Aggregate Industries will also be working alongside local branches of the Professional Institutions including the Institute of Asphalt Technology (IAT) and the Institute of Quarrying (IoQ) to provide information through various training Days, Seminars and Conferences. If you have any specific questions concerning these changes please email us at: ENhelp@aggregate.com and we will arrange for one of our local technical representatives to contact you.

Original Product Description

BS 4987 Design Mixes	
0/32 DBM 50 Design Base RB	BS4987 CI 5.2
0/32 HDM 50 Design Base RB	BS4987 CI 5.2
0/32 DBM 50 Des.Binder Course	BS4987 CI 6.4
0/32 HDM 50 Des.Binder Course	BS4987 CI 6.4
0/20 DBM 50 Des.Binder Course	BS4987 CI 6.5
0/20 HDM 50 Des.Binder Course	BS4987 CI 6.5
BS 4987 Recipe Mixes	
0/32 DBM 50 Base RB	BS4987 CI 5.2
0/32 HDM 50 Base RB	BS4987 CI 5.2
0/32 DBM 50 Binder Course	BS4987 CI 6.4
0/32 HDM 50 Binder Course	BS4987 CI 6.4
0/20 DBM 50 Binder Course	BS4987 CI 6.5
0/20 HDM 50 Binder Course	BS4987 CI 6.5
0/20 Open Graded B/C 125p	BS4987 CI 6.1
0/20 Open Graded B/C 190p	BS4987 CI 6.1
0/14 Open Graded S/C 125p	BS4987 CI 7.1
0/14 Open Graded S/C 190p	BS4987 CI 7.1
0/10 Open Graded S/C 125p	BS4987 CI 7.2
0/10 Open Graded S/C 190p	BS4987 CI 7.2
0/14 Close Graded S/C 125p	BS4987 CI 7.3
0/14 Close Graded S/C 190p	BS4987 CI 7.3
0/10 Close Graded S/C 125p	BS4987 CI 7.4
0/10 Close Graded S/C 190p	BS4987 CI 7.4
0/6 Dense Surface Course 125p	BS4987 CI 7.5
0/6 Dense Surface Course 190p	BS4987 CI 7.5
0/6 Medium Graded S/C 125p	BS4987 CI 7.6
0/6 Medium Graded S/C 190p	BS4987 CI 7.6
0/4 Fine Graded S/C 125p	BS4987 CI 7.7
0/4 Fine Graded S/C 190p	BS4987 CI 7.7
BS 594 Design Mixes	
0% 0/3 HRA SC 50p	BS594:P1 C3/1
55% 0/10 HRA SC Des 50p	BS594:P1 C3/4
30% 0/14 HRA SC Des 50p	BS594:P1 C3/2
35% 0/14 HRA SC Des 50p	BS594:P1 C3/3
55% 0/14 HRA SC Des 50p	BS594:P1 C3/5
BS 594 Recipe Mixes	
50% 0/10 HRA BC/RB 50p	BS594:P1 C2/1
50% 0/14 HRA BC/RB 50p	BS594:P1 C2/2
50% 0/20 HRA BC/RB 50p	BS594:P1 C2/3
60% 0/20 HRA BC/RB 50p	BS594:P1 C2/4
60% 0/32 HRA BC/RB 50p	BS594:P1 C2/5
0% 0/3 HRA SC 50p	BS594:P1 C6/1
15% 0/10 HRA SC 50p	BS594:P1 C6/2
30% 0/10 HRA SC 50p	BS594:P1 C6/3
55% 0/10 HRA SC 50p	BS594:P1 Amd
30% 0/14 HRA SC 50p	BS594:P1 C6/4
35% 0/14 HRA SC 50p	BS594:P1 C6/5
55% 0/14 HRA SC 50p	BS594:P1 Amd

Penetration of Bitumens

Present Designation	New Designation
50p	40/60
85p	70/100
125p	100/150
190p	160/220

A different binder grade can be specified by changing the bitumen description.

For example a 50p material such as;
 HRA 15/10F surf 40/60 EN13108-4
 If required in a 125p would become
 HRA 15/10F surf 100/150 EN13108-4

New Product Description

EN13108-1 Design Mixes	
AC 32 dense base 40/60 des	EN13108-1
AC 32 HDM base 40/60 des	EN13108-1
AC 32 dense bin 40/60 des	EN13108-1
AC 32 HDM bin 40/60 des	EN13108-1
AC 20 dense bin 40/60 des	EN13108-1
AC 20 HDM bin 40/60 des	EN13108-1
EN13108-1 Recipe Mixes	
AC 32 dense base 40/60	EN13108-1
AC 32 HDM base 40/60	EN13108-1
AC 32 dense bin 40/60	EN13108-1
AC 32 HDM bin 40/60	EN13108-1
AC 20 dense bin 40/60	EN13108-1
AC 20 HDM bin 40/60	EN13108-1
AC 20 open bin 100/150	EN13108-1
AC 20 open bin 160/220	EN13108-1
AC 14 open surf 100/150	EN13108-1
AC 14 open surf 160/220	EN13108-1
AC 10 open surf 100/150	EN13108-1
AC 10 open surf 160/220	EN13108-1
AC 14 close surf 100/150	EN13108-1
AC 14 close surf 160/220	EN13108-1
AC 10 close surf 100/150	EN13108-1
AC 10 close surf 160/220	EN13108-1
AC 6 dense surf 100/150	EN13108-1
AC 6 dense surf 160/220	EN13108-1
AC 6 med surf 100/150	EN13108-1
AC 6 med surf 160/220	EN13108-1
AC 4 fine surf 100/150	EN13108-1
AC 4 fine surf 160/220	EN13108-1
EN13108-4 Design Mixes	
HRA 0/2F surf 40/60 des	EN13108-4
HRA 55/10F surf 40/60 des	EN13108-4
HRA 30/14F surf 40/60 des	EN13108-4
HRA 35/14F surf 40/60 des	EN13108-4
HRA 55/14F surf 40/60 des	EN13108-4
EN13108-4 Recipe Mixes	
HRA 50/10 bin/base 40/60	EN13108-4
HRA 50/14 bin/base 40/60	EN13108-4
HRA 50/20 bin/base 40/60	EN13108-4
HRA 60/20 bin/base 40/60	EN13108-4
HRA 60/32 bin/base 40/60	EN13108-4
HRA 0/2F surf 40/60	EN13108-4
HRA 15/10F surf 40/60	EN13108-4
HRA 30/10F surf 40/60	EN13108-4
HRA 55/10F surf 40/60	EN13108-4
HRA 30/14F surf 40/60	EN13108-4
HRA 35/14F surf 40/60	EN13108-4
HRA 55/14F surf 40/60	EN13108-4

Coarse Aggregate type and PSV

Any requirement for a simple rock type is added to the description. For example a material made with Limestone or a non-specified type of coarse aggregate will read:

AC 10 close surf 100/150 NS EN13108-1
 whilst a material made specifically with Hardstone coarse aggregate will read
 AC 10 close surf 100/150 HS EN13108-1

Any requirement for a specific PSV of the stone is added to the description

For example

AC 10 close surf 100/150 EN13108-1
 will become
 AC 10 close surf 100/150 PSV60 EN13108-1



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