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**GUIDELINES DOCUMENT
FOR THE ASSESSMENT AND CERTIFICATION OF
PERMANENT COLD-LAY SURFACING MATERIAL
FOR THE REINSTATEMENT OF OPENINGS IN HIGHWAYS**

Date: September 2010

Note: This document may be revised periodically to take account of improvements and amendments to test and assessment methods and material innovations. Readers are advised to contact the British Board of Agrément to check the latest edition.

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HAPAS GUIDELINES

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1. SCOPE

- 1.1 The purpose of this Guideline document is to set out the criteria for the assessment and Certification of permanent cold-lay surfacing material (PCSM) under the BBA HAPAS Assessment and Certification Scheme. The assessment must be completed on reinstatements installed and compacted in accordance with the relevant sections of the third edition of the *Specification* for the Reinstatement of Openings in Highways, hereafter known as the *Specification*.
- 1.2 The test methods and protocols contained in this document are for certification purposes only and are not intended for use on a contractual basis as a *Specification*.
- 1.3 A PCSM consists of a mixture which incorporates bituminous binders such as a proprietary emulsion or cut-back bitumen and coarse and fine aggregates. If a harmonised standard exists for the product, then this will be taken into account by reviewing declared characteristics against those identified within this document.
- 1.4 Approved PCSMs laid and compacted in accordance with the relevant requirements of the *Specification* can be used in accordance with A2.4.1 of the *Specification*, at the discretion of the Undertaker.
- 1.5 All approved PCSM mixtures must be capable of being laid and compacted in accordance with Chapter S10 of the *Specification* and comply with the voids content in Table S10.1 of the *Specification*. The cores must be removed from a performance trial detailed in Appendix A.2 up to a maximum of six months from the date of installation.
- 1.6 When a PCSM approval trial has begun, regardless of the aggregate or the material formulation under trial, the PCSM is considered to be an approved Deferred Set Material (DSM) to PD 6691, for interim use only, with immediate effect.

2. INTRODUCTION

The Assessment and Certification procedure is undertaken in two stages:

1 Assessment

- Submission for product approval
- Quality assurance
- Laboratory testing
- Product installation trial
- Product performance trial (if required)

2 Certification

- 2.1 In the event of an applicant offering a product including a number of options with regard to product components and/or alternative application procedures, the BBA will define the number of Product Sheets required and the range of tests to be performed to allow the acceptance of the alternative materials and/or procedures.
- 2.2 After consultation, the BBA reserves the right to amend or supplement the tests required for BBA assessment and certification at any time if required. The cost of all further tests will be borne by the applicant.
- 2.3 A Certificate will only be awarded after the product's successful completion of the assessment stage.

3. ASSESSMENT

3.1 Submission for product approval

3.1.1 An Applicant's submission will provide the following information:

- Application for BBA assessment
- Quality Plan; including details of the product to be assessed and production procedures
- Installation method statement that must include:
 - limitations in respect to weather and substrate conditions
 - substrate preparation (in particular bond coat requirements).
 - general installation procedures
 - maintenance and repair requirements
 - on-site storage and handling of materials
 - on site quality control / assurance procedures and associated documentation
 - curing time (time to trafficking)
 - shelf life of product (including after opening)

3.1.2 If the product includes hazardous substances, (ie that require special precautions to be taken under the COSHH Regulations), the Applicant must supply all the relevant data. No formal assessment of the suitability of this data, in terms of the COSHH regulations, is undertaken by the BBA. However, this data will always be required by the BBA and its subcontractors to ensure the safe use and testing of the product in their laboratories. The Applicant's instructions for use must include all necessary data to allow the safe use of the product.

3.1.3 The BBA will assess the Applicant's production processes, such as material controls, records, to ensure that a consistent product is offered for sale. This will include audit visits to one or more of the manufacturing locations to confirm the Quality Plan for the product.

3.2 Laboratory testing

3.2.1 The Applicant must provide the results of tests that confirm the characteristics of the product offered for assessment within the agreed *Specification* for their product. This information will be used to confirm that subsequent samples also fall within the agreed *Specification*.

3.2.2 Testing undertaken as listed in Appendix A must be carried out by a laboratory approved by the BBA.

3.2.3 If other claims are being made by the Applicant additional assessment work can be considered and detailed within the issued Certificate under 'Other Investigations'.

3.3 Product installation trial

- 3.3.1 A product installation trial will be organised to demonstrate the practicability of installation in accordance with the Applicant's installation procedures.
- 3.3.2 The trial will be witnessed and assessed by the BBA to cover the installation procedures as defined in the Applicants installation method statement. The Authority must be on site to confirm the reinstatement is completed in accordance with their requirements in accordance with the *Specification*.
- 3.3.3 The BBA will inspect the site to assess the visual condition of the product and may witness the performance tests identified in Appendix A.
- 3.3.4 The Applicant must arrange for a laboratory approved by the BBA or a UKAS accredited laboratory for the tests to carry out the road tests and take core samples for laboratory testing from the installation.
- 3.3.5 The Applicant will notify the relevant Authority and the BBA at least twenty-eight days in advance of the intended date of the approval trial, supplying details of:
- Start date(s) of the approval trial
 - Site address(s) road type/category
 - PCSM product
 - PCSM Health and Safety data sheet
 - PCSM layer thickness and intended compaction plant
- 3.3.6 This information, including a sketch of the approval trial site layout, if appropriate, is provided using Form PCSM 1(Appendix D). One copy of Form PCSM 1 is submitted for each separate material under approval trial. The Authority will confirm their intention to attend, or otherwise, within seven days of receipt of the notification, using the tear-off reply slip(s) provided. The approval trial should begin on the notification date, or a mutually agreed alternative date regardless of whether the Authority has notified an intention to attend.

3.4 Product performance trial (if required)

No history of use

- 3.4.1 A product performance trial will be required if it cannot be demonstrated that the product has performed satisfactorily over a two-year period on sites representative of its intended end use. See Appendix A for details.

History of use - retrospective process

- 3.4.2 Where a product already has approval, or part approval from an overseeing organisation, then existing data relating to the road trial carried out as part of the approval, if suitable, may be used for assessment purposes under this stage. Form PCSM 3 (Appendix D) must be supplied with fully traceable details of any existing sites and product used. Representative sites must be available for review by the BBA either through inspections or from information gathered from users or

specifiers of the product. The suitability of the data will be decided by the BBA.

3.5 Certification

- 3.5.1 The Certificate issued will be in the BBA HAPAS Roads and Bridges series and will verify the product's compliance with the requirements given in this document. The Certificate will define the product specification, intended applications, the conditions of use and the likely performance related to the severity of the conditions of use. It will also include a summary of test results as detailed in Appendix A.
- 3.5.2 The Certificate issued will be subject to the terms and conditions of the relevant BBA contract, which can be found on the BBA website: www.bbacerts.co.uk.
- 3.5.3 During the validity of any Certificate, the Certificate holder is responsible for the quality assurance/control of the production at the manufacturing location(s) declared to the BBA.
- 3.5.4 The BBA or its agents will carry out two or more audit visits each year to production location(s) and/or the Certificate holder's offices (where appropriate), to check their records and to ensure that the procedures and controls defined at the outset continue to apply.

4 ACCEPTANCE OF DATA

- 4.1 The BBA will accept test data from laboratories with UKAS accreditation for the specific tests referred to provided they are performed on samples that can be traced to the manufacturing location and the site identified. The BBA would require the test laboratory to submit a copy of their "UKAS schedule".
- 4.2 In the absence of a laboratory meeting the conditions of Section 5.1, the BBA may accept test data from other UKAS accredited testing laboratories, or laboratories approved by the BBA, that have demonstrated their competence and ability to perform the relevant tests to the satisfaction of the BBA.
- 4.3 Test data from overseas, external, independent testing laboratories that have the equivalent national accreditation for the specific tests may be accepted if there is a reciprocal agreement between UKAS and the national accreditation authority of the country in question.
- 4.4 Other data supplied in support of the assessment (eg. background information, test data relating to generic materials), where the above conditions are not met, will only be accepted after having been individually assessed and approved as being suitable by the BBA.

5 BIBLIOGRAPHY

BS DD 226:1996 Method for determining resistance to permanent deformation of bituminous mixtures subject to unconfined dynamic loading

BS EN 12697-5 : 2009 Bituminous mixtures. Test methods for hot mix asphalt. Determination of the maximum density

BS EN 12697-6 : 2003 Bituminous mixtures. Test methods for hot mix asphalt. Determination of the bulk density

BS EN 12697-26 : 2004 Bituminous mixtures. Test methods for hot mix asphalt. Stiffness

APPENDIX A PERFORMANCE TESTS AND REQUIREMENTS

Table A.1 Mandatory tests – Laboratory tests

Mechanical resistance	Requirement		
In-situ void content to BS EN 12697-8 on cores removed from site within 6 months of the installation date ⁽¹⁾ :	Table S10.1 of the <i>Specification</i>		
	Minimum Property Requirement at 20°C for Equivalence ⁽²⁾		
Indirect tensile stiffness modulus to BS EN 12697-26: 2004 ANNEX C for PCSC and PCBC only for type 3 and 4 roads	40/60 pen hot-laid Elastic Stiffness (MPa)	100/150 pen hot-laid Elastic Stiffness (MPa)	160/220 pen hot-laid Elastic Stiffness (MPa)
20 mm nominal size binder course	4600	1850	1000
10 mm nominal size surface course	3800	1500	880
6 mm nominal size surface course	2800	1150	660
All materials for use on type 3 and 4 roads Resistance to permanent deformation	Resistance to Permanent Deformation at 30° C to BS DD 226:1996⁽²⁾ Repeated load uniaxial creep resistance to permanent deformation: <16,000 microstrain for 1800 load applications <20,000 microstrain for 3600 load applications		

Notes

- 1 Use Maximum density measured in accordance with BS EN 12697-5 : 2009 Procedure A in water and Bulk Density to BS EN 12697-6: 2003 procedure C sealed specimen. All core holes will be reinstated in accordance with the relevant requirements of the *Specification*.
- 2 Must be completed within the two year performance trial period.

Table A.2 Key aspects of performance – Road tests

Durability - road performance trials	Requirement
Retrospective –	
Evidence of satisfactory performance over a two year period on at least a Type 3 and 4 site supporting manufacturer claims on working life, end use, road category and type.	Reported as satisfactory in accordance with PCSM form 03
No existing sites –	
A two-year monitored approval trial site which must include as a minimum:	Initial check for surface uniformity and regularity (surface profile – see note 3) then interim checks to confirm integrity of repair maintained along with visual inspection report on visual uniformity of surface (see report form Appendix B)
<ul style="list-style-type: none"> – type 3 and 4 trial sites – six-monthly visual inspection – surface profile measurement for each separate reinstatement. 	
It is recommended that the Authority completes the inspections. If this is not possible, then the Applicant must provide the Authority with brief details of the inspection findings within fourteen days of the inspection visit. In all cases, the BBA must be sent these details in the same timescale.	Authority confirmation that the trial reinstatement has met their requirements for void, depth and surface regularity. Signed off on PCSM form 01 and 02.

Notes

- 1 Testing to be agreed with the Applicant and will commence within a maximum of six months from the installation date.
- 2 Site selection must be based on the intended use of material in accordance with the Specification. Testing and is carried out on representative sections.
- 3 The surface profile must meet the requirements of the Specification for the Reinstatement of Openings in Highways Chapter 2 S2 Performance Requirements, S2.2.1 As laid profile (sub-clause 1).

APPENDIX B VISUAL ASSESSMENT OF PCSM INSPECTION REPORT

Table 1 Site details

Site location:	Product name:
Date of inspection:	Installation date:
CV/L/D:	Texture depth (mm):
Nominal installation depth (mm):	SRV:
Other info:	

Table 2 Summary of visual survey

Weather:	
Fretting of mortar:	Delamination:
Surface uniformity/variability:	Cracking:
Fatting up:	Deformation:
Loss of aggregate:	Surface profile:
Loose aggregate:	
General observations (eg condition of joints; cured; if unsatisfactory indicate here)	

Table 3 Overall mark⁽¹⁾

Requirement	Overall mark (tick most appropriate)
E (no discernable fault)	
G (no significant fault)	
Comments (eg unsatisfactory)	

(1) Marking scheme taken from the BBA HAPAS Guideline Document for the Assessment and Certification of Thin Surfacing for Highways, May 2008.

Date of inspection Signed.....

APPENDIX C DEFINITIONS AND ACRONYMS

BBA	British Board of Agrément
BBA Approved Laboratory	A laboratory approved by the BBA to carry out test work on behalf of the BBA, ie sub-contracted by the BBA, which may lead to the approval of a product and the issue of a BBA Certificate. Before approval the laboratory will have demonstrated to the BBA that it has the relevant expertise, equipment and quality systems in place to carry out the work required
ADEPT	Formerly the County Surveyors Society
Authority	As defined in the Streetworks act 1991. Normally the Street Authority responsible for the works
COSHH	Control of Substances Hazardous to Health
Curing time	The time after installation, when the system will accept normal trafficking
HA	Highways Agency (also representing other Overseeing Organisations including; The Scottish Office Industry Department, The Welsh Office and The Department of the Environment for Northern Ireland)
HAPAS	Highway Authorities Products Approval Scheme
PCBC	Permanent Cold-Lay Binder Course
PCSM	Permanent Cold-Lay Surfacing Material
UKAS	The United Kingdom Accreditation Service
Visual Assessment	A procedure for assessing the visual condition of trial sites

APPENDIX D PCSM FORMS

BBA / HAPAS PCSM APPROVAL NEW ROADS AND STREET WORKS ACT 1991 REGISTRATION OF NEW PCSM APPROVAL TRIAL	PCSM 1
FROM : (Applicant)	Undertaker's Ref :
NAME:	
TITLE :	DATE :
TO : (Authority)	
NAME:	
TITLE :	
PCSM TRIAL START DATE :	
PCSM TRIAL LOCATION Reinstatement Size / Location : Street Name : Local Area Name : District : Post Code :	
OSGR	
TYPE OF APPROVAL REQUIRED :	
ROAD / FOOTWAY TYPE :	
PCSM MATERIAL DETAILS PCSM Description : PCSM Supplier : Binder Description : Binder Supplier : Layer Thickness / Compaction :	

~~✂~~ - ~~✂~~ - - ✂ **CONFIRMATION REPLY SLIP** ✂ - - ✂ *Tear off & Return* ✂ - - ✂ - - ✂

FROM : (Authority)	Authority's Ref :
NAME:	
TITLE :	DATE :
TO : (Undertaker)	Undertaker's Ref :
NAME:	
TITLE :	
CONFIRM TRIAL ATTENDANCE	YES / NO

BBA / HAPAS PCSM APPROVAL NEW ROADS AND STREET WORKS ACT 1991 REGISTRATION OF NEW PCSM APPROVAL TRIAL	PCSM 2
--	---------------

FROM : (Undertaker)	Undertaker's Ref :
NAME:	
TITLE :	DATE :

TO : (Authority)
NAME:
TITLE :

PCSM SITE TRIAL FINAL INSPECTION DATE :
--

PCSM TRIAL LOCATION Reinstatement Size / Location : Street Name : Local Area Name : District : Post Code :	OSGR
--	------

TYPE OF APPROVAL REQUIRED :

ROAD / FOOTWAY TYPE :

PCSM MATERIAL DETAILS PCSM Description : PCSM Supplier : Binder Description : Binder Supplier : Original Approval Trial Site Date :

✂ - - ✂ - - ✂ CONFIRMATION REPLY SLIP ✂ - - ✂ Tear off & Return ✂ - - ✂ - - ✂

FROM : (Authority)	Authority's Ref :
NAME:	
TITLE :	DATE :
TO : (Undertaker)	Undertaker's Ref :
NAME:	
TITLE :	
CONFIRM TRIAL ATTENDANCE	YES / NO

**BBA / HAPAS PCSM APPROVAL
NEW ROADS AND STREET WORKS ACT 1991
REGISTRATION OF NEW PCSM APPROVAL TRIAL**

PCSM 3

PCSM MATERIAL DETAILS

PCSM Description :

PCSM Supplier

Binder Description

Binder Supplier

RETROSPECTIVE FIELD TRIAL START DATE :

TYPE OF APPROVAL REQUIRED :

PCSM TRIAL LOCATION

Reinstatement Size / Location :

Street Name :

Local Area Name :

District :

Post Code :

OSGR

MUTUAL CONFIRMATION OF RETROSPECTIVE APPROVAL REQUIREMENTS

UNDERTAKER :

Undertaker's Ref :

ADDRESS :

NAME :

TITLE :

DATE :

AUTHORITY:

Authority's Ref :

ADDRESS :

NAME :

TITLE :

DATE :

We, the above signed, jointly confirm the completion of this retrospective PCSM Approval Trial. We further confirm that the results obtained from the above PCSM Approval Trial were as follows:

- The above PCSM material was trialled as a highway reinstatement material for a 2 year test period.
- The approval trial conditions were representative of Undertaker's typical street works practices.
- The PCSM material showed a satisfactory surface performance after the specified 2 year test period.