

## **INTERIM ADVICE NOTE 155/12**

### **Revision of SHW Notes for Guidance Sample Appendix 7/1**

#### **Summary**

This IAN revises the Notes for Guidance to the SHW sample contract specific appendix 7/1 to permit the specification of surface dressing materials

#### **Instructions for Use**

This IAN replaces part of the existing Notes for Guidance to the Specification for Highway Works. It should be read in conjunction with the relevant parts of the Design Manual for Roads and Bridges (DMRB) and the Manual of Contract Documents for Highway Works (MCHW).

## 1. Introduction

This IAN contains amendments for the sample contract specific appendix 7/1 in MCHW Volume 2, Notes for Guidance to the Specification for Highway Works.

### 1.1 Purpose

The introduction of this IAN enables the contract specific specification of Surface Dressing materials.

### 1.2 Relationship

This IAN provides amendments for the existing contract specific appendix 7/1. It should be read in conjunction with the relevant parts of both the Design Manual for Roads and Bridges and the Manual of Contract Documents for Highway Works.

### 1.3 Implementation

This IAN shall be implemented immediately except where the procurement of works, at any stage from conception through design to completion of construction, has reached a stage at which, in the opinion of the HA, use of this document would result in significant additional expense or delay progress (in which case the decision must be recorded in accordance with the HA's procedures)

### 1.4 Mutual Recognition

"Any reference in this specification to a "British Standard", or to a "British Standard which is an adopted European Standard", is to be taken to include reference also to the following standards:

- (a) a standard or code of practice of a national standards body or equivalent body of any EEA state;
- (b) any international standard recognised for use as a standard or code of practice by any EEA state;
- (c) a technical specification recognised for use as a standard by a public authority of any EEA state; and
- (d) a European Technical Approval (ETA) issued in accordance with the procedure set out in directive 89/106/EEC.

Where there is a requirement in this specification for compliance with any part of a British Standard or a British Standard which is an adopted European Standard, that requirement may be met by compliance with any of the standards given above, provided that the relevant standard imposes an equivalent level of performance and safety provided for by a British Standard or a British Standard which is an adopted European Standard.

"EEA State" means a state which is a contracting party to the EEA Agreement

"EEA Agreement" means the agreement on a European Economic Area signed at Oporto on the 2nd of May 1992 as adjusted or amended"

## 2. Requirements

Amendments to sample contract specific Appendix 7/1 are given at Annex A of this IAN

For new contracts the amended Clauses shall be included in contracts as 'additional' or 'substitute' Clauses in site specific Appendix 0/1. For existing contracts they shall be issued as contract variations if required by the HA Project Sponsor.

## 3. Withdrawal Conditions

This IAN shall be applied until either revised interim requirements are issued or the Manual of Contract Documents Volume 2, The Notes for Guidance for the Specification for Highway Works Series, NG 700 are updated and this IAN notified as withdrawn as a result of those amendments.

## 4. Contacts

For queries regarding this IAN please contact:

[standards\\_enquiries@highways.gsi.gov.uk](mailto:standards_enquiries@highways.gsi.gov.uk)

## 5. Normative References

The Manual of Contract Documents for Highway Works, Volume 1 – Specification for Highway Works, Series 700, 800 and 900

The Manual of Contract Documents for Highway Works, Volume 2 – Notes for Guidance on the Specification for Highway Works, Series NG 700, 800 and 900

IAN 154/12 - Revision of SHW Clause 903, Clause 921 and Clause 942

HD26 - Pavement Design – Design Manual for Roads and Bridges, Volume 7, Section 2

BS PD 6691:2010 - Guidance on the use of BS EN 13108 Bituminous mixtures. Material specifications – BSI, UK.

## 6. Notification

This document was notified in draft to the European Commission in accordance with Directive 98/34/EC, as amended by Directive 98/48/EC.

**Annex A: Amendments to Sample Appendix 7//1**

**NG Sample Contract Specific Appendix 7/1: (mm/yy) Permitted Pavement Options**

**1 PERMITTED PAVEMENT OPTIONS - SCHEDULE 1**

*[Note to compiler: Complete Schedule 1. See NG 701.2. The compiler shall complete this Appendix using a contract referencing system for pavement areas, options and construction materials. The sample templates below include for illustrative purposes a limited example of such a system. Compilers may use their own referencing system].*

<b>Schedule 1: (mm/yy) Permitted Pavement Options for each roadworks area</b>						
Drawing Ref.	Roadworks Area	Pavements General Requirements	Permitted Pavement Option <i>[Note to compiler: add columns as needed to cover permitted options]</i>			
	Area A	Schedule 2.1	A1	A2	A3	etc.
	Area B	Schedule 2.2	B1	B2	B3	etc.
	Area C	Schedule 2.2	B1	B2	B3	etc.
	etc.	etc.	etc.	etc.	etc.	etc.

*[Note to compiler: The above schedule should include all options for flexible, flexible composite, rigid and rigid composite pavement construction for all areas, with each permitted pavement option given a unique reference number, for example, A1. An appropriate drawing reference should be for each area.]*

**2 PAVEMENTS GENERAL REQUIREMENTS - SCHEDULE 2**

*[Note to compiler: Complete Schedule 2. See NG 701.2. Where necessary, a separate General Requirements Schedule should be completed for Roadworks Areas identified in Schedule 1 that have different Pavement General Requirements. Schedule headings must be compatible with the Pavements General Requirements Schedule headings in Schedule 1.].*

<b>Schedule 2: Pavements General Requirements</b>		
Grid for checking surface levels of pavement courses <i>[702.4]:</i>	Longitudinal dimension:	
	Transverse dimension	
Surface regularity <i>[702.5, Table 7/2]</i>	Category of Road:	
Interval for measurement of longitudinal regularity <i>[702.7]:</i>		
Interval for measurement of transverse regularity <i>[702.8]:</i>		

### 3 PERMITTED CONSTRUCTION MATERIALS - SCHEDULE 3

*[Note to compiler: Complete Schedule 3. See NG 701.2. A separate Permitted Construction Materials Schedule should be completed for each of the Permitted Pavement Options identified in Schedule 1.]*

<b>Schedule 3: (mm/yy) Permitted Construction materials</b>				
Pavement Layer	Pavement Option xxnn*		Pavement Option xxnn*	
	Material Ref.	Thickness (mm)	Material Ref.	Thickness (mm)
Surface Treatment	STA1**			
Surface Course	SCA1**		SCA2**	
Binder Course	BCA1**		BCA2**	
Base	BA1**			
Upper base			UBA2**	
Lower base			LBA2**	
Subbase	SBA1**		SBA2**	
[Other - eg regulating]	RA1**			
Total Thickness				
Capping is not required/is required* as described in Appendix 6/7. [*Compiler to indicate as appropriate]				

*[\* Referencing of Pavement options to be compatible with those given in the Permitted Pavement Options in Schedule 1*

*\*\*Examples of compiler's possible unique reference for insertion in Schedule 5]*

#### 4 GENERAL REQUIREMENTS FOR CONSTRUCTION MATERIALS - SCHEDULE 4

*[Note to compiler: Complete Schedule 4. See NG 701.2. Include only the rows in the schedule where information is required for the specific contract.]*

Schedule 4: (mm/yy) General Requirements for Construction materials	
SHW Clause	Requirement
801.2	<i>[Note to compiler: give limiting distance for deposition of unbound mixtures referred to in sub-Clause 801.2.]</i>
801.3	<i>[Note to compiler: give limiting distance for deposition of unbound mixtures referred to in sub-Clause 801.3.]</i>
801.7	<i>[Note to compiler: state whether any material shall not comply with sub-Clause 801.7.]</i>
802.4	<i>[Note to compiler: state whether unbound materials up to 225 mm compacted thickness can be spread in more than one layer.]</i>
802.14	<i>[Note to compiler: state thickness of compacted layer.]</i>
810.6	<i>[Note to compiler: state whether the coefficient of linear expansion of the mixture is to be determined, using the test method specified in Clause 871.]</i>
818.1	<i>[Note to compiler: state whether induced transverse cracks are required, and the specify spacing of induced transverse cracks.]</i>
818.3	<i>[Note to compiler: state whether induced longitudinal cracks are required; and the specify location of induced longitudinal cracks.]</i>
820.2	<i>[Note to compiler: identify when an existing pavement layer is used to produce HBM, and whether the recycled aggregate or recycled concrete aggregate is to be tested to confirm compliance with sub-Clause 820.1.]</i>
901.6	<i>[Note to compiler: give requirements for resistance to fragmentation (hardness) if different from the requirements of sub-Clause 901.6.]</i>
901.7	<i>[Note to compiler: give requirements for resistance to freezing and thawing (durability) if different from the requirements of sub-Clause 901.7.]</i>
901.8	<i>[Note to compiler: give requirements for cleanness if different from the requirements of sub-Clause 901.8.]</i>
902.2	<i>[Note to compiler: give requirements for reclaimed asphalt if different from the requirements of sub-clause 902.2.]</i>
903.21	<i>[Note to compiler: give requirements for positioning of longitudinal joints if different from the requirements of 903.21.]</i>
903.22	<i>[Note to compiler: give requirements for treating the faces of cold upstanding edges if different from the requirements of 903.22. ]</i>
903.23	<i>[Note to compiler: give requirements for assessment of compaction at joints in binder courses and bases if different from the requirements of 903.23.]</i>
903.24	<i>[Note to compiler: state whether sealant shall be applied to the top surface of all base and binder course joints.]</i>
903.25	<i>[Note to compiler: state whether sealant shall be applied to any freestanding edge of the finished pavement.]</i>
903.27	<i>[Note to compiler: give requirements for PSV of temporary running surface if different from sub-Clause 903.27. List pavement materials applicable].</i>
925.2	<i>[Note to compiler: state whether a demonstration or approval trial is required. List pavement materials applicable].</i>
1001.2	<i>[Note to compiler: give requirements for concrete conformity if different from sub-Clause 1001.2. ]</i>
1004.7	<i>[Note to compiler: give testing requirements for concrete cubes.]</i>
1028	<i>[Note to compiler: give requirements for trial lengths.]</i>
1033.10	<i>[Note to compiler: State whether butt welding of steel reinforcement is permitted.]</i>

## 5 REQUIREMENTS FOR CONSTRUCTION MATERIALS – SCHEDULE 5

[Note to compiler: Schedule 5 should be completed for every permitted construction material identified in Schedule 3. Below is a universal template that includes all pavement construction materials referred to in the SHW for which site specific requirements or options should be given.]

Schedule 5: (mm/yy) Requirements for Construction materials			
Material Ref.	SHW Clause	Description	Requirement [Note to compiler: for each construction material complete the contract specific requirements. The references in brackets against each requirement give the origin of the option or criteria to be addressed]
	803	Type 1 unbound mixture	Mixtures containing crushed gravel coarse aggregate: - permitted [803.1]: - minimum CBR [803.8]: - trafficking trial [803.8]:
	804	Type 2 unbound mixture	Minimum CBR: - required [804.6]: - minimum value [804.6]: Mixtures containing more than 50% asphalt arisings: - permitted [804.1]: - trafficking trial [804.11]
	807	Type 4 (asphalt arisings) unbound mixture	Trafficking trial: - required [807.9]
	820	Aggregates for HBM	Rock coarse aggregates [820.2]
	821	Cement bound granular mixtures A (CBGM A)	Laboratory mechanical performance category: C 3/4, C 5/6, C 8/10; T1, T2, T3 [821.5 and Table NG 8/2]
	822	Cement bound granular mixtures B (CBGM B)	Aggregate requirements: LA <sub>50</sub> or LA <sub>60</sub> [822.2, Table 8/12] Laboratory mechanical performance category: C 8/10, C 12/15, C 16/20, C 20/25; T3, T4, T5 [822.5 and Table NG 8/2]
	823	Cement bound granular mixtures C (CBGM C)	Laboratory mechanical performance category: C 8/10, C12/15, C 16/20, C20/25; T3, T4, T5 [823.6 and Table NG 8/2]
	830	Fly ash bound mixture 1 (FABM 1) and Hydraulic road binder bound mixture 1 (HRBBM 1)	Aggregate requirements: C <sub>90/3</sub> , or C <sub>50/30</sub> , LA <sub>50</sub> , or LA <sub>60</sub> [830.2, Table 8/12] Laboratory mechanical performance category: C 6/8, C 9/12, C 12/16, C 15/20, C 18/24; T2, T3, T4 [830.5 and Table NG 8/2]
	831	Slag bound mixture B2 (SBM B2), Fly ash bound mixture 2 (FABM 2) and Hydraulic road binder bound mixture 2 (HRBBM 2)	Aggregate requirements: C <sub>90/3</sub> , or C <sub>50/30</sub> [831.2, Table 8/12] Laboratory mechanical performance category: C 6/8, C 9/12, C 12/16, C 15/20, C 18/24; T2, T3, T4 [831.7 and Table NG 8/2]
	832	Slag bound mixture B3 (SBM B3), Fly ash bound mixture 3 (FABM 3) and Hydraulic road binder bound mixture 3 (HRBBM 3)	Laboratory mechanical performance category: C 3/4, C 6/8, C 9/12, C 12/16, T1, T2, T3 [832.5 and Table NG 8/2]
	834	Fly ash bound mixture 5 (FABM 5)	Laboratory mechanical performance category: C 3/4, C 6/8; T1, T2 [834.4]
	835	Slag Bound Mixtures B1-1, B1-2, B1-3 & B1-4 (SBM B1)	Aggregate requirements: C <sub>90/3</sub> , or C <sub>50/30</sub> , [835.2, Table 8/12] Laboratory mechanical performance category: C 6/8, C 9/12, C 12/16, C 15/20, C 18/24; T2, T3, T4 [835.5 and Table NG 8/2]
	840	Soil treated by cement (SC), Soil treated by slag (SS), Soil treated by fly ash (SFA) and Soil treated by hydraulic road binder (SHRB)	Laboratory mechanical performance: [840.5, Table 8/13 and Table NG 8/2]
	904	Hot Rolled Asphalt Base	Mixture designation [904.1]:
	905	Hot Rolled Asphalt Binder Course (Recipe Mixtures)	Mixture designation [905.1]:

Schedule 5: (mm/yy) Requirements for Construction materials			
Material Ref.	SHW Clause	Description	Requirement <i>[Note to compiler: for each construction material complete the contract specific requirements. The references in brackets against each requirement give the origin of the option or criteria to be addressed]</i>
	906	Dense Base and Binder Course Asphalt Concrete (Recipe Mixtures)	Mixture designation <i>[906.1]</i> :
	907	Regulating Course	Mixture designations for permitted materials for regulating immediately below a surface course <i>[907.2]</i> :
	909	6mm Dense Asphalt Concrete Surface Course	Mixture designation <i>[909.1]</i> : Required declared PSV category <i>[909.2]</i> : Required maximum AAV category <i>[909.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> :
	910	Hot Rolled Asphalt Surface Course (Recipe Mixtures)	Mixture designation <i>[910.1]</i> : Coated chippings size, when required <i>[910.3]</i> : Required declared PSV category for chippings <i>[915.2]</i> : Required maximum AAV category for chippings <i>[915.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> : For unchipped mixtures, required declared PSV category for coarse aggregate <i>[910.2]</i> : For unchipped mixtures, required maximum AAV category for coarse aggregate <i>[910.2]</i> :
	911	Hot Rolled Asphalt Surface Course (Design Mixtures)	Mixture designation <i>[911.1]</i> : Coated chippings size, when required <i>[911.3]</i> : Required declared PSV category for chippings <i>[915.2]</i> : Required maximum AAV category for chippings <i>[915.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> : For unchipped mixtures, required declared PSV category for coarse aggregate <i>[911.2]</i> : For unchipped mixtures, required maximum AAV category for coarse aggregate <i>[911.2]</i> :
	912	Close Graded Asphalt Concrete Surface Course	Mixture designation <i>[912.1]</i> : Required declared PSV category <i>[912.2]</i> : Required maximum AAV category <i>[912.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> :
	914	Fine Graded Asphalt Concrete Surface Course	Mixture designation <i>[914.1]</i> : Required declared PSV category <i>[914.2]</i> : Required maximum AAV category <i>[914.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> :
	916	Open Graded Asphalt Concrete Surface Course	Mixture designation <i>[916.1]</i> : Required declared PSV category <i>[916.2]</i> : Required maximum AAV category <i>[916.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> :
	924	High Friction Surfacing	Type Classification <i>[924.3 and Table NG 9/4]</i> : Required declared PSV category <i>[924.4]</i> : Required maximum AAV category <i>[924.4]</i> :
	929	Dense Base and Binder Course Asphalt Concrete (Design Mixtures)	Mixture designation <i>[929.1]</i> : Whether void content at refusal is to be monitored in the permanent works <i>[929.3]</i> : Resistance to permanent deformation classification <i>[929.4, Table NG 9/24 and PD 6691 Table D2]</i> : Whether resistance to permanent deformation is to be monitored in the permanent works <i>[929.5]</i> :



<b>Schedule 5: (mm/yy) Requirements for Construction materials</b>			
Material Ref.	SHW Clause	Description	Requirement <i>[Note to compiler: for each construction material complete the contract specific requirements. The references in brackets against each requirement give the origin of the option or criteria to be addressed]</i>
	930	EME2 Base and Binder Course Asphalt Concrete	Mixture designation <i>[930.1]</i> :
	937	Stone Mastic Asphalt (SMA) Binder Course and Regulating Course	Mixture designation <i>[937.1]</i> : Resistance to permanent deformation classification <i>[937.5, Table NG 9/25 and PD 6691 Table D7]</i> : Whether resistance to permanent deformation is to be monitored in the permanent works <i>[937.6]</i> :
	938	Porous Asphalt	Details to be agreed with the Overseeing Organisation
	942	Thin Surface Course Systems	Traffic count in cv/l/d <i>[942.1]</i> : Site Category and Site Definition <i>[942.1 and Table NG 9/27]</i> : Generic type of thin surface course system required <i>[942.3 and Table NG 9/28]</i> : If required, maximum permitted upper (D) aggregate size <i>[942.7]</i> : Required declared PSV category <i>[942.8]</i> : Required maximum AAV category in hot paver laid thin surface course systems <i>[942.8]</i> : Required maximum AAV category for aggregate in thin surface course systems based on surface dressing or slurry surfacing techniques <i>[942.8]</i> : If a polymer modified bond coat is required <i>[942.9 and Table NG 9/29]</i> : Road/Tyre noise level <i>[942.11 and Table NG 9/30]</i> : Resistance to permanent deformation, if not Level 3 <i>[942.10 and Table NG 9/27 and 9/31]</i> : If required, minimum layer thickness <i>[942.12 and Table NG 9/32]</i> : If required, maximum layer thickness <i>[942.12 and Table NG 9/32]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> : Surface Macrotexture Performance Guarantee <i>[942.24 and Table NG 9/33]</i> : Surfacing Integrity Performance Guarantee if not in accordance with Clause 942.15 <i>[942.25]</i> :
	943	Hot Rolled Asphalt Surface Course and Binder Course (Performance-Related Design Mixtures)	Thickness if not in accordance with Clause 943.2 <i>[943.2]</i> : Resistance to permanent deformation classification <i>[943.6 Table NG 9/32 and PD 6691 Table C3]</i> : Whether resistance to permanent deformation is to be monitored in the permanent works <i>[943.10]</i> : Coated chippings size, when required <i>[910.3]</i> : Required declared PSV category for chippings <i>[915.2]</i> : Required maximum AAV category for chippings <i>[915.2]</i> : Whether surface macrotexture measurement is required <i>[921.1]</i> : Interval and frequency of macrotexture measurements, if not 10 per 250m <i>[921.2]</i> : Initial texture depth, if not in accordance with Table 9/3 <i>[921.2]</i> :
	1001 to 1034 and 1044	Unreinforced Concrete Slabs (URC)	Maximum spacing (m) of Transverse joints <i>[1009.1]</i> : Note: Maximum transverse joint spacing may be increased by 20% if limestone coarse aggregate is used throughout the depth of the slab. Alternatively when the slab is constructed in two layers with the top layer not exceeding 50 mm nominal thickness the maximum transverse joint spacing may be increased by 20% if limestone coarse aggregate is used throughout the lower layer. Hot-applied sealant Type N1 or Type F1 <i>[1017.1]</i> :

<b>Schedule 5: (mm/yy) Requirements for Construction materials</b>			
Material Ref.	SHW Clause	Description	Requirement <i>[Note to compiler: for each construction material complete the contract specific requirements. The references in brackets against each requirement give the origin of the option or criteria to be addressed]</i>
	1001 to 1034 and 1044	Jointed Reinforced Concrete Slabs (JRC)	Maximum spacing (m) of Transverse joints <i>[1009.1]</i> : Note: Maximum transverse joint spacing may be increased by 20% if limestone coarse aggregate is used throughout the depth of the slab. Alternatively when the slab is constructed in two layers with the top layer not exceeding 50 mm nominal thickness the maximum transverse joint spacing may be increased by 20% if limestone coarse aggregate is used throughout the lower layer. Longitudinal steel reinforcement <i>[1008.9 and HD26]</i> : Transverse reinforcement <i>[1008.8 and HD26]</i> : Hot-applied sealant Type N1 or Type F1 <i>[1017.1]</i> :
	1001 to 1034 and 1044	Continuously Reinforced Concrete Slabs (CRCP)	Longitudinal steel reinforcement: <i>[1008.9 and HD26]</i> : Hot-applied sealant Type N1 or Type F1 (except for construction joints) <i>[1017.1]</i> :
	1001 to 1034	Continuously Reinforced Concrete Base (CRCB)	Longitudinal steel reinforcement: <i>[1008.9 and HD26]</i> : Hot-applied sealant Type N1 or Type F1 <i>[1017.1]</i> :
	1030	Wet Lean Concrete	Strength <i>[1030.1]</i>

## **6 (08/08) THIN SURFACE COURSE SYSTEMS: INFORMATION TO BE PROVIDED BY THE CONTRACTOR - SCHEDULE 6**

*[Note to Contractor: Complete one sheet per system or variant of system that may be used]*

The Contractor shall provide the following information with his tender:

(i) (08/08) A copy of the British Board of Agrément HAPAS Roads and Bridges Certificate (or equivalent) or Certificates for the Thin Surface Course System (or equivalent) or systems that are proposed for use in the works, together with a copy of the Installation Method Statement associated with each Certificate [942.1]

(ii) (08/08) For any Certificate that covers several variants of one Thin Surface Course System, proposed variant or variants of the system to be used in the Works *[variants of a system occur from any option that results in different values being reported on the Certificate for one or more properties, and could involve changes in nominal maximum aggregate size, aggregate type, aggregate grading, binder type, binder content, fibres or other additives, type and rate of spread of bond coat]*

(iii) (08/08) If requested, or if the Thin Surface Course System is not produced under a Sector Scheme, the proposed component materials to be used in the Thin Surface Course System and their proportions for each proposed system [942.4]

(iv) (08/08) Proposed source or sources of coarse aggregate together with statement of properties including Polished Stone Value, Aggregate Abrasion Value, Los Angeles Coefficient and Flakiness Index [942.5]

(v) (08/08) If regulating material is to be used, evidence of its deformation resistance either independently or in combination with the Thin Surface Course System [942.10]

## **7 BINDER DATA REQUIREMENTS [937.4 and 943.4] - SCHEDULE 7**

The following data shall be provided to the Overseeing Organisation for modified binders as required in sub-Clauses 937.4 and 943.4. The data should not be more than 12 months old. A table in which the binder data may be recorded is given at the end of this section.

For work carried out for the Highways Agency, a copy of the results should be handed to the Overseeing Organisation, to be forwarded to: Pavement Engineering Team at Highways Agency, Woodlands, Manton Lane, Manton Industrial Estate, Bedford MK41 7LW.

### **I. Binder Samples**

Bituminous binders shall be sampled according to BS EN 58. For modifiers blended with the other component materials of the mixture at the mixer a simulated binder shall be prepared. Such modifiers are generally less intimately mixed with the bitumen and less well dispersed throughout the mixture than when pre-blended. Evidence that the simulated binder offers the same performance as the binder produced when the modifier is added at the mixer shall be provided.

### **II. Penetration**

Binder penetration at 25°C (BS EN 1426), 100g 5 seconds, and at 5°C, 200g 60 seconds, for the binder as supplied, after hardening in the Rolling Thin Film Oven Test (RTFOT) in accordance with BS EN 12607-1, and after RTFOT and Ageing in the Pressure Ageing Vessel at 85°C (PAV85) in accordance with BS EN 14769.

### **III. Product Identification Test and Rheological Properties**

Results for the binder(s) proposed shall comprise rheological data for each binder in the form of complex shear (stiffness) modulus ( $G^*$ ) and phase angle ( $\delta$ ) determined in accordance with BS EN 14770 for binder as supplied, after RTFOT, and after RTFOT and PAV85 Ageing in accordance with BS EN 14769.

### **IV. Storage Stability Test**

All binders shall be stored strictly in accordance with the manufacturer's instructions. Polymer modified binders claimed to remain homogeneous in storage without agitation shall be tested for storage stability in accordance with BS EN 13399. The mean of the differences in softening point between the top and bottom samples, of not less than five pairs of such samples shall not exceed 5°C. Manufacturers of pre-blended modified binders shall state what precautions are necessary to ensure that adequate homogeneity is maintained during storage.

### **V. Photomicrograph**

A typical photomicrograph of the modified binder and binder using ultra-violet or other technique to provide maximum contrast of the polymer structure to the binder before modification shall be supplied together with details of sample preparation techniques. A photomicrograph is intended only to indicate the presence of a polymer modifier in the binder and should not be used as an indicator of performance. Guidance on the interpretation of photomicrographs is given in BS EN 13632 Visualisation of polymer dispersion in polymer modified bitumen.

### **VI. Cohesion**

Vialit Pendulum cohesion test curve of the binder, in accordance with BS EN 13588 for the binder as supplied, after RTFOT, and after RTFOT and PAV85 Ageing in accordance with BS EN 14769.

### **VII. FRAASS Brittle Point**

FRAASS brittle point measured using BS EN 12593 shall be provided on the binder as supplied, after RTFOT, and after RTFOT and PAV85 Ageing in accordance with BS EN 14769.

## Summary of binder data

Manufacturer of Binder:			
Product name:			
Batch ref:			
Binder type:			
Binder source:			
Softening point difference in storage stability test			
Test	Supplied binder	After RTFOT	After RTFOT and PAV85
Penetration at 25°C 0,1 mm (100g and 5 secs)			
Penetration at 5°C 0,1 mm (200g and 60 secs)			
Vialit pendulum cohesion maximum peak value J/cm <sup>2</sup>	#	#	#
Product identification test	#	#	#
Complex shear (stiffness) modulus (G*) and phase angle (δ) data.			
Fraass brittle point			
Other properties the Contractor considers useful			

Where indicated with # the Contractor shall attach a graphical output to this schedule.

### 8 (08/08) MIXTURE DATA REQUIREMENTS - SCHEDULE 8

The following data should be provided to the Overseeing Organisation for materials designed in accordance with Clause 901.17 and Clause 929 in respect of the proposed mixture.

For work carried out for the Highways Agency, a copy of the results should be handed to the Overseeing Organisation, to be forwarded to: Pavement Engineering Team at Highways Agency, Woodlands, Manton Lane, Manton Industrial Estate, Bedford, MK41 7LW.

#### I. Saturation Ageing Tensile Stiffness (SATS) ratio – as described in Clause 953