



National Highway Sector Schemes for Quality Management in Highway Works

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For the Supply of Paving Bitumens

Published by the Sector Scheme Advisory Committee for the Supply of Paving Bitumens©

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Summary of main changes between Issue 5 (April 2009) and Issue 6 (XXXX)

General: scheme now references BS EN 12591:2009 instead of BS EN 12591:2000.

References hereafter refer to clause numbers/appendices in the document

Appendix A1:- Quality Plan: - Minimum Test Frequencies and Temperature Checks for Paving Grade Bitumens (BS EN 12591) – clarification of tests required for Resistance to Hardening and additional note concerning test frequencies.

Appendix A2:- Quality Plan: - Minimum Test Frequencies and Temperature Checks for Hard Paving Grade Bitumens (BS EN 13924) – clarification of tests required for Resistance to Hardening and additional notes concerning test frequencies and requirement for the rolling mean of six softening point results in factory production control..

Appendix A3:- Quality Plan: - Minimum Test Frequencies and Temperature Checks for Polymer Modified Bitumens (BS EN 14023) – clarification of tests required for Resistance to Hardening and additional notes concerning test frequencies and additional tests.

Appendix C:- Training and Competence Requiements – inclusion of requirement for driver periodic training.

Summary of main changes between Issue 4 (December 2007) and Issue 5 (April 2009)

General: scheme now references BS EN ISO 9001:2008 instead of BE EN ISO 9001:2000 and also includes polymer modified bitumens to BS EN 14023:2005

References hereafter refer to clause numbers/appendices in the document

1.0 Scope: - inclusion of polymer modified bitumens.

2.0 Normative Reference: - inclusion of BS EN 14023:2005 Bitumen and bituminous binders – Framework Specification for polymer modified bitumens.

3.0 Terms and Definitions: - inclusion of polymer modified bitumens and polymer modified bitumen plant.

Appendix A3: Quality Plan: - Minimum Test Frequencies and Temperature Checks for Polymer Modified Bitumens (BS EN 14023) – new table detailing test frequencies and temperature checks.

Appendix B: Reference Documents Relevant to this Sector Scheme: - inclusion of standards for polymer modified bitumens and associated test methods.

Appendix G1:- Guide for Assessors' and other Auditors' Competences – new appendix.

Summary of main changes between Issue 3 (August 2006) and Issue 4 (December 2007)

General:

- title of document changed to “Sector scheme document for the supply of paving bitumens”
- scheme now includes hard paving grade bitumens to BS EN 13924:2006.

References hereafter refer to clause numbers/appendices in the document

4.0 Scope: - inclusion of hard paving grade bitumens.

5.0 Normative Reference:- inclusion of BS EN 12591:2000 Bitumen and bituminous binders – Specifications for paving grade bitumens and BS EN 13924:2006 (including National Annex NA published in 2007) Bitumen and bituminous binders – Specifications for hard paving grade bitumens.

6.0 Terms and Definitions: - inclusion of hard paving grade bitumens.

4.1 QMS General Requirements: - inclusion of requirements for certification by an accredited certification body and supplier registration to the scheme.

8.2.4 (v) Monitoring and Measurement of Product: - deletion of previous requirement for testing of product produced from alternative blend component(s).

8.2.4 (vi) Monitoring and Measurement of Product: - insertion of new requirement for testing of product produced from alternative blend component(s) or change in production process.

Appendix A1: Quality Plan: Minimum Test Frequencies and Temperature Checks for Paving Grade Bitumens (BS EN 12591):- previous table reformatted.

Appendix A2: Quality Plan: Minimum Test Frequencies and Temperature Checks for Hard Paving Grade Bitumens (BS EN 13924):- new table detailing test frequencies and temperature checks.

Appendix B: Reference Documents Relevant to this Sector Scheme: - inclusion of standards for hard paving grade bitumens and associated test methods.

Appendix K: The interpretation of certificates issued by certification bodies – new appendix.

Appendix L: Guidance to Clients – new appendix.

Summary of main changes between Issue 2 (March 2005) and Issue 3 (August 2006)

References hereafter refer to clause numbers/appendices in the document

Appendix A Note 8:- test requirements where product is supplied directly to Customers from non-UK sources

Summary of main changes between Issue 1 (July 2003) and Issue 2 (March 2005)

References hereafter refer to clause numbers/appendices in the document

1.0 Scope: - clarification of Scope

3.0 Terms (and used elsewhere):- clarification of definition of “supplying organisation”

Appendix A Note 2:- clarification of “sub-samples”

Appendix B: - updated references

Appendix C: - driver training requirements – new appendix

Appendix E: - clarification of calibration requirements

Appendix F: - information on Certification Bodies – new appendix

Appendix G (B.2):- change to “Notification of Certifications”

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COMPOSITION OF THE SECTOR SCHEME ADVISORY COMMITTEE, EXCLUSION OF LIABILITY AND SELECTION OF CERTIFICATION BODY AND SUPPLIER REGISTRATION

COMPOSITION OF THE SECTOR SCHEME ADVISORY COMMITTEE

Certification Bodies Accredited to this Sector Scheme:-

CSS	(County Surveyors' Society)
HA	(Highways Agency)
QPA	(Quarry Products Association)
RBA	(Refined Bitumen Association)
TAG	(Technical Advisors' Group)
UKAS	(United Kingdom Accreditation Service)

EXCLUSION OF LIABILITY

The Advisory Committee:

- I. has and accepts no liability whatsoever for any failure of any system or systems assessed under the document or for the quality, fitness for purpose, or safety of any product or service which is the subject of such assessment.
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SELECTION OF CERTIFICATION BODY AND SUPPLIER REGISTRATION

It is important to note that due to the specific requirements for assessor competence required by this Sector Scheme a technical expert may be appointed by the Sector Scheme Advisory Committee to assist UKAS in the assessment of certification bodies as described in Appendix G.

Prospective companies seeking registration under this scheme should ensure that they engage a certification body specifically accredited to assess against the requirements of this Sector Scheme Document (see Appendix F).

[Specifiers, consultants, engineers etc. that require confirmation of compliance with the contract specification in respect of the supply of products/materials should confirm the current status of the Bitumen Supplier's registration, quality assurance certificate issuer and that specific reference is made to this Sector Scheme \(see Appendices F, G and L\).](#)

INTRODUCTION

This Sector Scheme Document relates to the Quality Management System requirements for the supply of Paving Bitumens for paving construction and maintenance (Paving Grade Bitumens, Hard Paving Grade Bitumens or Polymer Modified Bitumens including base binders used to produce bitumen emulsions, cut-back/fluxed bitumens for use in cold/warm mix asphalt, surface dressing binders and bond coats)..

It is acknowledged that a number of accredited certification bodies have obtained the technical competence to be able to provide quality management system certification for this activity and it was recognised that there was a necessity for these bodies to adopt a common approach and the same interpretation of BS EN ISO 9000 Series of Standards for this Scheme. The Sector Scheme Advisory Committee for the Supply of Paving Bitumens was set up in 2001 to establish a UK Sector Scheme which would be used by UKAS as part of its assessment for certification bodies wishing to be accredited in the bitumen supply field.

The document is a live document with the advisory committee meeting at least once every 13 months to review and develop it as appropriate. Those using the document should always ensure that they have the current version of the document by visiting www.ukas.com (from the UKAS home page click on "Information Centre" in top menu bar, then click on "Publications List" and then scroll down to the section entitled "Publications Areas", then click on "Publications Relating to Certification Body Accreditation", and then scroll down to "Sector Schemes for Quality Management in Highway Works" where the current version may be found).

Health, safety and environmental issues are not covered by this document, but all parties involved should ensure that appropriate risk assessments are made and operations are in compliance with current legislation.

Any observations or complaints relating to this document should be handled in accordance with the procedures in Appendix J1 or J2 as appropriate.

INTERPRETATION OF BS EN ISO 9001:2008

1.0 SCOPE

This document describes the requirements for Quality Management Systems (QMS) to be established by suppliers of Paving Grade Bitumens to BS EN 12591:2009, Hard Paving Grade Bitumens to BS EN 13924:2006 (including National Annex NA (informative) published in 2007) and Polymer Modified Bitumens to BS EN 14023:2005 and interprets the requirements of BS EN ISO 9001:2008. Such Quality Management Systems have the aim of giving adequate assurance that the Product conforms to the relevant technical specification. The Scheme is applicable to Organizations supplying Paving Grade, Hard Paving Grade Bitumen or Polymer Modified Bitumen hot, in bulk from a Refinery, Terminal or Intermediate Storage. Process control upstream of the bitumen blending and storage plant is outside the scope of this document.

Manufacture, blending or storage and related activities (e.g. calibration, testing, etc, etc) may not necessarily be carried out **directly** within the Organization's own QMS, i.e. they may be carried out within the QMS of another division of the same company, i.e. a refinery, or within another Organization's QMS. In these cases compliance with the relevant requirements of EN ISO 9001:2008 and this document may be demonstrated by certification by a UKAS accredited Certification Body of the other party's QMS.

Only the organization supplying the bitumen to the customer requires registration to this Sector Scheme. This Sector Scheme Document shall be referenced in the Certificate of Registration issued by appropriate Certification and Inspection Bodies accredited by the United Kingdom Accreditation Service (UKAS) or equivalent accreditation body. (See Appendix K)

References as listed in Appendix B have been utilised in the preparation of this document.

2.0 NORMATIVE REFERENCE

The following normative documents contain provisions which constitute provisions of BS EN ISO 9001:2008:

BS EN ISO 9001:2008 Quality Management Systems – Requirements
BS EN ISO 9000:2005 Quality Management Systems – Fundamentals and Vocabulary

Additionally, the following are included as normative documents:

BS EN 12591:2009 Bitumens and bituminous binders – Specifications for paving grade bitumens (including National Annex NA (informative))

BS EN 13924:2006 Bitumens and bituminous binders – Specifications for hard paving grade bitumens (including National Annex NA (informative) published in 2007)

BS EN 14023:2005 Bitumens and bituminous binders – Framework specification for polymer modified bitumens

Clause numbers in this document refer to the relevant clause numbers in BS EN ISO 9001:2008 - Requirements. Where no specific interpretation is given, the requirements are as stated in BS EN ISO 9001:2008 without further qualification.

3.0 TERMS & DEFINITIONS

For the purpose of this Sector Scheme Document, the following definitions shall apply:

Certificate of Registration:	A certificate issued by a UKAS accredited Certification Body certifying that the holder operates a Quality Management System complying with the requirements of BS EN ISO 9001:2000 and this document. (see Appendix K)
Specification:	The Specification for Paving Bitumens is the specification to which the Organization has contracted to supply. This Specification may be BS EN 12591:2009 Paving Grade Bitumen, BS EN 13924:2006 Hard Paving Grade Bitumen, BS EN 14023:2005 Polymer Modified Bitumen or, in the case of a non-standard bitumen, a specification agreed between the Organization and the Customer.
Customer:	The body purchasing the bitumen.
Organization:	The organization supplying the bitumen to the customer.
Quality System:	The Organization's structure, responsibilities, procedures, processes and resources for implementing the Quality Management System to BS EN ISO 9001:2008.
Quality Plan:	The document setting out the specific quality practices, resources and sequence of activities of an organization relevant to the supply of Paving Bitumens (see Appendix A1, A2 and A3).
Paving Grade Bitumen:	Paving Grade Bitumen complying with BS EN 12591:2009 or a non-standard Paving Grade Bitumen to a specification agreed between the Organization and the Customer.
Hard Paving Grade Bitumen:	Hard Paving Bitumen complying with BS EN 13924:2006 or a non-standard Hard Paving Grade Bitumen to a specification agreed between the Organization and the Customer.
Polymer Modified Bitumen:	Polymer Modified Bitumen complying with BS EN 14023:2005 or a non-standard Polymer Modified Bitumen to a specification agreed between the Organization and the Customer.
Product:	Paving Grade Bitumen, Hard Paving Grade Bitumen or Polymer Modified Bitumen.
Paving Bitumen:	Bitumen used in the construction and maintenance of paved surfaces.
Refinery:	Plant or installation where Paving Grade Bitumen or Hard Paving Grade Bitumen is manufactured blended and stored prior to supply.
Terminal:	Plant or installation where Paving Grade Bitumen or Hard Paving Grade Bitumen is blended and stored prior to supply.
Intermediate Storage:	Plant or installation where Paving Bitumen is stored only prior to supply.

4.0 QUALITY MANAGEMENT SYSTEM REQUIREMENTS

4 Quality Management System

4.1 General Requirements

The Organization shall operate a Quality Management System(s) (QMS) complying with the requirements of BS EN ISO 9001:2008 and with this Sector Scheme Document.

The Organization's QMS shall be certified by a Certification Body specifically accredited by UKAS to assess against the requirements of this Sector Scheme Document (see Appendix F).

The Organization shall initially register its certification status, and thereafter re-new its registration on an annual basis, with the compilers of the Schedule of Suppliers (currently LANTRA Awards). In addition, if the Organization wishes to appear on the LANTRA public register list (see Appendix L) this requires the payment of an annual registration fee. The LANTRA email address for registration purposes is NHSSscheduleofsuppliers@lantra-awards.co.uk.

The Organization shall additionally inform the Secretary of the Advisory Committee to the Scheme of when they receive first certification and/or have certification renewed.

4.2 Documentation Requirements

4.2.4 Control of Records

The following records shall be kept and be available for a minimum period of 5 years.

- a) Product test results
- b) Equipment calibration records (Appendix E)
- c) Delivery information (to include grade, loading point, delivery point, delivery date and quantity).

5 Management Responsibility

5.1 Management Commitment

The Organization's quality statement shall include a statement of commitment to this Sector Scheme.

5.2 Customer Focus

No specific Interpretation

5.3 Quality Policy

No specific Interpretation

5.4 Planning

No specific Interpretation

5.5 Responsibility, Authority and Communication

No specific Interpretation

5.6 Management Review

The Quality System shall be reviewed to ensure its continuing suitability and effectiveness at least once every 13 months.

6 Resource Management

6.1 Provision of Resources

All necessary facilities, equipment and personnel shall be available to carry out the required inspection and tests.

6.2 Human Resources

Training and competence requirements for delivery drivers are given in Appendix C. No specific interpretation for other personnel.

6.3 Infrastructure

No specific interpretation

6.4 Work Environment

No specific interpretation

7 Planning and Product Realization

7.1 Planning of Product Realization

The Quality Plan shall include the following items of process control.

- a) All controls necessary to ensure the control of Product to be supplied from the receipt of Customers' orders to the point of delivery. A description of the flow of materials and the processes carried out on them from input to the bitumen storage or blending plant to delivery to the Customer. This shall incorporate a flow diagram.
- b) A statement of the control processes necessary to maintain and regulate the quality of Product in conformity with the Specification.
- c) Inspection and testing frequencies for Product and incoming blend components to the bitumen storage or blending plant. The plan shall define the controls of incoming blend components that assure material consistency and quality. The inspection(s) or test(s) selected shall be appropriate to define the quality of the specific incoming component(s).

Where an incoming component(s) is from a source operating a quality management system to BS EN ISO 9001, testing on receipt is not required. Inspection of delivery documentation shall suffice. Inspection(s) and testing frequencies for base materials and components used in the manufacture of polymer modified bitumens shall be in accordance with clause 6.3.3. and Table 3 of BS EN 14023:2005.

7.2 Customer Related Processes

7.2.2 Review of Requirements Relating to the Product

- (i) The review processes will cover all activities from handling of initial enquiries through to transfer of the Product to the Customer and, where necessary, shall also include Customer specific requirements.
- (ii) A record shall be made of all reviews as well as of any subsequent amendments made to written or call-off orders.

7.3 Design and Development

This document excludes the requirements of this clause because process control upstream of the bitumen blending and storage plant is outside the scope of this document. Such exclusion does not affect the Organization's ability or responsibility to provide Product that meets Customer and applicable regulatory requirements.

7.4 Purchasing

No specific interpretation

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

- (i) Delivery of Product into Customer's storage shall be in accordance with the RBA Safe Delivery Code.
- (ii) Handling, storage and delivery of the Product shall be in accordance with the IP Model Code of Safe Practice Part 11: Bitumen Safety Code.

7.5.5 Preservation of Product

Procedures shall be established for ensuring the cleanliness of delivery tankers so as not to adversely affect Product quality.

7.6 Control of Monitoring and Measuring Equipment

- (i) All inspection, measuring and test equipment shall be checked for accuracy at least at the frequencies indicated in Appendix E and records kept. Where applicable test equipment shall be calibrated and traceable to a National Standard.
- (ii) Where Product is produced by blending components into delivery tankers, the Quality Plan shall include measures to check and maintain the blending equipment and flow meters as detailed in Appendix E.

8 Measurement, Analysis and Improvement

8.1 General

Inspection and testing shall be undertaken to demonstrate compliance with the Specification.

Product for supply to Customers shall be inspected and tested using procedures detailed in the Quality Plan and at least to the frequencies detailed in Appendix A1, A2 or A3 as appropriate.

8.2 Monitoring and Measurement

8.2.2 Internal Audit

Audits shall be scheduled to ensure that the Quality Management System is audited at least every 2 years.

The purpose of an internal audit is to demonstrate the effectiveness of the Quality Management System. This may be carried out most effectively by frequent part audits.

8.2.3 Monitoring and Measuring of Processes

All sampling and testing shall be carried out in accordance with the relevant BS EN. However, alternative procedures (e.g. non-standard tests) may be used for process control provided adequate correlation with the relevant BS EN can be demonstrated.

8.2.4 Monitoring and Measurement of Product

- (i) The results of all tests carried out, including tests on incoming blend components to the bitumen storage or blending plant, shall be recorded.
- (ii) A register of blend components shall be maintained.
- (iii) Tests taken specifically for the purpose of process control may be identified separately and need not be used for assessing compliance with the Specification.
- (iv) The Product sampled and tested shall be representative of the Product delivered to the Customer.
- (v) Procedures shall be established to demonstrate that Product produced by blending components is mixed within stated tolerances.
- (vi) Whenever a change occurs in the blend components or the production process which would change significantly one or more of the Product's characteristics, the test (as detailed in Appendix A1, A2 or A3) for the appropriate characteristic(s) shall be repeated.

8.3 Control of Nonconforming Product

Nonconforming product is Product that fails to comply with the Specification. Procedures for identifying nonconforming product and procedures for taking corrective action shall be established and followed. In the event of nonconforming product being identified prior to delivery, such action may involve: -

- a) the Organization seeking the Customer's agreement for the acceptance of nonconforming product prior to delivery.
- b) if the nonconforming product is of an incorrect grade, to redirect it to an alternative Customer.
- c) reject the nonconforming product.
- d) rework the nonconforming product to meet the required Specification

The Organization shall promptly notify the Customer in the event of nonconforming product being identified after delivery has been made.

8.4 Analysis of Data

No specific interpretation

8.5 Improvement

No specific interpretation

APPENDIX A1: QUALITY PLAN

MINIMUM TEST FREQUENCIES & TEMPERATURE CHECKS FOR PAVING GRADE BITUMENS (BS EN 12591:2009)

Test	Method	Frequency (see note 1)	
		Grades 20/30, 35/50, 50/70, 70/100 & 250/330	Grades 30/45, 40/60, 100/150 & 160/220
Penetration @ 25°C	BS EN 1426	D	
Softening Point	BS EN 1427	M	W
Resistance to hardening - retained penetration - increase in softening point - change of mass	BS EN 12607-1	A	
Solubility	BS EN 12592	A	
Kinematic Viscosity @ 135°C	BS EN 12595	A	
Flash Point	BS EN ISO 2592	A	
Loading or storage temperature check		D	

Notes

- Some customers may request higher test frequencies.
- D = Daily, W = Weekly, M = Monthly, A = Annually
- Indicated test rates apply only if Product is supplied to Customers. All tests shall be carried out on sub-samples of a single bulk sample when more than one binder property is to be determined.
- Indicated test rates are minimum test rates. However, if Product is supplied from a single storage tank, the penetration (and, if applicable, softening point) test rate is every 14 days, but shall be remeasured when fresh untested product is added to the tank.
- Test rates for penetration & softening point are applicable to Refineries and Terminals. Other tests are applicable to Refineries only.
- Maximum storage or loading temperature shall be IP Model Code of Safe Practice recommended maximum storage & handling temperature. Product temperature may be calculated from blend component temperatures.
- Minimum loading temperature shall be IP Model Code of Safe Practice recommended minimum pumping temperature + 35°C.
- Where Product is delivered into Intermediate Storage, tests carried out at the supply source shall be deemed adequate. However, if Product is held in Intermediate Storage for longer than 14 days with no fresh incoming Product, a penetration or softening point test shall be carried out to check for binder hardening. This period may be extended where evidence is provided to show that Product deterioration does not occur.
- Where Product is delivered directly to the customer by an Organization certified to this Sector Scheme from a non-UK based Refinery, Terminal or Intermediate Storage, which is not certified to this Sector Scheme, test requirements in the table shall apply as qualified by clause 7.1(c). If the supply source maintains a third party accredited Quality Management System to EN ISO 9001, tests carried out by the supply source shall be deemed adequate. If the supply source is not third party accredited to EN ISO 9001, the Organization certified to this Sector Scheme shall incorporate the test requirements of the table as qualified by clause 7.1(c) into its own Quality Plan.

APPENDIX A2: QUALITY PLAN

MINIMUM TEST FREQUENCIES & TEMPERATURE CHECKS FOR HARD PAVING GRADE BITUMENS (BS EN 13924:2006)

Test (see note 1)	Method	Frequency (see note 2)
		Grades 10/20 & 15/25
Penetration @ 25°C	BS EN 1426	D
Softening Point (see note 3)	BS EN 1427	W
Penetration Index	BS EN 13924	W
Resistance to hardening - retained penetration - increase in softening point - change of mass - penetration index on original bitumen	BS EN 12607-1	A
Solubility	BS EN 12592	A
Kinematic Viscosity @ 135°C	BS EN 12595	A
Flash Point	BS EN ISO 2592	A
Vialit Pendulum	BS EN 13588	A
Fraass Breaking Point	BS EN 12593	A
Dynamic Viscosity	BS EN 13302	A
Dynamic Shear Rheology	BS EN 14770	A
Bending Beam Rheology	BS EN 14771	A
Loading or storage temperature check		D

Notes

1. See BS EN 13924 National Annex NA (informative) for specific details of tests required.
2. Some customers may request higher test frequencies.
3. includes a requirement for the rolling mean of six results in Factory Production Control.
4. D = Daily, W = Weekly, M = Monthly, A = Annually
5. Indicated test rates apply only if Product is supplied to Customers. All tests shall be carried out on sub-samples of a single bulk sample when more than one binder property is to be determined.
6. Indicated test rates are minimum test rates. However, if Product is supplied from a single storage tank, the penetration (and, if applicable, softening point) test rate is every 14 days, but shall be re-measured when fresh untested Product is added to the tank.
7. Test rates for penetration & softening point are applicable to Refineries and Terminals. Other tests are applicable to Refineries only.
8. Maximum storage or loading temperature shall be IP Model Code of Safe Practice recommended maximum storage & handling temperature. Product temperature may be calculated from blend component temperatures.
9. Minimum loading temperature shall be IP Model Code of Safe Practice recommended minimum pumping temperature + 35°C.
10. Where Product is delivered into Intermediate Storage, tests carried out at the supply source shall be deemed adequate. However, if Product is held in Intermediate Storage for longer than 14 days with no fresh incoming Product, a penetration or softening point test shall be carried out to check for binder hardening. This period may be extended where evidence is provided to show that Product deterioration does not occur. (continued overleaf)

11. Where Product is delivered directly to the customer by an Organization certified to this Sector Scheme from a non-UK based Refinery, Terminal or Intermediate Storage, which is not certified to this Sector Scheme, test requirements in the table shall apply as qualified by clause 7.1(c). If the supply source maintains a third party accredited Quality Management System to EN ISO 9001, tests carried out by the supply source shall be deemed adequate. If the supply source is not third party accredited to EN ISO 9001, the Organization certified to this Sector Scheme shall incorporate the test requirements of the table as qualified by clause 7.1 (c) into its own Quality Plan.

APPENDIX A3: QUALITY PLAN

MINIMUM TEST FREQUENCIES & TEMPERATURE CHECKS FOR POLYMER MODIFIED BITUMENS (BS EN 14023:2005)

Test (see note 1)	Method	Frequency (see note 2)
<i>Essential requirements to BS EN 14023 Table 1</i>		
Penetration @ 25°C	BS EN 1426	see note 3
Softening Point	BS EN 1427	see note 3
Force Ductility <i>or</i> Tensile Test @ 5 °C <i>or</i> Vialit Pendulum (see note 8)	BS EN 13589 followed by BS EN 13703 <i>or</i> BS EN 13587 followed by BS EN 13703 <i>or</i> BS EN 13588	A
Resistance to hardening - retained penetration - increase in softening point - change of mass	BS EN 12607-1	A
Flash Point	BS EN ISO 2592	A
<i>Technical requirements to BS EN 14023 Table 2</i>		
See note 9		A
Loading or storage temperature check		D

Notes

- Some customers may request additional tests.
- Some customers may request higher test frequencies.
- Test frequency is once per completed batch; or for continuous production through an in-line blender, every 200 t or monthly whilst producing, whichever is more frequent.
- D = Daily, A = Annually
- Indicated test rates apply only if Product is supplied to Customers. All tests shall be carried out on sub-samples of a single bulk sample when more than one binder property is to be determined.
- Indicated test rates are minimum test rates. However, if Product is supplied from a single storage tank, the penetration and softening point test rate is every 14 days, but shall be re-measured when fresh untested Product is added to the tank.
- Storage & loading temperatures shall be the Organizations' recommended values. Product temperature may be calculated from blend component temperatures.
- Where Product is delivered into Intermediate Storage, tests carried out at the supply source shall be deemed adequate. However, if Product is held in Intermediate Storage for longer than 14 days with no fresh incoming Product, a penetration or softening point test shall be carried out to check for binder hardening. This period may be extended where evidence is provided to show that Product deterioration does not occur.
- Where Product is delivered directly to the customer by an Organization certified to this Sector Scheme from a non-UK based Polymer Modified Bitumen Plant or Intermediate Storage, which is not certified to this Sector Scheme, test requirements in the table shall apply as qualified by clause 7.1(c). If the supply source maintains a third party accredited Quality Management System to EN ISO 9001, tests carried out by the supply source shall be deemed adequate. If the supply source is not third party accredited to EN ISO 9001, the Organization certified to this Sector Scheme shall incorporate the test requirements of the table as qualified by clause 7.1 (c) into its own Quality Plan. (continued overleaf)

10. Only applicable for base Polymer Modified Bitumens used in the production of surface dressing & micro-surfacing (slurry seal) binders and bond coats.
11. Optional tests carried out at the discretion of the Organization

APPENDIX B: REFERENCE DOCUMENTS RELEVANT TO THIS SECTOR SCHEME

The listing is not comprehensive and other documents may be required to fulfill the requirements of this Sector Scheme. The Organization shall ensure that it has a working knowledge and access to all the documents including amendments and that the current version is used except for the dated documents shown below.

BS EN ISO 9000:2005	Quality Management Systems – Fundamentals and Vocabulary
BS EN ISO 9001:2008	Quality Management Systems – Requirements
BS EN 12591:2009	Bitumen and bituminous binders – Specifications for paving grade bitumens
BS EN 13924:2006	Bitumen and bituminous binders – Specifications for hard paving grade bitumens
BS EN 14023:2005	Bitumen and bituminous binders – Framework specification for polymer modified bitumens
BS EN 58	Bitumen and bituminous binders – sampling bituminous binders
BS EN 1426	Methods of test for petroleum and its products – BS 2000-49: Bitumen and bituminous binders – Determination of needle penetration
BS EN 1427	Methods of test for petroleum and its products – BS 2000-58: Bitumen and bituminous binders – Determination of softening point – Ring and Ball method
BS EN 12607-1	Methods of test for petroleum and its products – BS 2000-460.1: Bitumen and bituminous binders – Determination of resistance to hardening under the influence of heat and air – Part 1: RTFOT method
BS EN 12592	Methods of test for petroleum and its products – BS 2000-47: Bitumen and bituminous binders – Determination of solubility
BS EN 12593	Bitumen and bituminous binders – Determination of the Fraass Breaking Point
BS EN 12595	Methods of test for petroleum and its products – BS 2000-319: Bitumen and bituminous binders – Determination of kinematic viscosity
BS EN 13302	Bitumen and bituminous binders - Determination of viscosity of bitumen using a rotating spindle apparatus
BS EN 13587	Bitumen and bituminous binders – Determination of the tensile properties of bituminous binders by the tensile test method
BS EN 13588	Bitumen and bituminous binders - Determination of cohesion of bituminous binders with pendulum test

BS EN 13589	Bitumen and bituminous binders – Determination of the tensile properties of bituminous binders by the force ductility method
BS EN 13703	Bitumen and bituminous binders – Determination of deformation energy
BS EN 14770	Methods of test for petroleum & its products. Bitumen & bituminous binders - Determination of complex shear modulus & phase angle - Dynamic Shear Rheometer (DSR)
BS EN 14771	Bitumen & bituminous binders - Determination of the flexural creep stiffness - Bending Beam Rheometer (BBR)
BS EN ISO 2592	Methods of test for petroleum and its products – Determination of flash and fire points – Cleveland open cup method
ISO 17021	Conformity assessment -- Requirements for bodies providing audit and certification of management systems
RBA Code of Practice for the Safe Delivery of Bitumen Products (available from Refined Bitumen Association, Harrogate Business Centre, Hammerain House, Hookstone Avenue, Harrogate, HG2 8ER)	
IP Model Code of Safe Practice Part 11 - Bitumen Safety Code (available from the Energy Institute, 61 New Cavendish Street, London, W1M 8AR)	

APPENDIX C: TRAINING AND COMPETENCE REQUIREMENTS

All managers, supervisors and operatives shall receive training as deemed necessary by the Organization.

All drivers employed in the transportation and delivery of bitumen products shall receive training under the following headings:-

- Carriage of Dangerous Goods UK/ADR
- Driver periodic training (see www.drivercpc-periodictraining.org)
- RBA Hazard awareness / passport
- Employer specific driver training programmes

APPENDIX E: CONTROL OF INSPECTION AND TEST EQUIPMENT

(Clause 7.6 Control of Monitoring and Measuring Equipment)

MINIMUM CALIBRATION REQUIREMENTS

Item of Equipment	Purpose	Minimum Frequency
Weighbridge	To ensure correct weights	(i) 13 months (ii) In case of doubt (iii) Whenever significant maintenance or renewal is carried out
Temperature monitoring equipment	To ensure correct temperatures	(i) 13 months (ii) In case of doubt (as indicated by loading or storage temperature check) (iii) Whenever significant maintenance or renewal is carried out
Laboratory test equipment	To ensure correct functioning and accuracy	(i) 13 months (except kinematic viscosity tubes, see Note 1 below) (ii) In case of doubt (iii) Whenever significant maintenance or renewal is carried out
Blending Flow Meters	To ensure correct functioning	(i) 13 months (see Note 2 below) (ii) In case of doubt (as indicated by Product penetration values or loaded weight) (iii) Whenever significant maintenance or renewal is carried out

Notes:-

1. The minimum frequency for calibration of kinematic viscosity tubes is 5 years.
2. Calibration of blending flow meters may be carried out by on-going inspection of Product penetration values or loaded product weights.

APPENDIX F: SCHEDULE OF CERTIFICATION BODIES

Information on certification bodies accredited against this scheme can be found on the UKAS website www.ukas.com and to identify the certification bodies on the website:

- place the cursor onto 'about accreditation' in top grey menu bar
- move down to 'accredited bodies'
- move across to 'certification body schedules' and left click on this to takes you the list of schedules
- move down past 'key abbreviations' to 'search within the schedules' - click on 'advanced search'
- type 'Highway Sector Scheme No 15' in the box and tick the square by 'search UKAS documents'
- left click 'search'
- this then lists the certification bodies who are accredited and their details can be found by clicking on the appropriate links.

APPENDIX G: THE ROLE OF THE CERTIFICATION BODY

Scope

This appendix provides specific requirements relating to the necessary expertise and experience that certification bodies shall have in order to operate and administer the scheme in addition to the normal requirements of a United Kingdom Accreditation Service (UKAS) for accreditation.

G.A Qualifications of Certification Body

1. The Certification Body shall be accredited by UKAS to the requirements of ISO 17021 to issue certificates for quality management systems in accordance with BS EN ISO 9001:2008 and this Sector Scheme Document.
2. The Certification Body must be able to demonstrate to UKAS that it possesses and can maintain the necessary in-house expertise within its organization for the assessment of Organizations supplying Paving Bitumens.

G.B Evaluation

1. The Certification Body is responsible for ensuring that the evaluation team which carries out the audit for the Quality Management System Certificate, possess a demonstrable knowledge and understanding of the bitumen industry. Assessment of the certification body's ability to select a competent team will be made by UKAS during surveillance visits of the certification body. Typical knowledge and skills expected of the assessment team are as follows:
 - a) IRCA Registered Lead Auditor/Auditor of quality management systems or equivalent
 - b) knowledge of the controls necessary to ensure delivery of conforming product, including sampling and testing of Paving Bitumens.
2. Certification Bodies shall notify the Secretary of the Advisory Committee to the Scheme and the compiler of the Schedule of Suppliers when an organization is de-certificated. This will enable an accurate and extant database of certificated organizations to be maintained for public information and reference (<http://www.lantra-awards.co.uk/highways.htm>).
3. The Quality Management System Certificate of Registration, which shall include reference to this Sector Scheme Document, will be issued to a model that conforms to the requirements of UKAS and indicates competence under this Sector Scheme Document.
4. The Certification Bodies involved in certification to this scheme shall provide feedback on the effectiveness of the scheme to the Sector Scheme Advisory Committee for Paving Bitumens as part of the annual scheme review either by attendance at the review meeting or as a formal report to the meeting.
5. The Certification Body shall visit each Refinery, Terminal or Polymer Modified Bitumen Plant at least every 13 months and carry out Quality Management System audits. Every aspect of the Quality Management System shall be assessed over a 3 year period.

APPENDIX G1: GUIDANCE for ASSESSORS' AND OTHER AUDITORS' COMPETENCES

A Certification Body (CB) assessor or internal or second party auditor should be aware of the following when completing an audit:

G1.A General background to the scheme

- i) The reasons for development of the National Highway Sector Schemes (NHSS) and this scheme in particular, and for CB assessors examples of where its absence has caused concern/problems

This is contained in the introduction to the scheme, in this instance the scheme (NHSS 15) was initially developed with RBA.

- ii) Field of application

See NHSS 15 Scope

- iii) Contact details of those that can offer scheme specific assistance

Chairman of the Advisory Committee to the Sector Scheme - *see NHSS 15 Introduction.*

- iv) An overview of the end uses of paving bitumens

- v) Definitions and terminology that are particular to the scheme

See NHSS 15 Terms and Definitions

- vi) Training records of management, supervisors and operatives etc delivering the scheme services

See NHSS 15 Appendix C

- vii) Overview of reference documentation applicable to the scheme

See NHSS 15 Normative Reference and Appendix B

Knowledge of relevant European and British Standards for paving bitumens, in particular those relating to product conformity and type testing.

Knowledge of processes and their applicability involved in the manufacture, blending, sampling and testing of paving bitumens.

G1.B Summary of where the scheme introduces the interpretation of BS EN ISO 9001:2008

Clause	Interpretation (Y/N)	Comment
4. Quality Management System		
4.1	Y	
4.2	-	
4.2.1	N	
4.2.2	N	
4.2.3	N	
4.2.4	Y	
5. Management Responsibility		
5.1	Y	
5.2	N	
5.3	N	
5.4	-	
5.4.1	N	
5.4.2	N	
5.5	-	
5.5.1	N	
5.5.2	N	
5.5.3	N	
5.6	-	
5.6.1	Y	
5.6.2	N	
5.6.3	N	
6. Resource Management		
6.1	Y	
6.2	-	
6.2.1	N	
6.2.2	Y	See Appendix C
6.3	N	
6.4	N	
7. Planning and Product Realization		
7.1	Y	See Appendices A1, A2 & A3
7.2	-	
7.2.1	N	
7.2.2	Y	
7.2.3	N	
7.3	Y	
7.4	-	
7.4.1	N	
7.4.2	N	
7.4.3	N	
7.5	-	
7.5.1	Y	
7.5.2	N	
7.5.3	N	
7.5.4	N	
7.5.5	Y	
7.6	Y	See Appendix E
8. Measurement, Analysis and Improvement		
8.1	Y	See Appendices A1, A2 & A3
8.2	-	
8.2.1	N	
8.2.2	Y	
8.2.3	Y	
8.2.4	Y	
8.3	Y	
8.4	N	
8.5	-	
8.5.1	N	
8.5.2	N	
8.5.3	N	

G1.C Overview of *scheme activity*

1 Safe Working Practices

Health, safety and environmental issues are not covered by this document, but all parties involved should ensure that appropriate risk assessments are made and operations are in compliance with current legislation.

Additionally auditors shall receive health, safety and environmental induction training as deemed appropriate by the Organization to safeguard their well-being whilst on the Organization's premises.

Auditors shall promptly report any real or perceived concerns regarding health, safety and environmental issues to the Organization.

2 Training and Qualifications

Auditors should be aware that the people in the organization will need to:-

- Have achieved appropriate training and competency modules
- Be aware of and understand the system processes and documentation in which they are involved
- Been inducted on specific equipment (by employer) or if appropriate (i.e. under training) is supervised by a qualified person
- Aware of and understand the relevant requirements of this NHSS
- Aware of and understand the provisions for implementation of training in this NHSS.
- Hold relevant qualifications and authorizations

3 Maintain Plant and Equipment

Auditors should be aware of the importance of keeping plant and equipment properly maintained

4 Personnel Protection at Delivery Point

- Auditors should be sufficiently competent to make general observations on the effectiveness of the Organization's provisions for the protection of personnel at the delivery point. This is deemed to be satisfied by the Organization's drivers being trained in accordance with the RBA Code of Practice for the Safe Delivery of Bitumen Products which is confirmed by the driver holding a Bitumen Driver's Passport.

5 Environment

See clause 1. "Safe Working Practices" above

APPENDIX J1: FEEDBACK

Any observations or complaints relating to this document or the process described herein should be addressed to

Committee Secretary

Sector Scheme Advisory Committee for the Supply of Paving Bitumens
c/o UKAS
21 – 43 High Street
Feltham
Middlesex
TW13 4UN
Tel: 0208 917 8400
Fax: 0208 917 8500

Problem Identified:

Suggested Action:

Name:

Organization:

Address:

Contact details:

Date:

APPENDIX J2: COMPLAINTS TO CERTIFICATION BODIES

Complaints relating to certification matters in respect of alleged deficiencies in the product provided under this scheme should in the first instance be taken up with the Organization. In the event that the matter cannot be satisfactorily resolved written complaints should be made to the Organization's certification body, detailing the problem identified. Contact addresses can be found by following the procedure detailed in Appendix F.

Problem Identified:

Organization's Details:

Name:

Address:

Complaints

Name:

Organization:

Address:

Date:

Signed:

APPENDIX K: THE INTERPRETATION OF CERTIFICATES ISSUED BY CERTIFICATION BODIES

Certification Bodies (CB) issue Certificates of Registration (CoR) in a variety of styles as suits their particular house style. They may consist of a single CoR containing all the requisite information or the CoR may be a standard certificate with appendices or addendum attached providing the full scope of certification (services) and the location(s) where these services are offered by an Organization. In the latter case, the CoR refers to the relevant appendices or addenda, which form an integral part of the certificate.

A valid National Highway Sector Scheme (NHSS) CoR is only issued by a CB accredited by UKAS against the relevant NHSS (See Appendix F of this document) or by a recognised equivalent accreditation body.

As a minimum a valid CoR will contain the following information:

- The scope of registration including specific registration to BS EN ISO 9001:2008 and this NHSS including the scheme title e.g. National Highway Sector Scheme 15 – Sector Scheme for the Supply of Paving Bitumens.
- The identification of each and every location to which the CoR is applicable.
- The services/product offered by the Organization at each location identified on the CoR for NHSS 15 for the Supply of Paving Bitumens and any applicable categories with associated typical sub-categories where applicable.
- Logos for the NHSS, UKAS (or equivalent) and the CB.
- The name and address(es) of the Organization
- The validity of the certificate (ISO 9001 – 3 years)
- A unique reference number/code
- The signature of a relevant CB official with his name and title

The following are example models for the certification:

- Figure 1 shows the scope of registration for a generic certificate
- Figure 2 shows an example of a generic appendix.
- Figure 3 shows the scope of a typical certificate of registration for supply of paving bitumens
- Figure 4 shows an appendix to the certificate of registration for supply of paving bitumens

The italic text in square brackets indicates where specific text would need to be included.

Figure 1: Example Model Certificate of Registration

[Certification Body Name / Logo]

C E R T I F I C A T E O F R E G I S T R A T I O N

ORGANIZATION NAME]

[Organization Address]
[Town]
[County]
[Post Code]

[Certification Body Name] issues this certificate to the above named company after assessing the company's quality management system and finding it in compliance with

BS EN ISO 9001:2008 AND THE FOLLOWING NATIONAL HIGHWAY SECTOR SCHEMES

For the following scope of registration
[List of appropriate highways related works].
National Highways Sector Schemes
[Sector Scheme number and Title]
[Sector Scheme number and Title]
[Sector Scheme number and Title]

Certificate Number: *[Certificate Number]*
Issue Date *[date]*
Renewal Date *[date]*

Signature

[Name & Title of Certification Body Official]

[Certification Body standard footer: Name / Logo / UKAS Logo/NHSS Logo etc.]

Figure 2: Example Model Appendix

[Certification Body Name / Logo]

APPENDIX

To Certificate Number *[Certificate Number]* Appendix No. *[1]* Page 1
of *[1]*

This Appendix declares the scope of registration of the certificate granted to:

[ORGANIZATION NAME]

[Organization Address]
[Town]
[County]
[Post Code]

Scope of Registration
[List of appropriate highways related activities]
National Highway Sector Schemes
[Sector Scheme Number and Title]
[Sector Scheme Number and Title]
[Sector Scheme Number and Title]

[Certification Body standard footer: Name/ Logo/ UKAS Logo/NHSS Logo etc.]

Figure 3: Example Model Certificate of Registration for the supply of paving bitumens

[Certification Body Name / Logo]

C E R T I F I C A T E O F R E G I S T R A T I O N

[ORGANIZATION NAME]
[Organization Address]
[Town]
[County]
[Post Code]

[Certification Body Name] issues this certificate to the above named company after assessing the company's quality management system and finding it in compliance with
BS EN ISO 9001:2008 AND SECTOR SCHEME 15

For the following scope of registration
Supply of Paving Bitumens:

National Highways Sector Schemes
15 – Sector Scheme for Supply of Paving Bitumens

Certificate Number: *[Certificate Number]*
Issue Date *[date]*
Renewal Date *[date]*

Signature

[Name & Title of Certification Body Official]

[Certification Body standard footer: Name / Logo / UKAS Logo / NHSS Logo etc.]

Figure 4: Example Model Appendix to Certificate of Registration for the supply of paving bitumens

[Certification Body Name / Logo]

APPENDIX 01

To Certificate Number	<i>[Certificate Number]</i>	Appendix No. <i>[1]</i> Page 1 of <i>[1]</i>
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This Appendix declares the scope of registration of the certificate granted to:

[ORGANIZATION NAME]

*[Organization Address]
[Town]
[County]
[Post Code]*

Scope of Registration:

Supply of Paving Bitumens

National Highway Sector Schemes

15 – Sector Scheme for the Supply of Paving Bitumens

***[Certification Body standard footer: Name/ Logo/ UKAS Logo/NHSS
Logo etc.]***

APPENDIX L: GUIDANCE TO CLIENTS

Schedule of Suppliers

Lantra Awards have established and manage a schedule of registered companies that have been registered to National Highways Sector Schemes; free access to the schedule is obtained by logging on to the Lantra Awards website www.scheduleofsuppliers.com . However, it should be noted that only those Organizations that pay for entry onto the schedule are listed. The list of all registered companies is available by email at NHSSscheduleofsuppliers@lantra.co.uk .