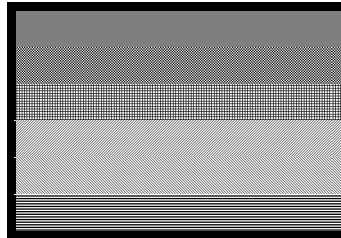


Material Source Approval

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



Source approval is required on all capping materials, granular sub-bases, bituminous base courses, bituminous binder courses and bituminous surface course materials.

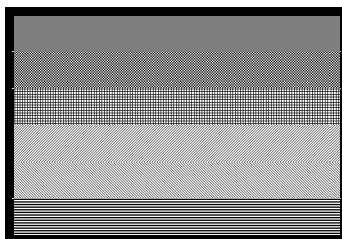
All sampling and testing shall be carried out by a laboratory/contractor holding the relevant and current UKAS accreditations for each test type and material.

Recycled aggregate source approval results will need to be accompanied by the suppliers' WRAP protocol documentation.

All source approval testing must be carried out in accordance with the Specification for Highway Works Volume 1 and to the relevant current BS/BS EN standards and the materials must comply with the specification requirements.

Testing Requirements for Subgrade/Formation materials

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



In Situ testing

Finished subgrade/formation level CBR Value determinations shall be conducted by In-situ CBR Tests (in accordance with BS1377: Part 9: 1990) or by In-situ Plate Loading Tests (in accordance with ACS documented procedure or other method approved by SGC).

(CBR Value test method is determined by material type and size. Generally speaking; Sands/Clays <20mm size will be by CBR test; whereas material with >20mm present would require Plate Loading tests).

The required frequency of CBR Value tests is 1 per 25 linear metres or at the discretion of SGC.

Other in-situ testing may be required depending on site conditions. Additional tests may be requested, if deemed necessary by SGC. These could be as follows:

In-situ permeability in accordance with BRE Digest 365 (Soil Infiltration Test)

Redox potential in accordance with BS 1377 : Parts 3 or 9: 1990.

Resistivity in accordance with BS 1377: Parts 3 or 9 : 1990.

Handheld Dynamic Cone Penetration (DCP) testing in accordance with TRL PROJECT REPORT PR/INT/277/04.

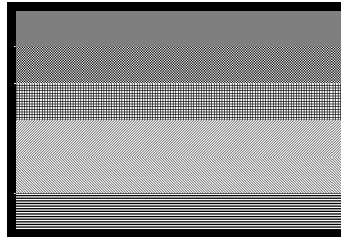
Laboratory testing

Chemical contamination suite ACS ENV2 in accordance with in-house test procedures
Moisture Content in accordance with BS1377 : Part 2: 1990

Moisture Content in accordance with BS EN 1097

Testing Requirements for Capping Materials

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



In Situ Testing

On finished surfaces of capping layers In-situ Plate Loading Tests shall be conducted in accordance with ACS documented procedure or other method approved by SGC; at the rate of 1 per 25 linear metres. This will report an estimated CBR value determined in accordance with : DMRB : IAN 73/06 Rev 1(2009) : Clause 7.14 - Empirical Relationship.

In-situ density testing by Nuclear Density Meter (NDM) and/or Sand Replacement Test (SRT) may be specified at the discretion of SGC.

On Site Sampling

Sampling of capping material for laboratory analysis shall be carried out by an organisation approved by UKAS holding the relevant and current accreditation. Samples of granular Capping shall be taken at the minimum rate of 1 per 400 tonnes of stockpiled / delivered material (1 per 200 tonnes for recycled materials) with a minimum of 2 samples per operation.

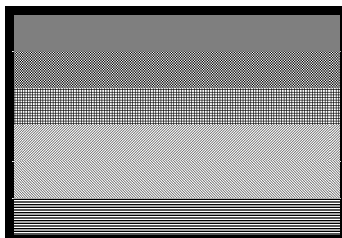
Laboratory testing

Source approval and routine laboratory testing will be carried out in accordance with the specification for highway works volume 1 series 600 table 6/1.

Chemical contamination suite ACS ENV2 in accordance with in-house test procedures

Testing Requirements for Sub-base Materials

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



In Situ testing

On finished surfaces of granular sub base layers, In-situ Plate Loading Tests shall be conducted in accordance with ACS documented procedure or other method approved by SGC; at the rate of 1 per 25 linear metres. This will report an estimated CBR value determined in accordance with : DMRB: IAN 73/06 Rev 1(2009) Clause 7.14 - Empirical Relationship.

In-situ density testing by Nuclear Density Meter(NDM) and/or Sand Replacement Test (SRT) on the sub base layers will be carried out at the minimum rate of 1 test per 25 linear meters per compacted layer.

On Site Sampling

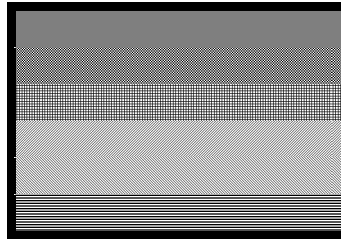
Sampling of capping material for laboratory analysis shall be carried out by an organisation approved by UKAS holding the relevant and current accreditation. Samples of granular sub base shall be taken at the minimum rate of 1 per 400 tonnes of stockpiled / delivered material (1 per 200 tonnes for recycled materials) with a minimum of 2 samples per operation.

Laboratory testing

Source approval and routine laboratory testing will be carried out in accordance with the specification for highway works volume 1 series 800 : Clauses 801, 803, 804,805,806 and 807.

Testing Requirements for Base Materials

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



Site monitoring

“In-hopper” delivery temperature and “exit screed” rolling temperature readings in accordance with BS EN 12697-13:2000.

A record will be made of the type and number of compaction plant used during the work together with rolling patterns, joint cutting /painting.

Records will be made of tack/bond coat application and weather conditions.

Records of substrate conditions will be noted prior to and during laying/working time.

Laying techniques and delivery ticket information from every load will be recorded

Representative samples will be taken in accordance with EN 12697-27 : 2001 at a rate of one per 80 tonne laid for all base courses.

In Situ testing

Compaction checks as per clause 929 of the Specification for Highway Works and BS 594987 2007 for compaction control by Nuclear Density Meter Testing and/or In-situ Bituminous Coring.

Laboratory testing

In-situ and Refusal Air Voids determined in accordance with BS EN 12697-8:2003.

Reference/Refusal Density! Percentage Refusal Density in accordance with BS EN 12697- 9:2002

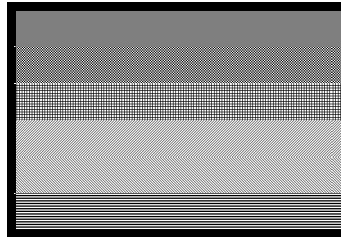
Determination of Bulk Density to BS EN 12697- 6:2012

Determination of Maximum Density in accordance with BS EN 12697-5 : 2009
CLAUSE 9.2

Soluble binder and mineral aggregate particle size distribution in accordance with
BS EN 12697-1: 2012 (Clause B.1.4.3 & B.2.2) & BS EN 12697-2 : 2002

Testing Requirements for Binder Course Materials

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



Site monitoring

“In-hopper” delivery temperature and “exit screed” rolling temperature readings in accordance with BS EN 12697-13:2000.

A record will be made of the type and number of compaction plant used during the work together with rolling patterns, joint cutting /painting.

Records will be made of tack/bond coat application and weather conditions.

Records of substrate conditions will be noted prior to and during laying/working time.

Laying techniques and delivery ticket information from every load will be recorded

Representative samples will be taken in accordance with EN 12697-27 : 2001 at a rate of one per 80 tonne laid for all binder courses.

In Situ testing

Compaction checks as per clause 929 of the Specification for Highway Works and BS 594987 2007 for compaction control by Nuclear Density Meter Testing and/or In-situ Bituminous Coring.

Surface regularity will be checked using a Rolling Straight Edge (as per TRL SR 290).

Laboratory testing

¶In-situ and Refusal Air Voids determined in accordance with BS EN 12697-8:2003.

Reference/Refusal Density/ Percentage Refusal Density in accordance with BS EN 12697- 9:2002

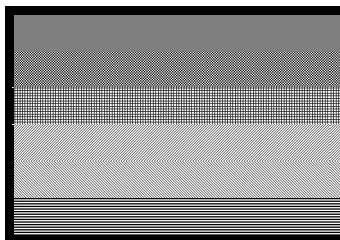
Determination of Bulk Density to BS EN 12697- 6:2012

Determination of Maximum Density in accordance with BS EN 12697-5 : 2009
CLAUSE 9.2

Soluble binder and mineral aggregate particle size distribution in accordance with
BS EN 12697-1: 2012 (Clause B.1.4.3 & B.2.2) & BS EN 12697-2 : 2002

Testing Requirements for Surface Course Materials

Surface Course
Binder Course
Base
Sub-base
Capping
Subgrade



Site monitoring

“In-hopper” delivery temperature and “exit screed” rolling temperature readings in accordance with BS EN 12697-13:2000.

A record will be made of the type and number of compaction plant used during the work together with rolling patterns, joint cutting /painting.

Records will be made of tack/bond coat application and weather conditions.

Records of substrate conditions will be noted prior to and during laying/working time.

Laying techniques and delivery ticket information from every load will be recorded

Representative samples will be taken in accordance with EN 12697-27 : 2001 at a rate of one per 60 tonne laid for all surface courses.

In Situ testing

Surface regularity will be checked using a Rolling Straight Edge (as perTRL SR 290).

Surface Texture Depth checks will be carried out in accordance with BS 598: Part 105: 2000(Sand Patch) and in case of doubt using Glass Beads to BS EN 13036-1:2002

Compaction checks if required by Nuclear Density Meter Testing (more commonly applicable to Base and Binder layers).

Laboratory testing

Determination of Maximum Density in accordance with BS EN 12697-5 : 2009 CLAUSE 9.2 (more commonly applicable to Base and Binder layers).

Soluble binder and mineral aggregate particle size distribution in accordance with BS EN 12697-1 : 2012 (Clause B.1.4.3 & B.2.2) & BS EN 12697-2 : 2002