Australian Standard®

Methods of sampling and testing asphalt
Method 1.2: Sampling—Coring method

PREFACE

This Standard was prepared by the Standards Australia Committee CE-006, Asphalt and Sprayed Surfacing, to supersede, in part, AS 2891.1—1986, *Methods of sampling and testing asphalt*, Method 1: *Sampling of asphalt*.

METHOD

1 SCOPE

This Standard sets out two methods for obtaining cores of compacted asphalt from pavements and preparing the cores for testing. The Standard does not include methods of sampling asphalt that has been placed but not compacted on a pavement and does not address the selection of sampling sites.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
2891	Methods of sampling and testing asphalt
2891.1.1	Method 1.1: Sampling—Loose asphalt
2891.1.3	Method 1.3: Sampling—Asphalt from slabs

3 DEFINITIONS

For the purposes of this Standard, the definitions below apply.

3.1 Asphalt

A mixture of bituminous binder and aggregate with or without mineral filler.

3.2 Sample site

The position within a lot or section of the pavement at which a core sample is extracted from the pavement.

4 SAFETY PRECAUTIONS

This Standard may involve hazardous materials, operations and equipment. This Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

5 APPARATUS

The following apparatus may be required to undertake the sampling and sample preparation procedures described in Sections 7 and 8:

(a) *Coring machine* Diamond tipped core cutter with a drilling head capable of driving core barrels of approximate diameter 100 mm to 150 mm (see Note). The cutter shall have an arrangement for cooling and cleaning the cutting face using either chilled water or a combination of dry ice and compressed air.

NOTE: The size of the core cutter may need to be specific to the testing requirements, e.g., specimens for modulus testing. Larger diameter specimens may also be required for research testing.

(b) *Core sawing machine* Masonry saw with a diamond tipped blade. The saw shall have an arrangement such that the cutting edge can be cooled with either water or compressed air. Where compressed air is used the asphalt shall have been cooled prior to cutting.

(c) *Insulated cooler* or other container when using dry ice.

(d) *Box* for transporting cores.

(e) *Core extraction tool(s)* for recovering core samples from a pavement.

(f) *Ruler or vernier calliper* graduated to the nearest 1 mm.

6 SAMPLE SIZES

The dimensions of core test specimens shall be commensurate with the requirements of the intended test. Core samples for the determination of bulk density shall be not less than 95 mm in diameter. Each test specimen shall not include more than one layer of asphalt as placed in the pavement.

7 SAMPLING PROCEDURE

7.1 General

Two methods of obtaining cores are described in this Standard:

(a) Wet coring method.

(b) Dry coring method.

In determining the most appropriate method, the future testing of the core shall be considered.

After extraction from the pavement, samples shall be placed on a flat surface and be protected from damage and exposure to direct sunlight and all other forms of heat.

7.2 Wet coring method

The procedure for obtaining a core from a sample site shall be as follows:

(a) Determine the boundaries of the section of asphalt to be sampled.

(b) Select the location of the sample sites in accordance with an appropriate sampling plan.

(c) Position the coring machine over the asphalt ensuring that the barrel of the core cutter is approximately perpendicular to the road surface.

(d) Start the core cutter then lower the bit carefully to the asphalt, turn on the water supply to the bit and commence cutting the core.

(e) Regulate the rate of feed of the core cutter and the speed of the bit so that the core is cut cleanly without clogging of the bit, stalling of the cutter or the generation of excess heat in the asphalt.

(f) When the required depth has been reached, withdraw the bit from the asphalt and remove the core from the pavement without distorting or damaging the asphalt. If the core is bonded to an underlying layer of material, insert the core extractor between the core and the wall of the core hole and lever the core carefully so as to avoid distorting the core. If the core refuses to release, commence cutting again to a depth where release can be obtained.

(g) Inspect the core for damage. If the core is damaged, cut a new core adjacent to the existing hole in accordance with Steps (c) to (f).

(h) Place the core on its flattest face in an insulated transport box protected from the sun during transport.

(i) Record and identify each core in accordance with Clause 9.

7.3 Dry coring method

The procedure for obtaining a core from a sample site shall be as follows:

(a) Determine the boundaries of the section of asphalt to be sampled.

(b) Select the location of the sample sites in accordance with an appropriate sampling plan.

(c) Place dry ice on the surface of the asphalt at the site to be cored approximately 20 min prior to coring. Place sufficient dry ice to cover an area with a diameter approximately 40 mm greater than the diameter of the core.

(d) Position the coring machine over the chilled asphalt ensuring that the barrel of the core cutter is approximately perpendicular to the road surface.

(e) Start the core cutter then lower the bit carefully to the asphalt, turn on the air supply to the bit and commence cutting the core.

(f) Regulate the rate of feed of the core cutter, the speed of the bit and the air supply so that the core is cut cleanly without clogging of the bit, stalling of the cutter or the generation of excess heat in the asphalt.

(g) When the required depth has been reached, withdraw the bit from the asphalt and remove the core from the pavement without distorting or damaging the asphalt. If the core is bonded to an underlying layer of material insert the core extractor between the core and the wall of the core hole and lever the core carefully so as to avoid distorting the core. If the core refuses to release, commence cutting to a depth where release can be obtained.

(h) Inspect the core for damage. If the core is damaged, cut a new core adjacent to the existing hole in accordance with Steps (c) to (g).

(i) Place the core on its flattest face in an insulated transport box chilled with dry ice and protected from the sun during transport.

(j) Record and identify each core in accordance with Clause 9.

8 PREPARATION OF TEST SPECIMENS

8.1 Preparation of specimens for bulk density and modulus

The procedure for preparing specimens from cores shall be as follows:

(a) Identify and mark any interface between adjacent layers of asphalt and, if required, determine the average thickness of each layer of asphalt, to the nearest millimetre.