

Master Specification

Part RD-BP-S4

Supply of Cold Mix Asphalt

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RD-BP-S4 Supply of Cold Mix Asphalt

1 General

- a) This Master Specification Part sets out the requirements for the supply of cold mix asphalt for maintenance patching using fluxed binder for either dense graded or open graded termed standard cold mix asphalt including:
- i) the documentation requirements, as set out in section 2;
 - ii) the material requirements, as set out in section 3;
 - iii) the requirements for cold asphalt mixes, as set out in section 4;
 - iv) the requirements for the manufacture and delivery of mixes, as set out in section 5;
 - v) the sampling and testing requirements, as set out in section 6;
 - vi) the test procedures, as set out in section 7; and
 - vii) the verification and testing requirements, as set out in section 8.
- b) The supply of cold mix asphalt for maintenance patching must comply with the Reference Documents, including:
- i) AS 1141.11.1 Methods for sampling and testing aggregates, Method 11.1: Particle size distribution - Sieving method;
 - ii) AS 2008 Bitumen for pavements;
 - iii) AS 2150 Asphalt - A guide to good practice;
 - iv) AS 2341.12 Methods of testing bitumen and related roadmaking products, Method 12: Determination of penetration;
 - v) AS 2891.2.1 Methods of sampling and testing asphalt, Method 2.1: Sample preparation - Mixing, quartering and conditioning of asphalt in the laboratory;
 - vi) AS 2891.3.3 Methods of sampling and testing asphalt, Method 3.3: Binder content and aggregate grading - Pressure filter method;
 - vii) AS 4283 Cold mix asphalt for maintenance patching (withdrawn version, replacement standard(s) not to be applied unless expressly required by this Master Specification Part);
 - viii) Austroads Test Method ATM-T231 Deformation Resistance of Asphalt Mixtures by the wheel tracking test;
 - ix) Department Test Procedure TP226 Sampling of Soil, Aggregates and Rocks (available from: https://dit.sa.gov.au/standards/test_procedures);
 - x) Department Test Procedure TP425 Sampling of Asphalt (available from: https://dit.sa.gov.au/standards/test_procedures); and
 - xi) Department Test Procedure TP652 Determination of Viscosity by Haake Viscobalance (available from: https://dit.sa.gov.au/standards/test_procedures).
- c) Provision is also made in this Master Specification Part for cold mix asphalt suitable for maintenance patching based on propriety products termed modified cold mix asphalt.
- d) The definitions in AS 4283 Cold Mix Asphalt for Maintenance Patching (withdrawn) apply to this Master Specification Part.

2 Documentation

2.1 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must include:

- a) details of the proposed modified cold mix asphalt as required by section 4.2b); and
- b) details of the Contractor’s proposed standard cold mix asphalt and NATA certification as required by section 4.3a).

2.2 Quality Management Records

In addition to the requirements of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable), the Quality Management Records must include:

- a) the samples and documentation required by section 6;
- b) the test results as required by section 7; and
- c) the verification requirements and records as required by section 8.

3 Materials

The Contractor must ensure that all cold mix asphalt materials supplied for maintenance patching comply with the following requirements:

- a) binder, flux and cutter must satisfy the requirements of RD-BP-S1 “Supply of Bituminous Material”; and
- b) aggregate, sand and mineral filler must satisfy the requirements of RD-PV-S1 “Supply of Pavement Materials”.

4 Cold asphalt mix requirements

4.1 Standard cold mix asphalt

The Contractor must ensure that all standard cold mix asphalt supplied for maintenance patching complies with the following requirements:

- a) the standard cold mix asphalt must be designed to satisfy the requirements of AS 4283 Cold mix asphalt for maintenance patching (withdrawn), as varied by this section 4.1; and
- b) the standard cold mix asphalt must:
 - i) be open grade OG7 or dense grade AC7; and
 - ii) meet the requirements of Table RD-BP-S4 4-1.

Table RD-BP-S4 4-1 Target mix requirements for standard cold mix asphalt

Mix type	Open graded (OG7)	Dense graded (AC7)
Fluxed types and content	Nominate (refer section 4.3)	Nominate (refer section 4.3)
Residual bitumen: C170 or C320	5.1% by mass total mix	4.7 - 5.0% by mass total mix
Design grading	AS 4283 Cold mix asphalt for maintenance patching	AS 4283 Cold mix asphalt for maintenance patching

4.2 Modified cold mix asphalt

- a) The Contractor must ensure that all modified cold mix asphalt supplied for maintenance patching:
 - i) is superior in performance over the standard cold mix asphalt; and
 - ii) meets the requirements set out in this Master Specification Part including rut resistance depth of less than 10 mm at standard conditions, and without shoving or delamination within 6 months of trafficking.
- b) The Contractor must submit as part of the Construction Documentation details of the proposed modified cold mix asphalt confirming to section 4.2a).

4.3 Nominated mix

- a) The Contractor must submit as part of the Construction Documentation, details of the Contractor's proposed standard cold mix asphalt as detailed in section 4.3c), together with a certificate from a laboratory with appropriate NATA accreditation, stating that the standard cold mix asphalt and its constituents meet the requirements of this Master Specification Part.
- b) For a nominated cold mix asphalt, the aggregate grading and binder content and their sources must be known as the "nominated combined aggregate grading" and "nominated binder content" respectively.
- c) For the purposes of section 4.3a), the details of nominated standard cold mix asphalt must include:
 - i) constituent materials:
 - A. aggregates, including source and geological type;
 - B. added mineral filler, including type and source;
 - C. binder, including source, class or grade;
 - D. bitumen adhesion agent, including name, type and source; and
 - E. relevant test results verifying material properties; and
 - ii) mix design:
 - A. nominated combined aggregate grading;
 - B. nominated binder content;
 - C. nominated flux content and type, including any seasonal adjustment;
 - D. mixing plant location, description and capacity; and
 - E. test results of the properties in Table RD-BP-S4 4-1 of representative material of nominated mix produced by the mixing plant from which the cold mix is to be supplied.

5 Manufacture and delivery of mixes

The Contractor must ensure that the manufacture and delivery of cold mix asphalts for maintenance patching satisfy the following requirements:

- a) standard cold mix asphalt must be manufactured to replicate the nominated mix design with grading and binder tolerances to be within the requirements of AS 2150 Hot Mix Asphalt - A Guide to Good Practice;
- b) the cold mix asphalt must be:
 - i) produced under uniform conditions; and

- ii) essentially homogeneous with respect to composition and general appearance;
- c) the cold mix asphalt must be delivered within 3 days from production; and
- d) modified cold mix must be delivered in propriety packaging in good condition to preserve performance properties.

6 Sampling and testing

- a) The Contractor must ensure that the cold mix asphalts for maintenance patching comply with the following sampling and testing requirements:
 - i) in addition to samples taken for verification testing, the Contractor must provide samples of the cold mix asphalts for product auditing purposes in accordance with Table RD-BP-S4 6-1;
 - ii) the Contractor must provide notification when sampling has occurred and deliver samples to the Principal's nominated facility;
 - iii) the Contractor must provide documentation to confirm that the samples have been received at the Principal's nominated facility; and
 - iv) all samples must be clearly marked and traceable to the relevant Work Lot in accordance with PC-QA1 "Quality Management Requirements" or PC-QA2 "Quality Management Requirements for Major Projects" (as applicable).
- b) All samples and documentation contemplated by section 6a) must be provided to the Principal as part of the Quality Management Records.

Table RD-BP-S4 6-1 Sampling and testing for product auditing

Product	Sampling	Sampling frequency	Sample testing
Standard cold mix asphalt	1 sample (min. 6 kg per sample)	Per truck or delivery	As requested by the Principal
Residual bitumen ⁽¹⁾	1 sample (minimum of 1 L)	Per Project	

Table notes:

(1) Samples are not required where a Departmental arrangement exists.

7 Test procedures

- a) The Contractor must carry out testing of the cold mix asphalt supplied for maintenance patching in accordance with the requirements of this Master Specification Part, including the Reference Documents and the test procedures listed in Table RD-BP-S4 7-1.
- b) The Contractor must provide the results of the testing to the Principal as part of the Quality Management Records.

Table RD-BP-S4 7-1 Test procedures

Test	Test procedure
Sampling of raw materials: aggregates	Department Test Procedure TP226 Sampling of Soil, Aggregates and Rocks
Sampling of raw materials: bitumen and polymer modified binder	AS 2008 Bitumen for pavements
Sampling of raw materials: mineral filler	Department Test Procedure TP226 Sampling of Soil, Aggregates and Rocks
Sampling of asphalt	Department Test Procedure TP425 Sampling of Asphalt
Sample preparation: splitting and conditioning of asphalt in the laboratory	AS 2891.2.1 Methods of sampling and testing asphalt, Method 2.1: Sample preparation - Mixing, quartering and conditioning of asphalt in the laboratory

Test	Test procedure
Binder content: pressure filtration method	AS 2891.3.3 Methods of sampling and testing asphalt, Method 3.3: Binder content and aggregate grading - Pressure filter method
Particle size distribution by dry sieving	AS 1141.11 Methods for sampling and testing aggregates, Method 11.1: Particle size distribution — Sieving method
Deformation resistance of asphalt mixtures by the wheel tracking test	Austrroads Test Method ATM-T231 Deformation Resistance of Asphalt Mixtures by the wheel tracking test

8 Verification requirements and records

The Contractor must supply written verification as part of the Quality Management Records that the requirements listed in Table RD-BP-S4 8-1 have been complied with.

Table RD-BP-S4 8-1 Test records

Subject	Property	Test frequency	Acceptance limits
Residual bitumen	Viscosity 60° C	1 test per every 6 months of production of part thereof	140 - 200 pa.s
Residual bitumen	Penetration 25° C	1 test per every 6 months of production of part thereof	Minimum 62
Manufacture of mixes	Binder content and aggregate grading	1 test per every 6 months of production of part thereof	As required by AS 2150 Hot Mix Asphalt - A Guide to Good Practice