

Master Specification

Part RD-BP-C8

Application of Pavement Crack Sealant

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RD-BP-C8 Application of Pavement Crack Sealant

1 General

This Master Specification Part sets out the requirements for the sealing of cracks using hot placed elastomeric / crumb rubber sealants in existing asphalt and spray seal pavements to prevent ingress of water into the pavement including:

- a) the documentation requirements, as set out in section 2;
- b) the material requirements, as set out in section 3;
- c) the requirements for sealant work method, as set out in section 4;
- d) the performance requirements, as set out in section 5;
- e) the requirements for sampling and testing, as set out in section 6; and
- f) the verification requirements and records, as set out in section 7.

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 crack sealant and evidence that it complies with RD-BP-S3 “Supply of Pavement Crack Sealant”, in accordance with section 3.1b);
- b) details of work method including procedures for the application of the sealant for each crack sealing operation type and treated crack width range;
- c) sealant manufacturer’s instructions and product performance data;
- d) evidence confirming performance characteristics are met;
- e) details of plant to be used in application of crack sealant and demonstration of its appropriateness; and
- f) evidence confirming the crack sealant is applicable to the sites to be crack sealed, in accordance with section 4.5b).

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) skid resistant test results as required by section 5.1b);
- b) the crack sealant test results as required by section 6a); and
- c) the verification requirements and records as required by section 7.

3 Materials

3.1 General

- a) The Contractor must use a crack sealant compliant with RD-BP-S3 “Supply of Pavement Crack Sealant”.

- b) The Contractor must submit details of the crack sealant and evidence that it complies with RD-BP-S3 "Supply of Pavement Crack Sealant" as part of the Construction Documentation.

3.2 Aggregate

- a) The Contractor must ensure that, if blinding is necessary to meet tackiness requirements, the materials are compliant with RD-PV-S1 "Supply of Pavement Materials".
- b) Sand must be either Type Sa-B or Sa-C.
- c) Aggregate must be sealing aggregate Type SA7-5 or SA5-2.

4 Sealant work method

4.1 General

A Work Lot for crack sealing purposes includes the pavement crack-sealed over 7 days.

4.2 Traffic

- a) The Contractor must ensure that traffic control for crack sealing purposes is undertaken in accordance with the requirements of PC-SM1 "Traffic and Pedestrian Management".
- b) The Contractor must ensure that extrusion or picking up of the sealant on vehicle tyres does not occur.

4.3 Temperature

Hot sealants must not be placed if the pavement is damp or the pavement temperature is below 0°C.

4.4 Pavement surface preparation

- a) The Contractor must ensure that crack sealing is not carried out where excessive cracks exist such as in crocodile cracking. This includes any area where there is a closed cell of less than 150 mm in length and width.
- b) The Contractor must apply the following treatments to the pavement surface at the crack location:
 - i) using a lance to thoroughly clean the cracks of all foreign material, including old crack sealant (heating capacity is optional, but if hot air is utilised, care must be exercised to keep the lance moving to avoid burning the surrounding pavement);
 - ii) brushing or other techniques to remove locked in detritus as required; and
 - iii) ensuring the crack is as dry as practicable, using heating if necessary.
- c) For efficient removal of foreign materials from within cracks, the Contractor must ensure that equipment supplies compressed air to a minimum pressure of 800 kPa.

4.5 Application of sealant

- a) A tack coat appropriate to the sealant must be applied in preparation for the sealant if required by the manufacturer's instructions. The Contractor must ensure that the tack coat is fully dry before sealant application.
- b) The Contractor must demonstrate in the Construction Documentation that the crack sealant is applicable to the sites to be crack sealed taking into account pavement type, climate for the time of year, moisture characteristics, and crack widths.
- c) Sealant must be applied to crack widths recommended by the crack sealant manufacturer.
- d) Heating of hot sealant must be carried out within the binder temperature range as recommended by the manufacturer.

- e) The Contractor must ensure that localised sealant overheating is prevented by continuously agitating the sealant while heating or by using jacketed heaters with a calibrated temperature measuring device. Prolonged heating and reheating of sealant must be avoided.
- f) Where there is evidence of deterioration in the performance of the sealant during the course of the crack-sealant work, additional test sections are required to be tested to demonstrate compliance with this Master Specification Part.
- g) Crack sealing must not be applied to OGA wearing courses.

4.6 Non-complying application of sealant

- a) Non-compliant application of sealant includes:
 - i) over application of sealant (e.g. at crocodile cracking);
 - ii) too large an application band width;
 - iii) dripping of sealant where not required;
 - iv) missing cracks;
 - v) wrong use of crack sealant for crack width or pavement type; and
 - vi) not meeting other performance requirements.
- b) In the event of non-compliant application of sealant, in accordance with section 4.6a), the Non-Conformance regime of PC-QA1 “Quality Management Requirements” or PC-QA2 “Quality Management Requirements for Major Projects” (as applicable) will apply.

5 Performance requirements

5.1 Skid resistance

- a) The Contractor must ensure that the skid resistance of the crack sealant is not less than the skid resistance levels specified in Table RD-BP-C8 5-1.
- b) Where required by the Contract Documents, the following procedure must be used to demonstrate compliance with this section 5.1 and the test results included as part of the Quality Management Records:
 - i) the Contractor must prepare test sections at 2 or more locations, one with a road surface with good texture and one with a road surface with poor texture. Each individual test section must consist of 100 mm wide bands applied transversely across lane and longitudinally for 2 m in a wheel path; and
 - ii) the Contractor must arrange for skid resistance tests to be carried out on each wheel path at each trial section which achieve the minimum requirements specified in Table RD-BP-C8 5-1.

Table RD-BP-C8 5-1 Skid resistance Griptester

Road situation	Minimum grip No.	Maximum vehicle speed (km/h)
Difficult sites - steep grades, traffic light approaches, tight bends, roundabouts	0.50 - 0.55	60 - 80
Urban arterial roads	0.45	60
Rural arterial roads	0.45	110
Urban / lightly trafficked	0.40	60
Urban arterial expressway	0.45	90 - 100

5.2 Tackiness

The Contractor must ensure that tackiness is such that no pick-up of sealant by vehicle tyres will occur after 5 minutes from application.

6 Sampling and testing

- a) The Contractor must undertake sampling and testing in accordance with Table RD-BP-C8 6-1 and include the test results in the Quality Management Records.
- b) The Contractor must undertake any additional audit samples from the Site as may be requested by the Principal to verify that the crack sealant meets the requirements of the Master Specification.

Table RD-BP-C8 6-1 Sealant sampling and test requirements

Test purpose	Frequency	Acceptance limits
Product quality control - sealant test properties	Minimum of one per Project	RD-BP-S3 "Supply of Pavement Crack Sealant"
Product identification	One per Project if required by the Contract Documents	RD-BP-S3 "Supply of Pavement Crack Sealant"
Placed product skid resistance	One per Project if required by the Contract Documents	As set out in section 5.1

7 Verification requirements and records

- a) The Contractor must provide as part of the Quality Management Records within 5 days of the completion of each Work Lot, a report which includes the following details:
 - i) location of work - road name and location as appropriate;
 - ii) details of applied crack sealant;
 - iii) daily or more frequent start and finish times;
 - iv) pavement temperatures;
 - v) area of pavement treated in square meters (or length of crack sealing undertaken if specified in the Contract Documents);
 - vi) sealant test results and litres used;
 - vii) average estimated crack width;
 - viii) Non-Conformances; and
 - ix) any additional documentation relevant for long term performance evaluation.
- b) The report required by section 7a) for each Work Lot must be documented on a single sheet.