

Master Specification

Part RD-EW-S1

Supply of Geotextiles

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RD-EW-S1 Supply of Geotextiles

1 General

- a) This Master Specification Part specifies the requirements for the supply of geotextiles, used as separation, filtration, or drainage elements in earthworks and pavement construction and paving fabrics used in bituminous spray sealing applications, including:
 - i) the documentation requirements, as set out in section 2;
 - ii) the property requirements of geotextile materials, as set out in section 3;
 - iii) the property requirements of geotextiles, as set out in section 4;
 - iv) the sampling and testing requirements, as set out in section 5;
 - v) the storage, packing and identification requirements, as set out in section 6;
 - vi) the test procedures, as set out in section 7;
 - vii) the measurement requirements, as set out in section 8; and
 - viii) the Hold Point requirements, as set out in section 9.
- b) Geotextiles must comply with the Reference Documents, including:
 - i) AS 3706 Geotextiles - Methods of test; and
 - ii) ASTM D6140 Standard Test Method to Determine Asphalt Retention of Paving Fabrics Used in Asphalt Paving for Full-Width Applications.

2 Documentation

2.1 Construction Documentation

In addition to the requirements of PC-CN3 “Construction Management”, the Construction Documentation must nominate the bitumen retention rate for paving fabrics used as part of spray seals as required by section 4.2b).

2.2 Pre-installation Quality Management Records

- a) 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:
 - i) the results of all testing conducted in accordance with section 5; and
 - ii) certificates of compliance from a NATA certified testing authority, certifying that each geotextile used complies with the requirements of this Master Specification Part.
- b) The records required in section 2.2a) must be submitted at least 5 Business Days prior to delivery of the geotextiles and will constitute a **Hold Point**. Installation of the relevant geotextiles must not commence until the Hold Point has been released.

3 Properties of geotextile materials

- a) Geotextiles must consist of woven or non-woven fabric manufactured from synthetic fibres of a long chain polymer such as polypropylene, polyethylene, polyester or similar.
- b) After forming, geotextiles must be processed so that the fibres retain their relative positions with respect to each other.

- c) Geotextiles must be free from Defects or flaws which significantly affect their physical or filtering properties.
- d) If geotextiles are to be joined, the thread used for joining must be high strength polyolefin, polyester, or Kevlar.
- e) Non-woven geotextiles must have filaments bonded by needle punching, heat, or chemical bonding processes.
- f) Woven geotextiles must have filaments interlaced in 2 sets, mutually at right angles, and one set must be parallel to the longitudinal direction of the geotextile.
- g) Geotextiles must be stabilised against deterioration due to ultraviolet radiation.

4 Properties of geotextiles

4.1 Geotextiles used for filtration, drainage and separation

- a) The geotextile strength rating, G, must be calculated as $G = \sqrt{L \times h50}$, where:
 - i) L = plunger failure load (N), as determined by AS 3706.4 Geotextiles - Methods of test - Determination of burst strength - California bearing ratio (CBR) - Plunger method; and
 - ii) h50 = normalised drop height (mm), as determined by AS 3706.5 Geotextiles - Methods of test - Determination of puncture resistance - Drop cone method.
- b) The geotextile strength rating, G, calculated in accordance with section 4.1a) must:
 - i) be greater than 2,000 for type 1 geotextiles; and
 - ii) be greater than 3,000 for type 2 geotextiles.

4.2 Geotextiles used in spray seals (paving fabrics)

- a) The minimum melt temperature of geotextiles used in spray seals, including paving fabrics, must be greater than 195°C.
- b) The Construction Documentation must nominate the bitumen retention rate for paving fabrics used as part of spray seals.
- c) In addition to the requirements of section 6, the Contractor must prevent the contamination of geotextiles used in sealing applications from precipitation and any other source of moisture.

5 Sampling and testing

- a) Geotextiles must be tested by a NATA certified testing authority in accordance with AS 3706.1 Geotextiles - Methods of test - General requirements, sampling, conditioning, basic physical properties and statistical analysis.
- b) The Contractor must provide geotextile testing results for each of the properties set out in Table RD-EW-S1 7-1.
- c) The sampling and testing frequency for geotextiles must be in accordance with the requirements of Table RD-EW-S1 5-1.
- d) Control testing must be carried out for each batch of geotextile in accordance with the geotextile manufacturer's specifications.

Table RD-EW-S1 5-1 Geotextiles - sampling and testing frequency

Batch or order size (sq. m) defined as the Work Lot size	Number of rolls to be sampled representing the Work Lot
Initial 10,000 or part thereof	1
Each subsequent 10,000 (maximum)	1

6 Storage, packaging and identification

- a) Geotextiles must:
 - i) be stored under protective cover or wrapped with a waterproof, opaque UV protective sheeting, to avoid any UV damage prior to installation;
 - ii) not be stored directly on the ground or in any manner in which they may be affected by heat; and
 - iii) be stored in accordance with the manufacturer's specifications.
- b) Geotextile rolls must be clearly labelled showing manufacturer, type of geotextile and batch identification number.

7 Test procedures

- a) The Contractor must provide geotextiles testing results in accordance with the requirements of this Master Specification Part, including the Reference Documents and the test procedures listed in Table RD-EW-S1 7-1.
- b) The results of the testing required in section 7a) must be provided as part of the Quality Management Records.

Table RD-EW-S1 7-1 Test procedures

Property	Test procedure
General requirements, sampling, conditioning, basic physical properties and statistical analysis	AS 3706.1 Geotextiles - Methods of test - General requirements, sampling, conditioning, basic physical properties and statistical analysis
Determination of burst strength - California bearing ratio plunger method	AS 3706.4 Geotextiles - Methods of test - Determination of burst strength - California bearing ratio (CBR) - Plunger method
Determination of puncture resistance - drop cone method	AS 3706.5 Geotextiles - Methods of test - Determination of puncture resistance - Drop cone method
Determination of pore size distribution - dry sieving method	AS 3706.7 Geotextiles - Methods of test - Determination of pore-size distribution - Dry-sieving method
Determination of tensile properties - wide-strip method	AS 3706.2 Geotextiles - Methods of test - Determination of tensile properties - Wide-strip method
Determination of durability - resistance to degradation by heat, light and moisture	AS 3706.11 Geotextiles - Methods of test - Determination of durability - Resistance to degradation by light, heat and moisture
Mass per unit area	AS 3706.1 Geotextiles - Methods of test - General requirements, sampling, conditioning, basic physical properties and statistical analysis
Bitumen retention	ASTM D6140 Standard Test Method to Determine Asphalt Retention of Paving Fabrics Used in Asphalt Paving for Full-Width Applications

8 Measurement

Where the Contract Documents require measurement of geotextiles for the purpose of payment, the measurement must be based on the final surface area covered, with no allowance for the specified overlaps.

9 Hold Points

Table RD-EW-S1 9-1 details the review period or notification period, and type (documentation or construction quality) for each Hold Point referred to in this Master Specification Part.

Table RD-EW-S1 9-1 Hold Points

Section reference	Hold Point	Documentation or construction quality	Review period or notification period
2.2b)	Submission of pre-installation Quality Management Records	Documentation	2 Business Days review