



Test method T1524

Determination of opening size of
seamless knitted tubular filter fabric

NOVEMBER 2012



Revision Summary

Ed/Rev Number	Clause Number	Description of Revision	Authorisation	Date
		Reformatted and Revision Summary Added	D.Dash	June 2001
Ed 2/ Rev 0	All	Reformatted RMS template	J Friedrich	November 2012

Note that Roads and Maritime Services is hereafter referred to as 'RMS'.

The most recent revision to Test method T1524 (other than minor editorial changes) are indicated by a vertical line in the margin as shown here.

Test method T1524

Determination of opening size of seamless knitted tubular filter fabric

1. Scope

This test method sets out the procedure for determining the range of dimensions of openings in sample areas of seamless knitted tubular filter fabric for use over corrugated plastic subsoil pipe.

2. Apparatus

- (a) A scale marked in mm
- (b) A cylinder of any opaque material of length approximately 250 mm with a diameter as follows:-
 - (i) 65 mm, if tubular filter fabric for use with 65 mm corrugated plastic pipe is to be tested.
 - (ii) 100 mm, if tubular filter fabric for use with 100 mm corrugated plastic pipe is to be tested.
 - (iii) 150 mm, if tubular filter fabric for use with 150 mm corrugated plastic pipe is to be tested.
- (c) A microscope capable of magnification x 30 with a suitable camera attachment and graticule
- (d) A pair of scissors
- (e) String
- (f) Clean tracing film
- (g) Tracing film showing 13 circles ranging from 4-18 mm diameter in 1 mm steps
- (h) 0.7 mm, HB lead pencil, or equivalent suitable pen

3. Procedure

- (a) Cut a 500 mm length from the filter fabric sample
- (b) Spread the 500 mm sample length out on a flat surface and without stretching the material mark off 3 gauge lengths of 125 mm, centrally positioned
- (c) Fit the filter fabric centrally over the cylinder and tie one end with string
- (d) Stretch the untied end such that the gauge length of 125 mm increases to $125 \times \left(\frac{100 - L}{100} \right) \text{ mm}$ where L is the longitudinal strain (in percent) as obtained by Test Method T1520 (Yield)
- (e) Place the cylinder with fabric under the microscope and photograph using 35 mm photographic format at three locations near the centre of each gauge length at a magnification of x 30 as shown in Figure 1
- (f) Photograph the graticule at a magnification of x 30, and determine the precise scale factor
- (g) Place the clear tracing film over each of the photographs taken (e) and make a tracing of the openings as shown in Figure 2 so as to identify the 10 largest openings in each photograph. An opening is to be defined for this test to be the space between all adjacent strands. Single filaments projecting into the area are to be ignored. (See Figure 3). Care must be taken to distinguish strands deeper in the field of view from stray single filaments
- (h) The diameter of the 10 largest inscribed circles is to be determined for each photograph. An inscribed circle should touch the opening perimeter at a minimum of 3 places which ideally are distributed over the perimeter. (See figure 4). The perimeter of an inscribed circle must always fall within the opening. The diameters of the openings are to be recorded in microns by referring the circles to the photographed graticule so as to accurately scale the photograph. The graticule is marked in microns such that when photographed through the microscope and processed in identical manner to the sample photographs it can be used to define the diameters of the set of circles, and so in turn the photographed openings in microns

It should be noted that elongate openings may accept more than one inscribed circle. In such cases the size of opening is taken to be the diameter of the largest inscribed circle. (See Figure 5)

- (i) Count the openings with diameters of inscribed circles above 130 microns in each photograph. Partial openings on the perimeter of the photograph are to be excluded from the count

4. Calculations

- (a) Nominate the Representative Large Opening Size (DR) as the third largest diameter of the group of thirty diameters made up of the ten largest inscribed circles in each of the three photographs
- (b) Combine the counts of openings with diameters of inscribed circles above 130 microns for the 3 photographs. Divide the total by the area represented on the 3 photographs to compute the number of openings above 130 micron diameter per 100 mm². This is nominated the Opening Index (1)

5. Reporting

- (a) Report the Representative Large Opening diameter (DR)
- (b) Report the Opening Index (1)
- (c) Report the range of diameters of the ten largest inscribed circles for each photograph.

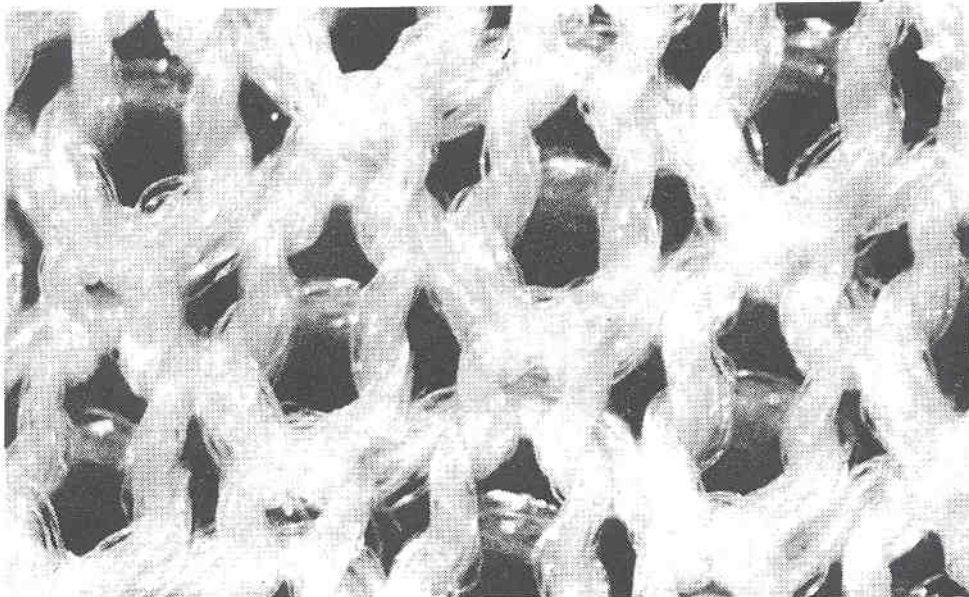


FIGURE 1

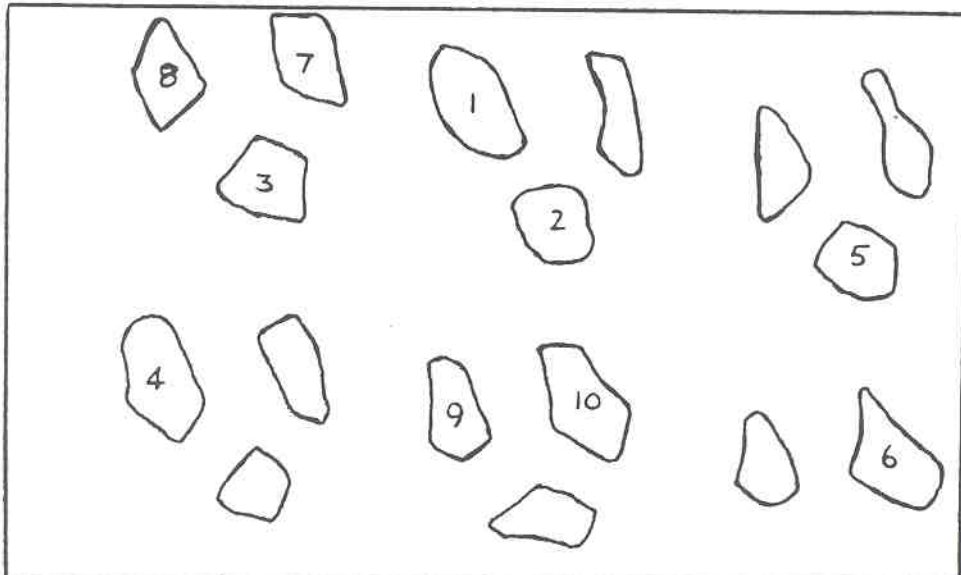


FIGURE 2



FIGURE 3

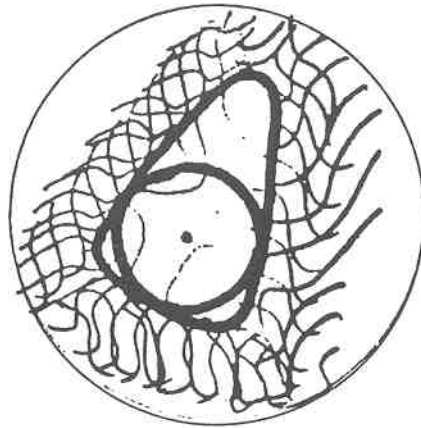


FIGURE 4

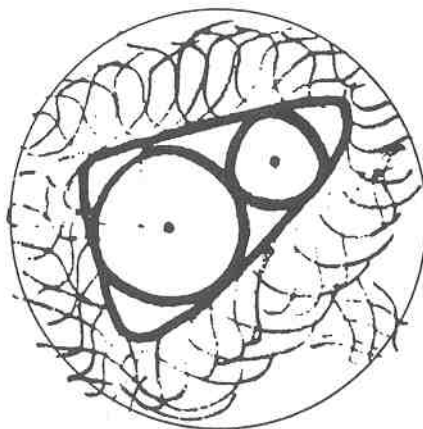


FIGURE 5