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Filtration Efficiency Test Report

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Mike Taylor – Dane Taylor Technologies Pty Ltd

Service Description

Characterise a multi-layer composite medium supplied by Dane Taylor Pty Ltd subject to filtration efficiency testing using fine particles of potassium chloride under following conditions:

- Flow rate: 55 LPM (0.15 m•s^{-1} face velocity)
- Aperture size: 89 mm (sample diameter of 109 mm)

Identifiable layers identified for filter medium MTR14:

Front	2	3	Back
Pacastat	Black non-woven	White non-woven	Pacastat through cotton

Filter Test Results

A circular sample of 109mm diameter was cut from the test fabric and subjected to potassium chloride fine particle filter testing at >1000 particles/cm^3 upstream concentration.

Fabric Properties

Measured properties of the multi-layer test samples are provided in Table 1.

Table 1: Mechanical properties of the multi-layer fabric sample

Medium	No of layers	Thickness	Basis Weight	Fabric Density
		(mm)	(g/m^2)	(kg/m^3)
MTR14	4	15.7	1030	78

Filter Test Results

Filter test results averaged from 2 samples for a face velocity (v_f) of 0.15 m/s are summarised in Table 2. Filtration efficiencies FE and quality factors Q_x are provided with the lower particle size limit as index.

Table 2: Measured pressure drop as well as filtration efficiency and quality factor for 0.3µm, 0.5µm, 0.7µm, 1.0µm and 2.0µm particles from medium "MTR14".

Medium	Pressure Drop	$FE_{0.3}$	$FE_{0.5}$	$FE_{0.7}$	$FE_{1.0}$	$FE_{2.0}$	$Qx_{0.3}$	$Qx_{0.5}$	$Qx_{0.7}$
	(Pa)	(-)	(-)	(-)	(-)	(-)	(10^{-9} m)	(10^{-9} m)	(10^{-9} m)
MTR14	118	99.9433	99.9928	99.9994	BD ‡	BD ‡	180	230	197
% Std Dev	10	6 #	18 #	49 #			10	11	9

Standard deviation of penetration in %. ‡ Below Detection

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