



# Confidential Report

Our Ref: E-032324/D





Unit 6, Wheel Forge Way, Trafford Park,  
Manchester, M17 1EH, UK.  
Telephone: +44 (0) 161 876 4211  
Email: [onestopshop@bttg.co.uk](mailto:onestopshop@bttg.co.uk)  
Website: [www.bttg.co.uk](http://www.bttg.co.uk)

Date: 04 April 2024

Our Ref: E-032324/D  
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Client: Oxford Safety Supplies  
Olympic House  
Collet  
Southmead Park  
Didcot  
Oxon  
OX11 7WB

Job Title: Tests on a 2-layer knitted fabric

Client's Order No: -

Date of Receipt: 19<sup>th</sup> February 2024  
Date of Test Start: 18<sup>th</sup> March 2024

Description of Sample(s): One 2-layer knitted fabric, identified as follows, was received for testing:  
  
N038N Advance Baselayer

Work Requested: We were asked to make the following tests:  
  
Air Permeability ISO 9237  
Water Vapour Resistance ISO 11092



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Sample was identified as follows:

N038N Advance Baselayer

### Laboratory Work

Where appropriate, the tests were made in Standard Atmosphere ( $65 \pm 4$  % relative humidity at  $20 \pm 2$  °C) the sample having been freely and continuously exposed to that atmosphere for at least 24 hours prior to testing. Specimens have been taken from the sample as described in the specified standards.

### Cleansing Pretreatment:

Prior to all tests five wash/dry cycles according to EN ISO 6330: 2021 Procedure 4N (40°C) with line drying (Procedure A).

### Air Permeability

The air permeability was measured according to ISO 9237: 1995, "Textiles – Determination of the permeability of fabrics to air". The rate of flow of air passing through a given area of fabric is measured at a given pressure difference across the fabric test area over a given time period.

The air flow was from the face to the reverse. Ten specimens, having a test area of 20cm<sup>2</sup> were tested from each sample with a pressure drop of 100 Pa.

Prior to testing, edge losses were calculated and have been taken into account in the figures reported.

The mean air permeability in mm/s was calculated.



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### Water Vapour Resistance

The water vapour ( $R_{et}$ ) of the sample was measured following the procedure detailed in ISO 11092: 2014, "Textiles – Physiological effects – Measurement of thermal and water-vapour resistance under steady-state conditions (sweating guarded-hotplate test)".

Prior to testing the specimens for test were conditioned for a minimum of 12 hours at a temperature of 35 °C and a relative humidity of 40 %.

The measuring unit and thermal guard are contained within a test enclosure having an air temperature of 35 °C and a relative humidity of 40 %. An electrically heated porous plate is covered by a water-vapour permeable but liquid-water impermeable membrane. Water is fed to the heated plate by a dosing device and the water evaporates and passes through the membrane as vapour. Air flows across and parallel to the plates upper surface at a speed of 1 m/s.

The test specimen is placed on the membrane and the heat flux required to maintain a constant temperature at the plate is a measure of the rate of water evaporation and from this the water vapour resistance of the test specimen is calculated.

A specimen for test measuring 300 mm x 300 mm, was placed on the porous plate, covering the thermal guard.

Specimens were tested with the reverse of the fabric (i.e. the side facing the skin during wear) to the measuring plate. The water vapour resistance was calculated once a steady-state had been achieved. Three specimens were tested.

The results for all tests are given in the tables on the following page.



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### RESULTS

Sample Ref: N038N Advance Baselayer

AIR PERMEABILITY (mm/s at 100 Pa)						
Ref.	Individual Results					Mean
Fabric	914.0	956.0	990.0	945.1	931.0	943.0
	927.6	899.2	934.5	986.1	946.9	

WATER VAPOUR RESISTANCE (Ret)				
Ref.	Individual Values (m <sup>2</sup> .Pa/W)			Mean (m <sup>2</sup> .Pa/W)
Fabric	6.8	7.0	7.1	7.0

Where required to make a judgement to any pass/fail criteria an estimation of uncertainty of measurement has been taken into account. Under our policy we have used a non-binary decision rule. See our decision rules policy (<http://www.bttg.co.uk/decision-rules-policy>) for further information.

Reported by: *Alca Newton* ..... Mr A Newton, Senior Customer Services Officer

Countersigned by: *Ella E Collinson* ..... Mrs E Collinson, Principal Technician

Enquiries concerning this report should be addressed to Customer Services.



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## Annex

### Summary of Uncertainty Budgets

Air Permeability  $\pm 6.3 \%$   
Water Vapour Resistance  $\pm 12.0 \%$



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