



Shirley
Technologies
Limited

Confidential Report

Our Ref: 29/00440/01/14

Shirley Technologies Limited. Registered Office :
Wira House, West Park Ring Road, Leeds, LS16 6QL.
A company registered in England & Wales with company number 04669651.
VAT Number GB 816764800.
The supply of all goods and services is subject to our standard terms of
business, copies of which are available on request.
Our laboratories are accredited to EN ISO/IEC 17025





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Web: <http://www.shirleytech.com>
Email: info@shirleytech.co.uk

30 January 2014

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Our Ref: 29/00440/01/14
Your Ref:

Client: Gudbrandsdalens Uldvarefabrik as

Address: N-2626 Lillehammer
Norway

Job Title: Colour Fastness to Rubbing Test on Fifty Eight Fabric Samples

Client's Order Ref:

Date of Receipt: 10 January 2014

Description of Sample(s): Fifty eight swatches of woven fabric, each a different colour, referenced by the Client:-

Quality 5537 Hallingdal

Work Requested: EN ISO 105: X12, colour fastness to wet and dry rubbing on each colour received.

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Testing atmosphere: Unless otherwise specified the sample(s) has been conditioned and tested, where appropriate, in the standard atmosphere for conditioning and testing textiles (BS EN ISO 139:2005 + A1:2011) of 65±4% r.h. and 20±2°C.

Colour Fastness to Rubbing

The samples were tested in accordance with BS EN ISO 105-X12:2002 using the following test conditions:-

- a Crockmeter as specified in section 4.1.2.
- a cylindrical rubbing finger exerting a downward force of 9N
- dry and wet rubbing (wet rubbing take-up of 100%)
- conditioning time of the specimens and rubbing cloth minimum 4 hours
- atmospheric conditions during testing 65±4%rh and 20±2°C
- specimens were tested in the length and width directions
- the staining of the cotton rubbing fabric was assessed using standard grey scales; 5 represents no staining and 1 represents severe staining.

| Reference | Nr. | Direction | Staining of rubbing fabric | |
|-----------------|-------|-----------|----------------------------|-------------|
| | | | 10 rubs wet | 10 rubs dry |
| 5537 Hallingdal | 1.166 | length | 4 | 4 |
| | | width | 4-5 | 4 |
| 5537 Hallingdal | 1.190 | length | 4 | 4 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 1.180 | length | 4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 1.173 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 1.153 | length | 4-5 | 4-5 |
| | | width | 4-5 | 4-5 |
| 5537 Hallingdal | 1.143 | length | 4-5 | 4-5 |
| | | width | 4-5 | 4-5 |
| 5537 Hallingdal | 1.123 | length | 4-5 | 5 |
| | | width | 4-5 | 5 |

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| Reference | Nr. | Direction | Staining of rubbing fabric | |
|-----------------|-------|-----------------|----------------------------|-------------|
| | | | 10 rubs wet | 10 rubs dry |
| 5537 Hallingdal | 1.113 | length width | 5 5 | 5 5 |
| 5537 Hallingdal | 1.103 | length width | 5 5 | 5 5 |
| 5537 Hallingdal | 1.110 | length width | 5 5 | 5 5 |
| 5537 Hallingdal | 1.907 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 1.420 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 1.457 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 1.407 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 1.100 | length width | 5 5 | 5 5 |
| 5537 Hallingdal | 1.116 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 1.126 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 1.130 | length width | 4-5 4-5 | 4-5 4-5 |
| 5537 Hallingdal | 2.227 | length width | 4-5 4-5 | 4-5 4-5 |

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| | | | 10 rubs wet | 10 rubs dry |
| 5537 Hallingdal | 2.224 | length | 4-5 | 5 |
| | | width | 4-5 | 5 |
| 5537 Hallingdal | 2.220 | length | 5 | 5 |
| | | width | 5 | 5 |
| 5537 Hallingdal | 2.200 | length | 5 | 5 |
| | | width | 5 | 5 |
| 5537 Hallingdal | 2.270 | length | 4-5 | 4-5 |
| | | width | 4-5 | 4-5 |
| 5537 Hallingdal | 2.350 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 2.370 | length | 3 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 2.368 | length | 3-4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 2.376 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 2.390 | length | 4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 2.840 | length | 4 | 4-5 |
| | | width | 4-5 | 4-5 |
| 5537 Hallingdal | 2.850 | length | 3 | 4-5 |
| | | width | 3 | 4-5 |
| 5537 Hallingdal | 2.810 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |

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|-----------------|-------|-----------|----------------------------|-------------|
| | | | 10 rubs wet | 10 rubs dry |
| 5537 Hallingdal | 2.723 | length | 4-5 | 5 |
| | | width | 4-5 | 5 |
| 5537 Hallingdal | 2.733 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 2.750 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 2.890 | length | 4-5 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 2.753 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 2.754 | length | 3-4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 2.773 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 2.764 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 3.763 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 3.702 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 3.968 | length | 4-5 | 4-5 |
| | | width | 4-5 | 4-5 |
| 5537 Hallingdal | 3.944 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |

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| | | | 10 rubs wet | 10 rubs dry |
| 5537 Hallingdal | 3.980 | length | 4-5 | 4-5 |
| | | width | 4-5 | 4-5 |
| 5537 Hallingdal | 3.960 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 3.660 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 3.563 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 3.573 | length | 3 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 3.694 | length | 3 | 4-5 |
| | | width | 3 | 4-5 |
| 5537 Hallingdal | 3.687 | length | 3 | 4-5 |
| | | width | 3 | 4-5 |
| 5537 Hallingdal | 3.657 | length | 3 | 4-5 |
| | | width | 3 | 4-5 |
| 5537 Hallingdal | 3.674 | length | 3 | 4-5 |
| | | width | 3 | 4-5 |
| 5537 Hallingdal | 3.680 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 3.526 | length | 4 | 4-5 |
| | | width | 4 | 4-5 |
| 5537 Hallingdal | 3.547 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |

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| | | | 10 rubs wet | 10 rubs dry |
| 5537 Hallingdal | 3.590 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 3.600 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |
| 5537 Hallingdal | 3.596 | length | 3-4 | 4-5 |
| | | width | 3-4 | 4-5 |

Reported by: p.p. *L.I. Butler* D M Dickson (Mrs)
L I Butler (Mrs) Senior Technician – Textiles

Countersigned by: *J. Bullers* J M Bullers (Mrs)
Operational Head – Textiles

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