1. Introduction

It is the H&M supplier’s responsibility to ensure the fabric is of good quality and suitable for the intended garment including garment treatments. H&M require the supplier to have a method of fabric inspection. Together with its fabric supplier, the H&M supplier should ensure the fabric is carefully and systematically inspected prior to cutting in accordance to this Guideline. H&M recommends all visual fabric inspections of woven and jersey to be in accordance with the “4 Point System”.

1. INTRODUCTION

2. GENERAL

2.1 H&M documents
2.2 Fabric Technical Data
2.3 Approved fabric
2.4 Roll ticket information
2.5 Fabric quantity to be inspected
2.6 Fabric inspection report

3 EQUIPMENT

3.1 Fabric inspection machine
3.2 Light Box

4 COLOUR CONTINUITY RECORD

4.1 Roll record
4.2 Shade record
4.3 Full width cutting

5 INSPECTION PROCEDURE

5.1 Weight
5.2 Cuttable width
5.3 Roll length verification
5.4 Splices
5.5 Fabric odours
5.6 Bowing/Skewing

6 FOUR (4) POINT SYSTEM

6.1 Defects and Penalty points
6.2 Points calculation
6.3 Acceptable points
6.5 Allowance

7 CONCLUSION
2. General

The fabric supplier must inspect the fabric prior to delivery and the inspection report must accompany the delivery. The H&M garment supplier must inspect the fabric prior to cutting. Both inspection reports must be kept for 6 months.

2.1 H&M documents

It is the H&M supplier’s responsibility to inform, hand out and make sure their fabric suppliers comply with following H&M documents:

- H&M Chemical Restrictions
- H&M Quality Standards and Requirements
- H&M Supplier Colour Guide Book
- H&M Fabric Inspection Guideline
- H&M Fabric Technical Data

2.2 Fabric Technical Data

H&M and the garment supplier agree at the quotation stage on fabric quality and its technical performance. Information is filled in on the Fabric Technical Data.

- Part A - Fabric information - given by the fabric supplier
- Part B - Fabric performance - test results according to the fabric supplier
- Part C - Ready-to-wear garment performance - test results according to the garment supplier

2.3 Approved fabric

During visual fabric inspection a swatch of the approved fabric must be available in all colours. Fabric face side must be marked; minimum size of swatch is 25x25cm (10”x10”). It will be used as reference for look and hand feel.

2.4 Roll ticket information

Fabric supplier must mark each roll with:

- Fabric supplier
- H&M garment supplier
- H&M order and Department number
- Fabric description
- Colour and H&M Colour number
- Fabric composition
- Cuttable width
- Fabric weight
- Roll length
- Roll weight (jersey)
- Dye/Print lot
- Shade
- Defect points on inspected rolls
- Roll number

2.5 Fabric quantity to be inspected

H&M require a visual fabric inspection of minimum 10% of the bulk fabric quantity. The fabric rolls selected for inspection must represent all colours and dye lots within a colour. If the average shipment points exceed the acceptable points or if inspection shows a high fault rate, an additional 15% must be inspected. If fabric fails again, the delivery must be 100% inspected or rejected.

The fabric inspection must either be alternated between 2 people every 2 hours, or a break scheduled every 2nd hour, in order to make a proper judgement and to avoid fatigue.
2.6 Fabric inspection report
H&M require a fabric inspection report stating:
• Inspection report number
• Date
• Fabric supplier
• H&M garment supplier
• H&M order and department number
• Fabric description
• Colour
• Cuttable width
• Weight
• Roll number
• Dye lot
• Fabric length according to Roll ticket
• Inspected length
• Colour shade
• Bowing/Skewing
• Roll points
• Roll points per 100 m²/yd²
• Roll Grade
• Average defective (shipment) points per 100 m²/yd²
• Inspection; Pass/Fail
• Remarks

We recommend H&M Fabric Inspection report which includes roll and summery reports.

3 Equipment

3.1 Fabric inspection machine
Inspection should be carried out using a fabric inspection machine with:
• Variable speed control
• Meter/Yardage counter
• Overhead and transmitted lighting minimum 1000 lux
• Over feed capability, if inspecting stretch fabric

3.2 Light Box
All colours and shades must be checked in a Light Box against the colour standard and the approved sample.
The illuminants are TL83, D65, A-light (tungsten, light bulb) and UV light.
For more detailed information see Supplier Colour Guide Book.
4 Colour continuity record

Colour and shades must be controlled by maintaining colour continuity records. Dye lot to dye lot, within a dye lot and within a roll must be checked. Records must be available for H&M and kept for at least 6 month.

The swatches must be a minimum of 4x10 cm and be evaluated visually in a light box. A close critical match to colour standard and approved fabric must be achieved in; TL83, D65 and display no dramatic difference in colour appearance in A-light (tungsten). For more detailed information see Supplier Colour Guide Book.

For the use of ISO 105-A02: 1993 Grey scale for assessing change in colour there should not be a greater difference than 4-5 between any parts within a dye lot and roll.

4.1 Roll record

A Roll record should be created by fabric supplier as a reference of every roll. All swatches in a dye lot should be loosely attached with a string into a bundle to enable easy colour evaluation. The bundle should be marked with:

- H&M Order and Department number
- Date
- Fabric supplier
- Fabric description
- Colour description

Each swatch must be face side up, with the ends, wales or pile running in the same direction marked with:

- Roll length
- Roll number
- Dye lot number

For washed garments the H&M garment supplier must stitch all roll swatches together, to a patchwork (blanket), marked with roll number, and wash according to specification.

4.2 Shade record

The H&M fabric supplier must create a shade record specifying meters/yards. Minimum acceptable quantity for one shade is 500 m/yds. A spectrophotometer colour report is recommended to be included in the shade record.

The records of shades/family of shades must be marked with:

- H&M Order and Department number
- Date
- Fabric supplier
- Fabric description
- Colour description
- Roll No
- Shade family
- Total length

To limit number of shades per country, the garment supplier must sort shades/family of shades into countries and fill in:

- Planned country

Example of H&M Shade Record that may be used. Download at www.hm.com/supplier

<table>
<thead>
<tr>
<th>Colour Shade</th>
<th>D65</th>
<th>TL83</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>To App. fabric:</td>
<td>Ok</td>
<td>Ok</td>
<td>Ok</td>
</tr>
<tr>
<td>Shade:</td>
<td>A</td>
<td>Family:</td>
<td>A, E, D</td>
</tr>
<tr>
<td>Roll No: 1-30, 91-150</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total length: 15000m</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Planned country: Se, De, F</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
4.3 Full width cutting
At the beginning and at the end of each roll selected for fabric inspection, cut a 30 cm/6” full width cutting. The look, hand feel, and colour must be compared in the light box against:
- Colour Standard
- Approved fabric
- Fabric Technical Data
Shade deviation within a roll must be checked by folding or sewing:
- Side to side
- Side-centre-side
- Beginning-end
If difference is more then 4-5 on the grey scale between any parts, the H&M local office must be contacted.

5 Inspection procedure

5.1 Weight
- Check weight on minimum 10% of the rolls chosen for inspection.
- Weigh a 100 cm² cutting; convert the weight into m²/yd².
- Weight should correspond to weight stated on Fabric Technical Data.
If the deviation is more then -5% / +7% the roll has failed.

5.2 Cuttable width
The minimum Cuttable width, measured between needle holes at roll selvages, is stated on the Fabric Technical Data, and must be checked at least 3 times on each roll at:
- Beginning.
- Middle.
- End.
Rolls where cuttable width is less, has failed.

5.3 Roll length verification
- Roll length measuring less than 40 m/yds can not be accepted, unless agreed.
- Roll length stated on the roll ticket must be verified against the actual roll length measured by the fabric checking machine.
- If the deviation is 1% less, length should be double checked on a cutting table.
If difference remains, the roll has failed.

5.4 Splices
- Minimum splice length is 30 m/yds.
- Splice location must be noted on the individual roll inspection report.
- 4 penalty points will be assigned for each splice/join.
No roll is allowed to contain more than 1 splice/join.

5.5 Fabric odours
Roll that emit an unpleasant odour, has failed.
5.6 Bowing/Skewing

Bowing is the measurement of the bowing arc at the highest point of a line at right angles between the two selvages.

Skewing/Twisting:
Skewing/Twisting is the measurement of the highest point between a weft thread/row and a line at right angles between the two selvages/folds.

Tolerance Calculation

\[
\frac{A}{\text{Cuttable width}} \times 100 = \text{Max %}
\]

<table>
<thead>
<tr>
<th>Fabric Types</th>
<th>Max % of fabric width</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Woven</td>
</tr>
<tr>
<td>Solid colours/Prints</td>
<td>3%</td>
</tr>
<tr>
<td>Stripes/Checks</td>
<td>2%</td>
</tr>
</tbody>
</table>

Rolls exceeding these tolerances have failed.

Exception:
Skewing are characteristics for woven twill/satin constructions and for single jersey. The skewing tolerance must therefore be agreed on each order separately, and stated on the “Fabric Technical Data”. The H&M garment supplier must first check twisting and eventual distortion on garment after:
- Eventual garment treatment.
- Washing according to care instruction.
In case of Inconsistent skewing/twisting in-between inspected rolls the inspection has failed.
6 Four (4) Point System

The 4 Point System is named from a basic grading rule; **regardless of length/size or number of defects, no more than 4 penalty points may be assigned on any linear meter/yard**.

6.1 Defects and Penalty points
Defect should be marked with a coloured sticker. To show defect position the selvage should be marked with the same colour of sticker or thread.
Defects in both warp/weft directions will be assigned points using the following criteria:

<table>
<thead>
<tr>
<th>Defect Length</th>
<th>Points</th>
<th>Sticker colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 75mm/3”</td>
<td>1</td>
<td>White</td>
</tr>
<tr>
<td>75mm-149mm/3”-6”</td>
<td>2</td>
<td>Green</td>
</tr>
<tr>
<td>150mm-229mm/6”-9”</td>
<td>3</td>
<td>Yellow</td>
</tr>
<tr>
<td>Over 230mm/9”</td>
<td>4</td>
<td>Red</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hole</th>
<th>Points</th>
<th>Sticker colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less or equal to 2.5cm/1”</td>
<td>2</td>
<td>Green</td>
</tr>
<tr>
<td>Larger than 2.5cm/1”</td>
<td>4</td>
<td>Red</td>
</tr>
</tbody>
</table>

6.2 Example:

1. **Total points awarded for first m/yd is 4.**
   2+4 points=6 points.
   “Regardless of length/size or number of defects, no more than 4 penalty points may be assigned on any linear meter/yard”.

2. **Total points awarded for second m/yd is 1.**

3. **Total points awarded for third m/yd is 3.**

4. **Total points awarded for fourth m/yd is 4.**
   4+4 points=8 points.
   “Regardless of length/size or number of defects, no more than 4 penalty points may be assigned on any linear meter/yard”.

H&M Fabric Inspection Guideline
April 2006
6.3 Points calculation

**Metrical System:**

**Individual roll points**

\[
\text{Roll Points} \times 100 \div \text{Inspected meters} \times \text{Cuttable width (m)} = \text{Points/100 m}^2
\]

**Average points for the Inspected Lot**

\[
\text{Total Roll Points} \times 100 \div \text{Total Inspected meters} \times \text{Cuttable width (m)} = \text{Shipment Points/100 m}^2
\]

**Imperial System:**

**Individual roll points**

\[
\text{Roll Points} \times 100 \times 36 \div \text{Inspected yards} \times \text{Cuttable width (inch)} = \text{Points/100 yd}^2
\]

**Average points for the Inspected Lot**

\[
\text{Total Roll Points} \times 100 \times 36 \div \text{Total Inspected yards} \times \text{Cuttable width (inch)} = \text{Shipment Points/100 yd}^2
\]

6.4 Acceptable points

<table>
<thead>
<tr>
<th>Woven</th>
<th>Points Per 100 m²</th>
<th>Points Per 100 yd²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Types</td>
<td>Average shipm.</td>
<td>Individual roll</td>
</tr>
<tr>
<td>Natural</td>
<td>27</td>
<td>32</td>
</tr>
<tr>
<td>Synthetic</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Corduroy</td>
<td>31</td>
<td>37</td>
</tr>
<tr>
<td>Denim</td>
<td>20</td>
<td>26</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Jersey</th>
<th>Points Per 100 m²</th>
<th>Points Per 100 yd²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabric Types</td>
<td>Average shipm.</td>
<td>Individual roll</td>
</tr>
<tr>
<td>Single Jersey</td>
<td>17</td>
<td>22</td>
</tr>
<tr>
<td>Double Jersey</td>
<td>20</td>
<td>26</td>
</tr>
<tr>
<td>Interlock</td>
<td>24</td>
<td>31</td>
</tr>
<tr>
<td>Warp Knit/Lace</td>
<td>22</td>
<td>28</td>
</tr>
</tbody>
</table>

The above standard points are applied in the following manner:
- If the measured points of any individual roll are higher than the agreed maximum points/roll, the entire roll has failed.
- If the average shipment points exceed the acceptable average points the whole fabric inspection has failed.

6.5 Allowance

Defects should be compensated with an agreement between the fabric supplier and the garment supplier.
7 Conclusion
The inspection report should be used to:
• Understand the fabric quality before cutting.
• Discuss the improvement required on the failed rolls with the fabric supplier.
• Guide for the best fabric sourcing decision.
• Provide a profile of each quality.
• Provide a profile of each fabric supplier’s performance season by season.