better cotton™

Measuring cotton consumption

Technical supplement

Contents

1. Introduction

This document is a technical supplement to *Measuring cotton consumption: Requirements and guidance*, which is available in the Measuring Cotton Consumption area of the Better Cotton website.

a. Purpose

Variability in business models, business processes, product styles, and business software, together with an absence of primary (direct) data on cotton consumption, increases the likelihood that Better Cotton Retailer and Brand Members ('RB Members') will measure cotton consumption differently. Better Cotton does not prescribe any specific data management method for measuring cotton fibre consumption. However, this supplement is intended to help RB Members gather and analyse data related to their cotton consumption and to improve the quality and consistency of information submitted to Better Cotton.

RB Members are strongly encouraged to document their processes related to measuring cotton consumption, particularly raw data templates and calculation templates, to facilitate consistent measurement year-on-year.

2. Definitions

This document uses the same definitions as *Measuring cotton consumption: Requirements and guidance* with the following additions:

Data: Information, facts and statistics collected for reference or analysis.

Database: An organized collection of data, stored and accessed electronically. A database differs from a data set as its data is organised and retrieved in a specific format and structure. Databases are commonly used to store data in software systems.

Dataset: A collection of data.

Enterprise Resource Planning (ERP): It refers to the software and systems an organisation uses to collect, store, manage and interpret data from its business activities and manage its resources.

Information Management System: In the context of this document, it collectively describes all software, documents, records and systems used by an RB Member in its day-to-day commercial activities.

Purchase Order (PO): A commercial document issued by a buyer to a seller, indicating the type, quantities and agreed prices for products or services that the seller will provide to the buyer.

Product Lifecycle Management (PLM): The process of managing complex product information, engineering and manufacturing workflows, and collaboration. PLM software connects people, processes, and data across the entire product lifecycle to a central repository of information.

3. Gathering Data

The basic formulae for calculating total cotton consumption are as follows, depending on the primary data starting point (consumer products or fabric used to make them).

Using data on consumer products:

$$\textbf{Product Cotton Consumption} = \textbf{Product unit weight} * \textbf{Units bought or sold} * \\ \%\ \textbf{of cotton in product} * \textbf{Product to fibre multiplier}$$

Using data on fabrics used:

$$\textbf{Fabric Cotton Consumption} = \textbf{Fabric weight} * \textbf{Fabric length} * \textbf{Fabric width} * \\ \%\ \textbf{of cotton in fabric} * \textbf{Fabric to fibre multiplier}$$

Depending on the information management system available to RB Members, different data points may be used as a starting point. For example, RB Members may be able to use any or all of the following:

- Purchase Orders (POs): A list of all POs raised over a given period,
- Product Lines: A list of all product lines bought or sold over a given period, or,
- Fabric Codes: A list of all fabric codes bought over a given period.

a. Locating data

RB Members' information management systems, and the data they contain, may be managed by several business functions and spread across different storage locations.

Identifying the RB Member's main commercial processes may be helpful in identifying the software or records required, identifying duplicate datasets, and identifying gaps.

- Larger brands tend to use software systems that are designed specifically for managing the lifecycle and purchase and sale of products.
- Smaller brands may find spreadsheets, text documents and cloud storage (e.g. OneDrive, Dropbox or Google Drive) as more common ways of organizing their business data.

This supplement does not differentiate between purpose-built systems and collections of spreadsheets, text documents etc., and its guidance is intended to be equally applicable to either.

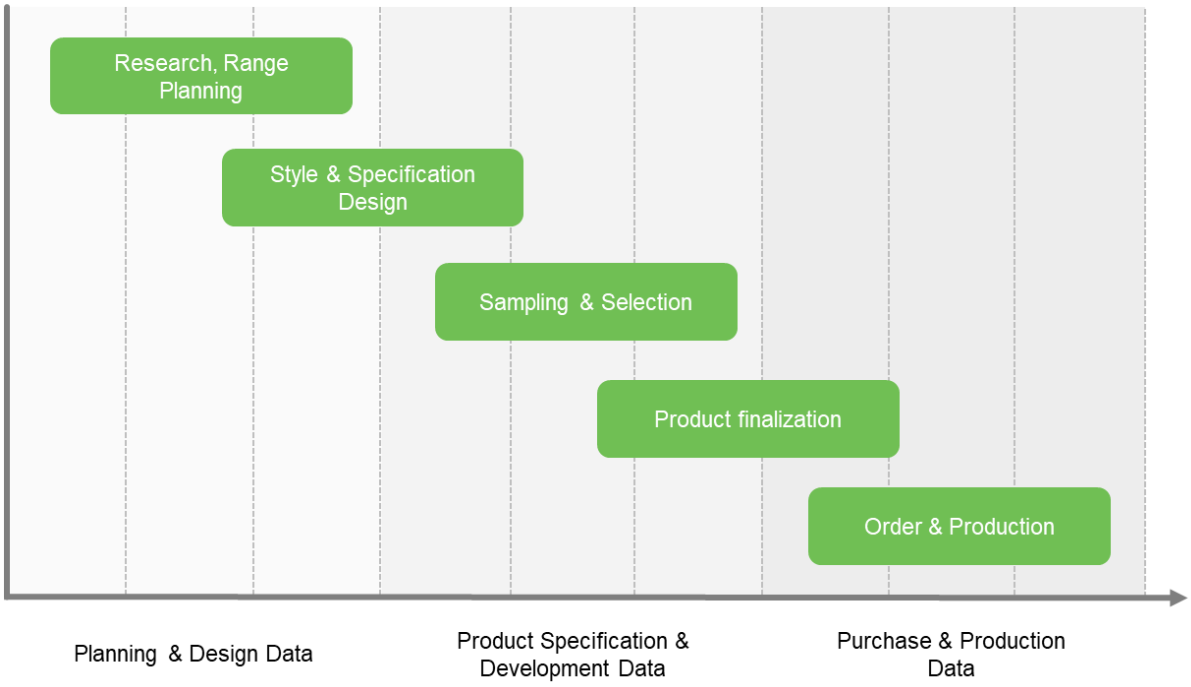

Figure 3.1: Example product lifecycle steps (green boxes) with three main data sources available (horizontal axis).

b. Data completeness

To successfully measure cotton consumption, the data record used must include certain essential fields according to the requirements in *Measuring cotton consumption: Requirements and guidance*.

Some RB Members may find that all fields required are contained within a single dataset or database. In other cases, it might be necessary to join multiple datasets together. For example, product purchase data might exist in one software system, with product composition elsewhere belonging to another department. Table 3.2 includes some examples.

Depending on the nature of the data and the RB member's circumstances, it may be possible to use an aggregated report covering multiple data sources. In other situations, the RB member may need to manually aggregate different data sources. Using a field that is common across each data source will help to achieve this, as this will link different data sets together.

Example Data Source	Example Fields *(non-exhaustive)*
Planning & Design Data	Budgets Colorways Forecast Units Range Types Style Number (for products)
Product Specification & Development Data	Colorways Fabric Codes Material Composition Product Type (for products) Style Number (for products)
Purchase & Production Data	Colorways Fabric width / length (for fabrics) Material Composition Product Type (for products) Purchase Order Number Purchase volumes Style Number (for products) Unit Cost Vendor (Supplier) Name Vendor (Supplier) Country

Table 3.2: Data sources (from Figure 3.1) with example fields in each source.

c. Data filters

When gathering data, particularly from software systems, filters are used to include or exclude certain data. The RB Member's choice of filters should be informed by the choices made for each requirement under Section 3 of 'Measuring Cotton Consumption: Requirements & Guidance'.

Example 1: Timeframe

Requirement 3f requires RB Members to measure cotton consumption over a continuous 12-month period.

Table 3.3 illustrates example filters applied to data depending on the data source.

Example Data Source	Example Field	Example filters applied
PO Systems	PO Raised Date	POs raised between 1st January and 31st December, or, POs raised during the RB Member's fiscal year.
PO Systems	Goods Received in Warehouse Date	Goods received between 1st January and 31st December, or, Goods received during the RB Member's fiscal year.
Product Sales Systems	Product Sold Date	Product Lines sold between 1st January and 31st December, or, Product Lines between the RB Member's fiscal year.
PLM Systems	Product Line Season Code	Products under Season Codes "Spring/Summer" and "Autumn/Winter" for a given year.

Table 3.3: Example fields to which data period filters could be applied.

Example 2: Third Party Products

Requirement 3c requires RB Members to exclude third party products. A data filter may be applied, for example, on the RB Member's PO data, to exclude any products that have a value of "Yes" under the "Third Party" field.

d. Additional data

Measuring cotton consumption: Conversion factors and multipliers , also available in the Measuring Cotton Consumption area of the Better Cotton website, gives RB Members the possibility to make their calculation more accurate if they have primary data on the types of fabric and yarns used. This level of accuracy is not mandatory, but it is possible for those with information management systems containing this type of data.

e. Missing data

Some RB Members may find that their systems lack or combine certain fields, for example:

- Product weights are commonly not recorded by ERM, PLM and PO systems,
- Product multipacks may be included in the product description (e.g. “T-shirt 2pk”).

In such cases, RB Members will need to use secondary data or use appropriate analysis techniques to extract relevant data.

To improve the accuracy of calculations, RB Members are encouraged to eliminate gaps in their data. For example, visibility of yarn and fabric types would substantially reduce the need to use industry average multipliers to convert end-product weight to cotton fibre and improve RB Members’ understanding of their total cotton consumption.

4. Calculating cotton consumption

a. Data format

RB Members with large, centralised software for managing business processes may store data and make it available for export in several different formats.

For the majority of RBs, spreadsheet software (such as Microsoft Excel, Google Sheets and LibreOffice Calc) is used for storing, organising, analysing, and presenting cotton consumption data. Spreadsheet software is widely used, it is more flexible and easier to use than specialist tools. However, it is important to note that spreadsheet software is not suitable for larger datasets (e.g. more than 100,000 rows or records and above), where calculations become slow and unreliable.

RB Members with particularly large data sets may wish to procure support from an internal business intelligence specialist or an external consultant who can use specialist data analytics software and techniques to manage large data sets.

	A	B	C	D	E	F
1	**Division**	**Department**	**Team**	**PO Number**	**Qty**	**Product Class**
2	Fashion	Menswear	Denim	11654	1348	Jeans
3	Fashion	Menswear	Denim	13988	255	Jeans
4	Fashion	Menswear	Denim	57204	490	Jeans
5	Fashion	Menswear	Denim	23300	834	Shorts
6	Fashion	Menswear	Denim	93757	4073	Shorts
7	Fashion	Menswear	Knits	39798	4198	Casual Tops
8	Fashion	Menswear	Knits	64247	2068	Casual Tops
9	Fashion	Menswear	Wovens	78429	2296	Casual Tops
10	Fashion	Menswear	Wovens	19630	1315	Casual Tops
11	Fashion	Menswear	Wovens	80204	666	Casual Tops
12	Fashion	Menswear	Wovens	90541	1049	Casual Tops
13	Fashion	Womenswear	Denim	20938	3665	Jeans
14	Fashion	Womenswear	Denim	95719	2906	Jeans
15	Fashion	Womenswear	Denim	98153	1879	Jeans
16	Fashion	Womenswear	Denim	69879	2485	Jeans
17	Fashion	Womenswear	Denim	95409	4654	Jeans
18	Fashion	Womenswear	Denim	10154	4412	Jeans
19	Fashion	Womenswear	Knits	88441	1828	Dresses
20	Fashion	Womenswear	Knits	26602	4330	Dresses
21	Fashion	Womenswear	Knits	68347	2621	Dresses

Figure 4.1. Example list of initial output from a PO system.

b. Cleaning data

Setting up the calculation requires standardised input data. Because data in information management systems may be entered by many different individuals in different team, data may not follow fixed rules, formats or spellings. This is especially common in material composition fields for POs or product lines, but any data may need to be standardised.

The following material composition data may be for an identical fabric, but spreadsheet software will of course recognise them as different compositions, which complicates the analysis:

- “60% Cotton, 40% Polyester”
- “60% Cotton 40% Poly”
- “60CO_40PO”
- “Cot 60 Pol 40”

Data must therefore be cleaned. Cleaning data is the process of standardising it so that it can be easily and more accurately summarised. It involves converting data from one format to another that is more suitable for analysis and removing/replacing outliers.

Some typical examples of data cleaning are given below.

- Standardising and splitting material compositions, including:
  - Correcting spelling and converting material codes / names into a single, standardised format (e.g. “Cotton”).
  - Extracting material percentages into individual numeric data points (e.g. “60%” and “40%” in two different cells in spreadsheet software).

	A	B	C	D	E	F	G
1	Material Composition	Material Type 1	Material % 1	Material Type 2	Material % 2	Material Type 3	Material % 3
2	56% COTTON, 44% POLYESTER	COTTON	56%	POLYESTER	44		
3	100% CASHMERE KNITTED SWEATER WOMENSAND GIRLS	CASHMERE	100%				
4	100% CASHMERE KNITTED SWEATERMEN'S AND BOY'S	CASHMERE	100%				
5	100% CCOTTON	COTTON	100%				
6	100% COTTON	COTTON	100%				
7	100% COTTON JERSEY (50% RECYCLED) @ 250GSM	RECYCLED COTTON	50%	COTTON	50%		
8	100% COTTON WOMEN'S WOVEN OUTERWEAR	COTTON	100%				
9	100% COTTON, WOMENS WOVEN DRESS	COTTON	100%				
10	100% LAMBSWOOL	LAMBSWOOL	100%				
11	100% POLYESTER	POLYESTER	100%				
12	100% VISCOSE	VISCOSE	100%				
13	24% COTTON 45% VISCOSE 31% POLYAMIDE WOMEN'S KNIT PANT	COTTON	24%	VISCUSE	45%	POLYAMIDE	31%
14	50D POLYESTER TERRY 74% COTTON 26% POLYESTER	COTTON	74%	POLYESTER	26%		

Figure 4.2. Example list of material compositions from PLM system (Column A) with individual materials and percentage values split out (Columns B - G)

- **Standardising product or fabric types to apply weights** (for RB Members that do not collect product or fabric weight data)

	A	B	C
1	Product Classification	Assigned Product Silhouette	Product Silhouette Weight (g)
2	Boys Bottoms - Pants	Childrenswear - Boys: Trousers	277
3	Boys Bottoms - Shorts	Childrenswear - Boys: Shorts	145
4	Boys Footwear	Footwear - Lightweight	400
5	Boys Outwear Jacket	Childrenswear - Boys: Coat / Jacket	455
6	Girls Bottons - Pants	Childrenswear - Girls: Trousers	262
7	Girls Bottoms - Shorts	Childrenswear - Girls: Shorts	142
8	Girls Bottoms - Skirts	Childrenswear - Girls: Skirts	112
9	Girls Dresses - Casual	Childrenswear - Girls: Dress	134
10	Girls Dresses - Knit	Childrenswear - Girls: Dress	134
11	Girls Outwear Jacket	Childrenswear - Girls: Coat / Jacket	338
12	Girls Sleepwear - Seasonal	Childrenswear - Girls: Pyjama Set	202
13	Girls Swimwear - Seasonal	Childrenswear - Girls: Swimming Costume	58
14	Girls Tops - Graphic L/S Top	Childrenswear - Girls: T-Shirt Long Sleeve	110

Figure 4.3. Example list of product types (Column A) mapped to a standardised product silhouette (Column B) with the weight of each silhouette (Column C).

Some RB Members may find that their range of product or fabric types include thousands of unique values. Weight data may not be available to suit every combination of product type, fabric weight, design and size. Therefore, data should be standardised into groups so that the closest appropriate weight can be applied in a batch process.

c. Gaps and Assumptions

RB Members are likely to find that some data needed to calculate cotton consumption are missing. For example, fabric composition, product type or fabric weight data may be available for some products but not others.

In such cases, RB Members should, wherever possible, extrapolate from existing data. For example, Figure 4.4. includes products with missing material compositions ("null" in column H). The average material composition of similar products could be calculated to fill these gaps.

When applying assumptions, products that form a significant percentage of their overall cotton consumption should be subject to more scrutiny than those with an insignificant impact on the end results.

B	C	D	E	F	G	H
Division	**Department**	**Team**	**PO Number**	**Qty**	**Product Class**	**Material Composition**
Fashion	Menswear	Denim	11654	1348	Jeans	Null
Fashion	Menswear	Denim	13988	255	Jeans	100% Cotton
Fashion	Menswear	Denim	57204	490	Jeans	100% Cotton
Fashion	Menswear	Denim	23300	834	Shorts	100% Cotton
Fashion	Menswear	Denim	93757	4073	Shorts	75% Cotton 25% Polyester
Fashion	Menswear	Knits	39798	4198	Casual Tops	100% Polyester
Fashion	Menswear	Knits	64247	2068	Casual Tops	100% Viscose
Fashion	Menswear	Wovens	78429	2296	Casual Tops	Null
Fashion	Menswear	Wovens	19630	1315	Casual Tops	75% Polyester 25% Cotton
Fashion	Menswear	Wovens	80204	666	Casual Tops	Null
Fashion	Menswear	Wovens	90541	1049	Casual Tops	Null
Fashion	Womenswear	Denim	20938	3665	Jeans	98% Cotton 2% Elastane
Fashion	Womenswear	Denim	95719	2906	Jeans	98% Cotton 2% Elastane
Fashion	Womenswear	Denim	98153	1879	Jeans	98% Cotton 2% Elastane
Fashion	Womenswear	Denim	69879	2485	Jeans	97% Cotton 3% Elastane
Fashion	Womenswear	Denim	95409	4654	Jeans	97% Cotton 3% Elastane
Fashion	Womenswear	Denim	10154	4412	Jeans	75% Cotton 20% Viscose 5% Elastane
Fashion	Womenswear	Knits	88441	1828	Dresses	60% Cotton 40% Polyester
Fashion	Womenswear	Knits	26602	4330	Dresses	60% Cotton 40% Polyester
Fashion	Womenswear	Knits	68347	2621	Dresses	Null
Fashion	Womenswear	Knits	49927	3517	Dresses	80% Polyester 20% Viscose
Fashion	Womenswear	Knits	60825	2566	Casual Tops	Null
Fashion	Womenswear	Knits	95575	1295	Casual Tops	Null

Figure 4.4. Example output of PO system with gaps in the Material Composition field.

d. Secondary data

RB Members may find that some fields necessary to calculate total cotton consumption are not included in its information management systems. For these fields, secondary data should be used.

The most common example of these is product weights. RB Members are responsible for considering the suitability of secondary data and its applicability to their measurement process.

e. Summarising Data

Once data has been cleaned and standardised, it should be converted to a weight of cotton fibre and then added together to calculate a total weight of cotton fibre across the complete data set.

RB Members should consult the document *Measuring cotton consumption: Conversion factors and multipliers* and use the most appropriate multipliers from the set that Better Cotton has published.

Better Cotton uses the metric system, so final cotton consumption figures should be converted to metric units wherever necessary (metric tons).

To help set targets and monitor performance, RB Members may also wish to consider calculating total cotton consumption by:

- Individual brands (particularly for group companies),
- Individual divisions departments and teams,
- Sourcing offices and suppliers.

Including this data may assist RB members in engaging with stakeholders about specific targets and aspirations and therefore increase the rate of uptake of Better Cotton.

Better Cotton Calculator Tool

If data such as product or fabric weights are not available and RB Members have no way of obtaining such data, Better Cotton offers a *Cotton Calculator Tool* that can be used as an alternative.

The *Cotton Calculator Tool* offers average product weights for common apparel and home textile products. Using these average product weights is acceptable in cases where primary data is not available within the company, but please note that this will decrease the accuracy of the final calculation.

Additional Resources

Better Cotton sources

All Better Cotton guidance documents can be found in the Measuring Cotton Consumption area of the Better Cotton website:

- *Measuring cotton consumption: Better Cotton conversion factors and multipliers.*
- *Measuring cotton consumption: Requirements & guidance.*
- *Better Cotton Calculator Tool*
- *Better Cotton Annual Cotton Consumption Submission Form.*

Further reading

- Textile Exchange: Corporate Fiber and Materials Benchmark (CFMB) "Fiber Uptake Calculations & Reporting Best Practices Guide, 2019."