Fibre52®

FIBRE52 VERIFIED

PUBLIC EVIDENCE SUMMARY

GLOBAL MANUFACTURING EVIDENCE SUMMARY

Documented commercial manufacturing outcomes from Fibre52 processing.

GENERATED FROM ANONYMIZED COMMERCIAL MANUFACTURING DATA

OVERVIEW

EXECUTIVE SUMMARY

Fibre52 has been evaluated across global commercial and bulk manufacturing programs spanning multiple regions, mills, and fabric types. Across these programs, documented results show lower manufacturing intensity, lower process temperatures, reduced resource use, and reduced fabric weight loss compared with conventional preparation, with commercial viability demonstrated on standard mill equipment.

This summary presents representative, anonymized findings drawn from commercial and bulk trial programs conducted with certified and prospective manufacturing partners. It is intended as a documented evidence reference for brands, mills, and sourcing teams evaluating Fibre52 as a processing platform for cotton and cotton blend fabrics.

All results are dependent on mill, fabric, shade, process objective, equipment, and production conditions. Individual outcomes may vary. Figures presented in this document reflect selected trials and are not a guarantee of performance for any specific program.

READER GUIDANCE

HOW TO READ THIS DOCUMENT

This document summarizes anonymized commercial manufacturing data collected across Fibre52 partner mills. It is written for readers evaluating manufacturing evidence at a program level, not for readers seeking a single mill's confidential results.

- Customer-specific and mill-specific reports remain confidential and are not included here.
- Results shown are representative of documented trials and commercial programs. They are not a guarantee of outcomes for any future program.
- Public claims referenced in this document are based on documented manufacturing evidence and are reviewed prior to publication.
- Where a measurement was not evaluated in a given trial, it is omitted rather than estimated.

For a customer-specific Fibre52 Manufacturing Impact Assessment or a project-specific Verification Report, contact the Fibre52 Verified team directly.

COMPANY TIMELINE

FIBRE52 COMMERCIAL JOURNEY

2022

- **Technology Launch**
  The Fibre52 processing platform is introduced to the market as a neutral pH, low-temperature alternative to conventional cotton preparation.

2023–2024

- **Commercial Validation and Process Refinement**
  Trials expand across multiple mills and regions to validate manufacturing outcomes on standard equipment and refine process parameters for a range of fabric constructions.

2025

- **Commercial Manufacturing**
  Fibre52 moves into commercially adopted production at multiple certified partner mills, with documented bulk and at-scale results.

2026

- **Global Expansion and Manufacturing Evidence Platform**
  Fibre52 Verified is introduced as a public evidence platform, consolidating documented manufacturing outcomes across an expanding global partner network.

MANUFACTURING NETWORK

GLOBAL MANUFACTURING FOOTPRINT

Fibre52 is processed today across an expanding network of commercial and industrial validation partners, spanning cotton manufacturing regions worldwide.

COMMERCIAL MANUFACTURING

- India
- Bangladesh
- Pakistan
- Portugal
- Turkey

ACTIVE INDUSTRIAL VALIDATION

- China
- Vietnam
- Peru
- Honduras
- United Kingdom
- Sri Lanka

Mill identities within this network remain confidential unless a partner has approved public disclosure. Regional participation reflects documented commercial and validation activity as of this publication.

AGGREGATED RESULTS

MANUFACTURING IMPACT SUMMARY

The figures below reflect the strongest documented outcomes observed across selected commercial and bulk manufacturing trials.

Up to 50%

Less process water, where measured against conventional preparation

Up to 47%

Less natural gas consumption in selected trials

Up to 45%

Lower CO_2 emissions in documented manufacturing programs

Up to 35%

Shorter processing time across selected commercial trials

Up to 17%

Higher bursting strength, where evaluated by independent or mill-side testing

Results vary by fabric, shade, mill, machine, process objective, and production conditions. Figures represent selected trials and are not representative of every commercial program.

PROCESS OVERVIEW

PROCESS COMPARISON

Fibre52 changes the manufacturing conditions under which cotton is prepared, rather than adding a finish after the fact.

CONVENTIONAL COTTON PREPARATION

90–100°C Typical processing temperature

- Alkaline / caustic soda preparation chemistry
- Higher documented manufacturing intensity

FIBRE52 PROCESSING

60–75°C Typical processing window

- Neutral pH preparation chemistry
- No caustic soda
- Lower documented manufacturing intensity

Process temperatures and chemistry vary by fabric, shade, and process objective. Figures shown represent typical documented ranges, not fixed specifications.

SELECTED TRIALS

REGIONAL MANUFACTURING HIGHLIGHTS

PAKISTAN · COMMERCIAL PRODUCTION

Commercially Adopted Cotton Knit Program

Application: PFD, garment-dye preparation · Fabric: 100% cotton single jersey, 200 GSM, white

Documented outcomes included **up to 26%** shorter processing time, **up to 40%** less process water, **up to 44%** less natural gas, and **up to 45%** lower CO_2 emissions versus the conventional process at this mill.

INDIA · BULK TRIAL

Multi-Construction Bulk Validation

Application: PFD across multiple constructions and shades · Scope: 20 MT trial, jersey, rib, pique, waffle, interlock, terry, fleece

This bulk program documented **up to 33%** shorter processing time, **up to 25%** less process water, and **up to 49%** less steam consumption, with adequate absorbency achieved as required by the customer.

PAKISTAN · HEAVY GSM VALIDATION

Heavy GSM Terry Processing

Application: PFD only · Fabric: 100% cotton terry, 380 GSM, beige

This heavy GSM trial documented **up to 35%** shorter processing time, **up to 50%** less process water, and **up to 38%** lower electricity and natural gas use compared with the conventional process.

SELECTED TRIALS

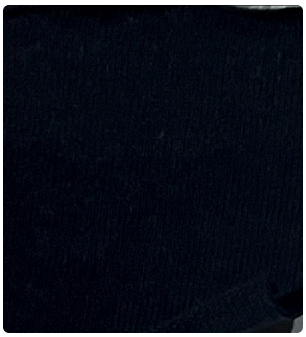
REGIONAL MANUFACTURING HIGHLIGHTS (CONTINUED)

PAKISTAN · PFD AND GARMENT DYE

Bulk-Stage Garment Dye Preparation

Application: PFD only · Fabric: 100% cotton and cotton/Lycra, 180 GSM, blue

This bulk-stage program documented **up to 29%** shorter processing time, **up to 40%** less process water, and **up to 47%** less natural gas versus the mill's conventional process. Photograph shows the documented greige, half-bleach, and dyed progression.



BANGLADESH · BLACK AND DYED FABRIC

Commercially Adopted Black Shade Program

Fabric: blended cotton single jersey, 160 GSM, black and additional dyed shades

This commercially adopted program documented **up to 29%** lower natural gas use, alongside reduced water and electricity consumption. The mill reported achieving matching shade depth using **10% less dye** in the black shade evaluated.

TURKEY · BRAND ADOPTION TRIAL

Jersey and Fleece Validation

Application: dyed fabric · Fabric: 100% cotton jersey and cotton/polyester fleece, 170–300 GSM

Documented outcomes included reduced water and steam use across both constructions evaluated. In a mill employee hand-feel survey, fabric processed with Fibre52 was rated **35% higher** than the mill's conventional process by the panel of participants.

SELECTED TRIALS

REGIONAL MANUFACTURING HIGHLIGHTS (CONTINUED)

INDIA · FULL-WHITE VALIDATION

High-Whiteness Rib Processing

Application: Bleaching, FWA/OBA finishing · Fabric: 100% cotton/Lycra rib, 220 GSM

This full-white trial documented a whiteness index of **154–158**, alongside **up to 23%** less process water, **up to 57%** less steam, and a **12% shorter** batch time versus the mill's conventional double-bleach process, with an approximate 3% weight-loss saving.

INDIA · TOWEL VALIDATION

Terry Towel Processing

Application: Bleaching, dyeing, finishing · Fabric: 100% cotton terry, 400 GSM

This towel trial documented **up to 22%** less process water and a **12% shorter** batch time versus the mill's conventional process, with an approximate 2–2.5% weight-loss saving and hand feel rated superior to the existing process.

INDIA · YARN-STAGE VALIDATION

Package Yarn Bleaching

Application: Yarn bleaching, package dyeing · Fabric: 100% cotton yarn

This yarn-stage trial documented **up to 24%** shorter pretreatment time, **up to 29%** less process water, and **up to 35%** less steam versus the conventional process, extending documented Fibre52 evidence beyond fabric-stage processing.

PROGRAM DESIGN

COMMERCIAL MANUFACTURING INSIGHTS

Commercial manufacturing objectives vary by mill, product category, and brand requirement. Fibre52 is applied as a platform that can be optimized toward different targets depending on what a program is measuring.

- Manufacturing data, including time, temperature, water, and energy use, is the consistent baseline measured across nearly every documented program.
- Fibre52 can be optimized toward different targets such as lower resource use, specific fabric characteristics, absorbency, high-whiteness applications, or reduced softener dependence, depending on the mill and product.
- Not every program measures every fabric quality. A given trial may document manufacturing resource use without also testing whiteness, strength, or hand feel, and vice versa.
- Where a fabric quality was tested, the result is reported as project-specific and tied to the trial conditions in which it was measured.

FABRIC CATEGORY

SOLVING HEAVY GSM PROCESSING CHALLENGES

Heavy GSM cotton fabrics are among the most demanding materials to process. Fibre52 has shown strong potential in helping manufacturers improve processing consistency and reduce creasemark risk, while using a lower-temperature, neutral pH preparation.

In documented heavy GSM trials, including terry and fleece constructions, mills observed reduced processing time and resource use alongside consistent visual quality outcomes, including low reported instances of unevenness and creasemarking where evaluated.

Heavy GSM outcomes are dependent on fabric construction, machine type, and liquor ratio. Results shown reflect selected trials and are not representative of every heavy GSM construction.

Documented fabric sample from a heavy GSM manufacturing trial.

MATERIAL YIELD

WEIGHT LOSS AND COTTON FIBER PRESERVATION

Fabric weight loss is one of the most important manufacturing measurements, because it indicates how much cotton material is retained during preparation.

Lower weight loss can support improved material yield and may indicate greater cotton fiber preservation during the bleaching and dyeing process. Weight loss is measured as the documented difference between greige fabric weight and finished fabric weight, expressed as a percentage, and is tracked as a standard manufacturing metric across Fibre52 commercial trials.

> Weight loss outcomes vary by fabric construction, fiber blend, and process objective. This document does not claim increased strength or performance from weight loss data alone unless bursting strength was separately measured and reported for that trial.

Documented finished fabric sample from a Fibre52 commercial manufacturing trial.

Across trials where weight-loss savings was the tested objective, Fibre52 has documented a 2-4% reduction in fabric weight loss versus conventional preparation.

FIBER PRESERVATION

WHY FIBER PRESERVATION MATTERS

Lower fabric weight loss doesn't just save material : it means less of the cotton fiber's natural structure is stripped away during processing. Across documented trials, that preserved structure shows up as a consistent pattern: fabric that is loftier, softer, and stronger than conventionally processed cotton.

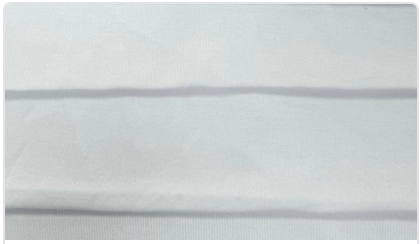
LOFTIER

Documented in towel and knit trials as increased bulkiness and fuller hand, consistent with less fiber damage during preparation.

"Buyer liked that F52-treated fabric was bulkier, brighter & stronger." . Industrial trial feedback

SOFTER

Documented **up to 35% higher** hand-feel score in mill panel testing, with several commercial programs achieving equivalent softness using **up to 50% less** added softener , indicating the fiber itself, not added chemistry, is doing the work.



STRONGER

Documented **up to 17% higher** bursting strength (ASTM D3786-06) versus conventional processing, with fabric also showing **-3.4%** shrinkage after home laundering versus **-8.5%** for conventional fabric (AATCC TM135).

No compromise on colorfastness. Fibre52-processed fabric matched conventionally processed fabric on colorfastness to laundering (AATCC TM61) and colorfastness to perspiration, both acid and alkaline (AATCC TM15), with no measurable reduction in performance.

Outcomes are dependent on fabric construction, fiber blend, and process objective. Figures represent selected trials and are not representative of every commercial program.

FLEXIBILITY BY PROGRAM

MANUFACTURING OBJECTIVES VARY

Fibre52 does not produce one fixed outcome. Mills may adjust parameters depending on the product goal for a given program.

- Desired fabric characteristics, including hand feel and drape
- Absorbency, for applications requiring rapid moisture uptake
- Bright whites, for high-whiteness applications where evaluated
- Finishing requirements specific to the brand or product category

In documented programs, many manufacturers have been able to reduce dependence on silicone softeners, depending on the application and fabric construction. This outcome is project-specific and is reported only where measured.

GOVERNANCE

VERIFICATION AND DATA GOVERNANCE

Every commercial program can generate a Fibre52 Manufacturing Impact Assessment, documenting the specific outcomes measured for that mill and product.

- Customer-specific and mill-specific reports remain confidential and are shared only with the relevant program partners.
- Public summaries, including this document, are generated from anonymized or aggregated data across multiple documented trials.
- Public claims referencing Fibre52 performance are reviewed against documented manufacturing evidence prior to publication.

THIRD-PARTY EVALUATION

INDEPENDENT ASSESSMENT

Fibre52 manufacturing data can support independent assessment, including life cycle assessment or carbon footprint studies, when requested by a partner.

Independent assessments are project-specific and are not required for every commercial program. Where an independent assessment has been completed for a given program, its scope and methodology are documented separately from this public summary.

Requests for independent assessment are coordinated directly with the Fibre52 Verified team and are scoped to the specific mill, product, and reporting requirement involved.

AT A GLANCE

SUMMARY OF EVIDENCE

EVIDENCE AREA	WHAT IS DOCUMENTED	PUBLIC SUMMARY AVAILABLE
Manufacturing resource use	Water, steam, electricity, and gas consumption per trial	Yes
Processing time	Total documented cycle time, conventional vs. Fibre52	Yes
Temperature	Process temperature profile across each documented cycle	Yes
Chemistry usage	Preparation chemistry composition, documented internally	Aggregated only
Fabric weight loss	Greige-to-finished weight differential	Yes
CO_2 emissions	Estimated emissions associated with utility consumption	Yes
Wastewater quality	Documented where measured for a given program	Where measured
Project-specific performance testing	Bursting strength, whiteness, or hand feel, where evaluated	Where evaluated

"Public Summary Available" reflects whether aggregated or representative data for that evidence area appears in this document. Mill-specific and customer-specific detail remains confidential.

Fibre52®

COMMERCIAL EVIDENCE. DOCUMENTED MANUFACTURING. VERIFIED CLAIMS.

Learn more at **fibre52.com/verification**

Contact **fibre52.com/#contact**