

A close-up photograph of a lavender field with numerous purple flower spikes on green stems, set against a blurred background of more lavender plants.

BioCircular Materials Alliance

Materials Biocircularity Database

December 2024

Understanding the Database

Introduction

This document provides a guide to interpreting the first version of the Materials Biocircularity Database. This version includes 32 datasets covering tests on cellulosic materials and chemical combinations. The focus is on evaluating the bioconvertibility of these materials into nutrients for fermentation, a critical factor in assessing biocircularity.

Testing protocols and evaluation methods

includes avoiding and preventing the following anti-competitive practices:

1. **Pretreatment:** Enhances fiber convertibility to sugars.
2. **Enzymatic Hydrolysis:** Breaks down fibers into glucose.
3. **Glucose Quantification:** Evaluates results.

The primary difference between the protocols lies in the pretreatment type: **alkaline** or **mechanical**. Ongoing evaluations will determine the efficiency and relevance of these approaches. Refer to the Materials Biocircularity Database Principles for further details.

In the database, these methods are labeled under the 'Evaluation Methods' column as:

- **24CCA01:** Alkaline pretreatment
- **24CCM01:** Mechanical pretreatment

Evaluation results

Each dataset includes evaluation results for two distinct samples:

- **Base Material Glucose Yield (X%):** Glucose yield from Base Material **before** treatment (baseline biocircularity).
- **After Target Process Glucose Yield (Y%):** Glucose yield from Base Material **after** the Target Process.

The key metric, **Target Process Bioconvertibility Result**, is calculated as the ratio of these two values (Y/X). A higher ratio indicates minimal negative impact on Biocircularity, which is beneficial for biocircularity.

A preliminary **Bioconvertibility Rating** has been assigned based on the Target Process Bioconvertibility Result. This rating is designed as a straightforward reference for product creators to guide design decisions. While this rating serves as an initial indicator, it is expected to evolve over time. As more data becomes available and discussions within the alliance progress, the rating system will be refined to ensure greater accuracy and alignment with industry goals.

Tested samples

Fiber types

The database includes results for various cellulosic materials, such as the following. Evaluation conditions were carefully optimized to achieve moderate glucose yields—approximately 50% of the fiber input—for Base Materials before treatment. This approach ensures the evaluation system is sensitive enough to detect changes in bioconvertibility effectively.

- **Cotton**
- **Linen**
- **Lyocell**
- **Viscose**

Dye types

Dyes tested include:

- **Reactive, Direct, Vat, Indigo** (rows 1–12, 25).

Chemical Finishes

- Softeners, Optical Brighteners, Easy-Care Agents, Water Repellents.
- Mixtures of dyes and finishes, such as:
 - Reactive dyes and softeners
 - Reactive dyes, easy-care agents, and softeners

Next steps

This initial framework version of the Materials Biocircularity Database serves as a foundational starting point for gathering and organizing critical data. While it provides a structured approach to evaluating biocircularity, it is not yet comprehensive or detailed enough to offer extensive practical insights for product design or material innovation. Future iterations will build upon this groundwork to deliver more actionable results.

The next phase involves extensive testing, including trials on material blends and more complex chemical combinations, to better reflect the diverse real-world applications. Collaboration with Alliance members will be key to refining the testing protocols, expanding the range of materials and chemical interactions studied, and validating the results.

By 2026, the insights from these efforts will inform the development of comprehensive Product Design Guidelines. These guidelines will bridge the gap between database findings and practical applications, enabling stakeholders to design truly biocircular products at scale.

Below, you will find a comprehensive and visual legend explanation of each type of data found in this initial version of the Database:

	Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
Explanation	A set of samples (Base Material before and after Target Process) evaluated for bio-convertibility into usable nutrients.	The control sample's composition used as a basis for comparison.	Detailed description of the chemical composition of the Base Material, in its state immediately before undergoing a Target Process. It may have undergone any number of processing steps before undergoing the Target Process.	Type the process which the Base Material has undergone that is the subject of the evaluation: <ul style="list-style-type: none"> • Colorant - dye • Colorant - printing • Finishing 	Chemical substance(s) which remain on the end textile product and have the greatest impact on the bioconvertibility of the Base Material	Formulation product commercial name (optional)	Application method, process conditions and chemical auxiliaries used in the Target process (optional)	Color obtained from the Target Process	Evaluation Method used: 24CCA01 or 24CCM01	Description of the testing protocol and metrics used to evaluate the samples.	Bioconvertibility of the Base Material before the Target Process (X)	Bioconvertibility of the Base Material after the Target Process (Y)	Quotient of Y/X comparing the Bioconvertibility of the Base Material before and after undergoing the Target Process	Biocircularity rating of the Target Process: <ul style="list-style-type: none"> • Excellent: 80% - 100% • Good: 65% - 79% • Fair: 50% - 64% • Poor: 0% - 49%
Example 1	DS-0001	100% cotton	Unprocessed, no chemical (undyed, unfinished)	Colorant - dye	Reactive dye Monofunctional Vinyl Sulfone (VS)	Permission to disclose pending	Dye concentration: 3% (dye weight / fabric weight) Dye temperature: 60°C Dyestuff: sulfated castor oil, bath improver, dye penetrating agent, sodium sulfate, sodium carbonate, detergent	Turquoise	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81%	48.89%	80.39%	Excellent
Example 2	DS-0001	100% cotton	Unprocessed, no chemical (undyed, unfinished)	Colorant - dye	Reactive dye Monofunctional Vinyl Sulfone (VS)	Permission to disclose pending	Dye concentration: 3% (dye weight / fabric weight) Dye temperature: 60°C Dyestuff: sulfated castor oil, bath improver, dye penetrating agent, sodium sulfate, sodium carbonate, detergent	Turquoise	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81%	48.89%	80.39%	Excellent

Materials Biocircularity Database

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
DS-0001	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Monofunctional	Remazol® Turquoise G 133%	Dye concentration: 3% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Turquoise	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	48.9	80.39%	Excellent
DS-0002	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Bifunctional Vinyl Sulfone (VS)	Remazol® Black B-N 150%	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Black	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	37.1	60.98%	Fair
DS-0003	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Monofunctional	Procion® Black PX-N 01	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Black	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	54.1	88.91%	Excellent
DS-0004	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Bifunctional Vinyl Sulfone (VS)	Levafix® ECO Black	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Black	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	36.2	59.50%	Fair

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
DS-0005	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Bifunctional Vinyl Sulfone (VS)/ Monochloro-triazine (MCT)	Remazol® Brilliant Red 3BS 150%	Dye concentration: 3% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: <ul style="list-style-type: none"> scouring and cleaning agents sulfated castor oil bath quality improver dye penetrating agent detergent sodium carbonate 	Red	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	52.2	85.91%	Excellent
DS-0006	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Monofunctional Vinyl Sulfone (VS) - anthraquinone	Remazol® Brilliant Blue RN	Dye concentration: 3% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Blue	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	52.2	85.91%	Excellent
DS-0007	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Monofunctional Vinyl Sulfone (VS) - anthraquinone	Remazol® Black B-N 150%	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Blue	24CCM01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	43.91	37.3	87.21%	Excellent
DS-0008	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye Monofunctional VS	Remazol® Luminous Yellow FL	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Yellow	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	66.5	109.39%	Excellent
DS-0009	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Direct dye Medium size molecule,	Sirius® Black G	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Black	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	11.9	19.49%	Poor

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
DS-0010	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Vat dye Bi-Anthraquinone	Indanthren® Red FBB Coll	Dye concentration: 7% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyeing procedure: 1. Bleaching: hydrogen peroxide, textile treatment agent 2. (Hyper V5) 3. Add colorant at 25C 4. Reduction, raise bath temperature till 60C: sodium dithionite, sodium hydroxide 6. Draining and rinsing 7. Oxidization: hydrogen peroxide, acetic acid 8. Rinsing and soaping: detergent, sodium carbonate	Red	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	16.0	26.29%	Poor
DS-0011	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Vat dye Thioindigo	Indanthren® Brilliant Pink R Coll	Dye concentration: 7% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyeing procedure: 1. Bleaching: • hydrogen peroxide • textile treatment agent (Hyper V5) 2. Add colorant at 25C 3. Reduction, raise bath temperature till 60C • sodium dithionite • sodium hydroxide 4. Draining and rinsing 5. Oxidization: • hydrogen peroxide • acetic acid 6. Rinsing and soaping • detergent • sodium carbonate	Pink	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.81	37.7	61.94%	Fair
DS-0012	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Indigo dye ?	DyStar® Indigo Vat 60% grains	Dye concentration: 7% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyeing procedure: 1. Bleaching: • hydrogen peroxide • textile treatment agent (Hyper V5) 2. Add colorant at 25C 3. Reduction, raise bath temperature till 60C	Blue	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	60.8	58.2	95.75%	Excellent

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
DS-0013	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Finishing	Softener Ethoxylated non-ionic	Further information is proprietary	No further information was provided	Greige	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	48.6	46.0	94.71%	Excellent
DS-0014	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Finishing	Softeners Mixture of 1 Non ionic softener and 1 cationic softener	Further information is proprietary	Impregnation in foulard - continuous process. Auxiliaries: Wetting/Dispersing agent and stabiliser for foulard baths, acid buffer	White	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	46.6	13.3	28.61%	Poor
DS-0015	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Finishing	Optical brightener Stilbene based	Further information is proprietary	No further information was provided	Greige	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	48.6	41.0	84.37%	Excellent
DS-0016	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Finishing	Easy care Mixture of fixing/cross linking agent + aliphatic polyurethane based resin	Further information is proprietary	Impregnation in foulard - continuous process. Auxiliaries: Wetting/Dispersing agent and stabiliser for foulard baths, silicone microemulsion as antistatic and hydrophilic agent, Scavenger for formaldehyde, Acid buffer Treatment applied to 100% CO fabrics	White	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	46.6	21.9	47.08%	Poor
DS-0017	100% Linen	Pretreatment - scoured/prepared for further treatment	No further information was provided	Finishing	Softener Ethoxylated non-ionic softener (ester based)	Further information is proprietary	No further information was provided	Greige	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	43.7	10.1	23.06%	Poor
DS-0018	100% Linen	Pretreatment - scoured/prepared for further treatment	No further information was provided	Finishing	Optical brightener Stilbene based	Further information is proprietary	No further information was provided	Greige	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	43.7	37.7	86.15%	Excellent

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
DS-0019	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant dye	Mixture of Reactive dyes Bifunctional VS + unknown reactive dyes	Further information is proprietary	No further information was provided	Black	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	46.6	21.9	46.95%	Poor
DS-0021	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Finishing	Optical brightener Stilbene based	Further information is proprietary	Yarn treatment by exhaustion in autoclave. Auxiliaries: Detergent and wetting agent, hydrogen peroxide stabiliser, hydrogen peroxide activator, Catalase enzyme for removal of hydrogen peroxide, Lubricant Finishing Color applied to 100% CO	White	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	36.3	82.1	226.23%	Excellent
DS-0022	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Reactive dye	No further information was provided	No further information was provided	Beige brown gold	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose	37.3	31.6	84.77%	Excellent
DS-0023	100% Cotton	Colorant - dye	No further information was provided	Finishing	Water repellent	No further information was provided	No further information was provided	Beige brown gold	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose	31.6	4.4	14.06%	Poor
DS-0024	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Direct dye Medium size molecule,	Sirius® Black G	Dye concentration: 8% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyestuff: (scouring and cleaning agents), sulfated castor oil, bath quality improver, dye penetrating agent, (detergent), sodium sulfate, sodium carbonate	Black	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	37.3	46.2	123.70%	Excellent

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Biocircularity Rating
DS-0025	100% Cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye	Vat dye Thioindigo	Indanthren® Brilliant Pink R Coll	Dye concentration: 7% (dye weight (g)/fabric weight (g)) Dye temperature: 60C Dyeing procedure: 1. Bleaching: • hydrogen peroxide • textile treatment agent (Hyper V5) 2. Add colorant at 25C 3. Reduction, raise bath temperature till 60C • sodium dithionite • sodium hydroxide 4. Draining and rinsing 5. Oxidization: • hydrogen peroxide • acetic acid 6. Rinsing and soaping • detergent • sodium carbonate	Pink	24CCM01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	36.9	33.4	90.39%	Excellent

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Bioconvertibility Rating
DS-0028	100% Iyocell	Prepared for Dyeing (PFD)	Textile auxiliaries: <ul style="list-style-type: none"> Bleaching stabilizers - RUCO-STAB OCD Washing agent - RUCOGEN EPT 18610 Wetting agent - RUCOWET MSE Organic complexing agent for the sequestration of hardness salts and process-disturbing metal ions in the acid demineralising stage - VEROLAN DEM Complexing agent with protective colloid properties for the sequestration of water hardness salts and process-disturbing metal ions, especially all from of iron ion VEROLAN SPA 	Colorant - dye + Finishing	Reactive dyes Softener Monofunctional VS + unknown Microsilicon	<ul style="list-style-type: none"> NOVACRON® BROWN EC-NC: reactive dye NOVACRON® GOLDEN YELLOW C-NC: reactive dye NOVACRON® GREY EC-NC: reactive dye BERGASIL MIC SL: microsilicon BERGASOFT NNY: softener 	<ul style="list-style-type: none"> BERGASIL MIC SL: microsilicon BERGASOFT NNY: softener BERGAWET YS CONC: non-ionic wetting agent NOVACRON® BROWN EC-NC NOVACRON® GOLDEN YELLOW C-NC NOVACRON® GREY EC-NC 	Green	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	57.3	46.1	80.55%	Excellent

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Bioconvertibility Rating
DS-0031	100% Organic cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye + Finishing	<ul style="list-style-type: none"> Bifunctional Vinyl Sulfone Reactive dye Easy care: Anti wrinkle agent Fabric softener (cationic/non ionic) 	<ul style="list-style-type: none"> Dye: Black JAKAZOL KC: reactive black 5 dye: bifunctional VS Dylub PL: Anti crease agent = easy care / anti wrinkle agent; Softine NFL: fabric softener (cationic/non ionic) 	Chemicals: <ul style="list-style-type: none"> Indigal PA- L Liq.: anti reduction agents; Inditol HSW: dyeing auxiliary products; Indipon ECO-SB: Indipon ECO-SB is a soaping agent, of high efficiency to remove excess dye that did not react with the fiber; Dry salt; Sodium Carbonate; Caustic Soda 50%; Acetic acid 	Black	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	55.4	21.6	38.96%	Poor
DS-0033	100% Organic cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant dye	Mixture of Reactive dyes Bifunctional VS + unknown reactive dyes	Further information is proprietary	No further information was provided	Black	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	36.5	13.2	36.09%	Poor
DS-0035	100% Organic cotton	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Finishing	Softeners Mixture of 1 Non ionic	Further information is proprietary	Impregnation in foulard - continuous process. Auxiliaries: Wetting/Dispersing agent and stabiliser for foulard baths, acid buffer	White	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	36.5	31.2	85.57%	Excellent
DS-0039	100% Lyocell	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye + Finishing	Reactive dyes Easy care • 2 bifunctional VS/MCT reactive dyes <ul style="list-style-type: none"> Anti crease/wrinkle agent 	<ul style="list-style-type: none"> Golden Yellow Jakofix MERL150: reactive yellow 176 (65-75%): bifunctional VS/MCT reactive dye; Orange Jakofix ME2RLC: Reactive orange 122 (65%-75%): bifunctional VS/MCT reactive dye; •Dylub PL: Anti crease agent 	Chemicals: <ul style="list-style-type: none"> Croscolor SLR New: Levelling agent for dyeing cellulosic fibres with reactive dyes; Inditol HSW: dyeing auxiliary products; Bio-Touch CL - G: Enzymes, non GMO acid cellulase for biofinishing of cellulosic articles ; Indipon ECO-SB: Indipon ECO-SB is a soaping agent, of high efficiency to remove excess dye that did not react with the fiber; BIO-TOUCH NL - G: Enzyme preparation; Acetic acid; Dry salt; Sodium Bicarbonate; Sodium Carbonate 	Orange	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	68.4	69.0	100.98%	Excellent

Dataset ID	Base Material composition	All Formulations and Processes undergone by Base Material before Target Process	More details on the Processes undergone by Base Material	Target Process Type	Target substance(s) present in the Target process sample	Target Process - Products commercial names	Target Process conditions	Color	Evaluation Method ID	Evaluation Method Description	Base Material Glucose Yield (X%)	After Target Process Glucose Yield (Y%)	Target Process Bioconvertibility Result (Y/X)	Target Process Bioconvertibility Rating
DS-0040	100% Lyocell	Colorant - dye + Finishing	No further information was provided	Finishing	Softeners • a non-ionic softener, • a Polyethylene wax (to facilitate the sewing process) • a silicone emulsion to soften the fabric => silicone softener	<ul style="list-style-type: none"> SOLUSOFT NUP LIQ: softener; SILSOFT MES-G: silicone microemulsion softener (non ionic, slightly cationic in acidic medium) 	Chemicals: <ul style="list-style-type: none"> Arkofix NZF NEW LIQ: cross linking agent; CATALIZADOR NKD LIQ: catalyst; KIERALON MRZ: wetting and cleaning agent 	Black	24CCM01	Cellulosic fibers: Mechanical milling pretreatment, Enzymatic hydrolysis, Glucose quantification	69.0	85.7	124.13%	Excellent
DS-0041	100% Lyocell	Unprocessed, no chemicals (undyed, unfinished)	No further information was provided	Colorant - dye + Finishing	Reactive dyes Easy care • 2 bifunctional VS/MCT reactive dyes • Anti crease/wrinkle agent	<ul style="list-style-type: none"> Golden Yellow Jakofix MERL150: reactive yellow 176 (65-75%): bifunctional VS/MCT reactive dye; Orange Jakofix ME2RLC: Reactive orange 122 (65%-75%): bifunctional VS/MCT reactive dye; •Dylub PL: Anti crease agent 	Chemicals: <ul style="list-style-type: none"> Croscolor SLR New: Levelling agent for dyeing cellulosic fibres with reactive dyes; Inditol HSW: dyeing auxiliary products; Bio-Touch CL - G: Enzymes, non GMO acid cellulase for biofinishing of cellulosic articles ; Indipon ECO-SB: Indipon ECO-SB is a soaping agent, of high efficiency to remove excess dye that did not react with the fiber; BIO-TOUCH NL - G: Enzyme preparation; Acetic acid; Dry salt; Sodium Bicarbonate; Sodium Carbonate 	Orange	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	46.0	48.2	104.78%	Excellent
DS-0042	100% Lyocell	Colorant - dye + Finishing	No further information was provided	Finishing	Softeners • a non-ionic softener, • a Polyethylene wax (to facilitate the sewing process) • a silicone emulsion to soften the fabric => silicone softener	<ul style="list-style-type: none"> SOLUSOFT NUP LIQ: softener; SILSOFT MES-G: silicone microemulsion softener (non ionic, slightly cationic in acidic medium) 	Chemicals: <ul style="list-style-type: none"> Arkofix NZF NEW LIQ: cross linking agent; CATALIZADOR NKD LIQ: catalyst; KIERALON MRZ: wetting and cleaning agent 	Orange	24CCA01	Cellulosic fibers: Alkaline pretreatment, Enzymatic hydrolysis, Glucose quantification	48.2	60.1	124.91%	Excellent