Sustainable Apparel Coalition

Higg Index Sustainability Profiles: Material Performance Methodology

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Sustainable Apparel Coalition

CONTENT

1. Introduction

1.1. Higg Index Transparency Program

1.1.1. The Higg Index transparency program is a multi-staged project that seeks to identify effective methods to communicate both quantitative and qualitative sustainability information to consumers in a way that aligns with governmental initiatives such as the European Commission's Product Environmental Footprint (PEF) project. This first phase of the transparency program consists of the Higg Index Sustainability Profile and the Higg Index Materials Seal, which provide a consistent means to measure and communicate about the environmental performance of the materials in a product, leveraging life cycle impact data from the Higg Material Sustainability Index (MSI).

1.2. Material Performance Methodology

1.2.1. The Material Performance Methodology outlines the criteria and requirements needed for a product to make a Higg Index Material Seal claim as part of the Higg Index Transparency program.

1.2.2. Scope

1.2.2.1. The scope of the claim covers the environmental impact reductions associated with using lower impact materials as part of the Bill of Materials of a product. All materials are compared to their benchmark materials to determine the environmental impact reductions. The environmental impacts are reported for global warming potential, eutrophication, abiotic resource depletion of fossil fuels, and water scarcity. These environmental impacts were chosen as they are the environmental impacts available to users of the Higg MSI, which were selected under guidance of SAC member experts as part of the development of this tool. The specific life cycle impact assessment methods used as well as the rationale for inclusion or exclusion of other impact categories are detailed in the Higg MSI methodology document.

1.2.3. System Boundary

1.2.3.1. The system boundary is the total aggregate of materials manufactured and directly used in the creation of a product, with an optional cut-off for trims and components up to 20% of the total product weight (provided that they don't otherwise require disclosure under textile labeling regulations).

1.2.4. Limitations

1.2.4.1. While the exclusion of trims and components may be viewed as a limitation on the accuracy of the product claim, only relative environmental impact results are produced. The exclusion of these trims and components is therefore equivalent to assuming there are no improvements over conventional materials and that they carry no significant environmental burdens.

1.2.4.2. The initial launch of the Higg Index transparency program focuses on choices related to raw material selection as this is information that is readily able to be verified and is a significant part of a product's footprint. All other manufacturing processes are held constant to standardize results; however, this means that the material impacts may not fully represent the specifics of a material as manufactured. As the methodology evolves, other manufacturing processes will be able to be selected to improve accuracy and enable further pathways to showing impact reductions.

1.2.5. Methodology Criteria

1.2.5.1. The criteria can be divided into several parts covered in detail in this document:

1.2.5.1.1. Product Material Footprint Disclosure

1.2.5.1.2. Material Benchmark Matching

1.2.5.1.3. Impact Reduction Thresholds

1.2.6. Terms & Definitions

1.2.6.1. **Achievement Level:** The threshold impact improvements within the impact category. For example, for Materials Achievement Level, this is the product's aggregated material footprint relative to conventional alternatives, as defined by the Methodology. There are three Material achievement levels based on threshold values of 12.5%, 25%, and 50% impact improvement. Achievement levels typically appear as the first layer of information on a brand or retailer website.

1.2.6.2. **Average Material:** The average material is a production weighted representation of the materials used in apparel and footwear. The average material is the normalization reference for the Higg MSI and has 10 MSI points in each impact category.

1.2.6.3. **Benchmark Material:** The benchmark material is the reference MSI material that any other material is compared to. All benchmark materials have criteria that must be met (ex: functional comparability), as detailed in the *Material Benchmarking* section of this document.

1.2.6.4. **Bill of Materials:** The Bill of Materials (BOM) is a complete list of all the physical items and their corresponding quantities that are required to build a product.

1.2.6.5. **Conventional Process:** A conventional process refers to the most common raw material or material manufacturing process used by industry for a production stage. Typically, a conventional process will be the default selection in the Higg MSI. For instance, polyester fabric uses fossil fuel based polyethylene terephthalate (PET) as the conventional raw material as it is the most commonly used polyester raw material.

1.2.6.6. **Higg MSI:** The Higg Material Sustainability Index (Higg MSI) is a cradle-to-gate life cycle assessment tool that contains environmental impact data for materials that are used in the apparel and footwear industries. The information is organized in a taxonomy of material categories and production stages and covers raw materials and material manufacturing processes, through to finished materials that are ready to be used as part of product assembly.

1.2.6.7. **Impact Categories:** Impact categories are how results from life cycle assessment (LCA) are communicated. Each impact category groups different emissions into one effect on the environment. For example, the impact categories for Material Performance in the Higg Index Sustainability Profile align with those used in the Higg Product Tools and are:

1.2.6.7.1. Global Warming Potential; called “Global Warming” on the Sustainability Profile

1.2.6.7.2. Eutrophication; called “Water Pollution” on the Sustainability Profile

1.2.6.7.3. Water Scarcity; called “Water Use” on the Sustainability Profile

1.2.6.7.4. Fossil Fuel Depletion; called “Fossil Fuels” on the Sustainability Profile

1.2.6.7.5. More information on the Impact Categories, including the detailed LCIA methods that are applied, can be found in the Higg MSI Methodology Document (https://howtohigg.org/higg-msi/higg-msi-methodology-document/)

1.2.6.8. **Material:** A discrete component of a product with a unique physical identity.

1.2.6.9. **Material manufacturing process:** The processing steps that raw materials undergo before becoming finished materials that can be used to create products (ex. Yarn spinning, textile dyeing).

1.2.6.10. **MSI Process:** A life cycle assessment (LCA) model of a specific raw material or material manufacturing process.

1.2.6.11. **Product:** The overall unit that the claim is being applied to (typically a garment identified by a style number and a colorway).

1.2.6.12. **Production Stage:** A common aspect of manufacturing a material. Production Stages share common inputs and outputs. Within a Production Stage, different Process options may be available.

1.2.6.13. **Raw Material:** The content from which a material is made of (ex. Fiber composition).

1.2.6.14. **Trims and Components:** Any material or accessory that has been added to decorate or enhance a product, but that is not part of the main material usage, insulation, or outer fabric surfaces. This includes zippers, buckles, embroidery, etc.

2. Product Material Footprint Disclosure Requirements

2.1 The Product Material Footprint is the aggregated material usage of a product. This information is typically found in a product Bill of Materials and must be completed by the user as a key condition to communicating material performance. For the first version of the Higg Index transparency program, the following requirements must be met:

2.1.1 All materials used in a Product should be included in the disclosure. Trims and components that make up less than 20% (total) of the product weight can be excluded[1].

2.1.1.1 *Example: A zip-up cotton sweater that has a small embroidery on the front does not have to include the embroidery or zipper as these are both considered trims and together are under 20% of the weight of the product.*

2.1.2 Any materials that are disclosed on a product or product information page, whether for regulatory purposes or for other product claims, must be included even when otherwise qualifying for an exemption.

2.1.2.1 *Example: A cotton sweater that has an embroidery on the front that covers 25% of the garment and must be disclosed for regulatory purposes. The embroidery content is disclosed on the product label and must be included in the Product Material Footprint disclosure.*

2.1.3 All disclosed materials must accurately represent their raw material content, in alignment with the Higg MSI Content Guidance[2].

[1] Regulations in different jurisdictions define minimum requirements for disclosure of "textile products". In the EU, any product that is at least 80% textile fiber must disclose their fiber content. The disclosure threshold for the Higg Index Material Seal is aligned with this requirement (i.e. any product that requires textile labelling in the EU would be able to use this same information to report raw material content for the purpose of this methodology.

[2] https://howtohigg.org/higg-msi/guidance-and-definitions/content-guidance-overview/

2.1.3.1 *Example: A windshell is made of a material that uses chemically recycled polyester as its raw material content. The raw material content of this material should be selected as "Polyethylene terephthalate (PET), chemically (methanolysis) recycled."*

2.1.4 The weight percentage of each material used and disclosed in the product must be provided as accurately as possible. Whenever possible, this should be based on the Bill of Materials for a product. If this is unavailable, the weight percentages can be determined through a deconstruction of a finished product.

2.1.4.1 *Example: A cotton t-shirt only is made of only one material. The weight percentage of this material in the Product Material Footprint is reported (correctly) as 100%.*

2.1.4.2 Example: An insulated jacket is made of a nylon shell fabric, a polyester insulation, and a recycled polyester lining. Using material consumption data from the Bill of Materials to determine the weight of each material, the relative proportions of these three materials are determined to be 30%, 50%, and 20% respectively. This breakdown is reported for the Product Material Footprint.

2.1.4.3 Example: An insulated jacket is made of a nylon shell fabric, a polyester insulation, and a recycled polyester lining. No Bill of Materials is available. The product is deconstructed, and each material weighed. The relative proportions are determined to be 30%, 50%, and 20% respectively. This breakdown is reported for the Product Material Footprint.

3. Material Benchmark Matching

3.1 Overview

3.1.1 Material benchmark matching is the process of pairing all materials identified in the product material footprint disclosure with respective benchmark materials. The key purpose is to ensure that impact reductions are made comparing like-to-like materials. All material benchmarks are automatically assigned and cannot be changed. The criteria for the selection of material benchmarks and the current list of approved material benchmarks are included below.

3.2 Benchmarking Criteria

3.2.1 All materials, raw materials, and material manufacturing processes are benchmarked against themselves by default unless the subsequent criteria are met (i.e. default means no improvements can be claimed / no relative change of impacts).

3.2.2 Functionally comparable raw materials and material manufacturing processes can be benchmarked against conventional processes. This is determined by the Higg MSI production stage taxonomy or defined by specific Grouping criteria (Appendix B).

3.2.2.1 Note: The Higg MSI taxonomy of production processes is the default consideration used to determine functional comparability, with expansion by agreement with industry experts (as defined in Appendix B) and/or documented comparative LCAs that conform with the relevant ISO standards (14040, 14044) and that are publicly available. For Higg MSI processes that cross multiple Production Stages, the comparative conventional processes must include the same Production Stages.

3.2.2.2 *Example: Mechanically Recycled Polyester is benchmarked against conventional virgin Polyester and is not compared to Cotton or Recycled Cotton.*

3.2.3 Any material or process can only be benchmarked to itself, unless there is a credible way to validate the claim (see Higg Index Material Transparency Program Verification Protocol).

3.2.3.1 *Example: Recycled Cotton can be validated using content claim standards such as the Global Recycled Standard (GRS). Therefore, it can be benchmarked to conventional cotton.*

3.2.4 Materials and processes are compared to the most similar process in terms of regionality and specificity, when applicable.

3.2.4.1 *Example: Global organic cotton can be compared to global conventional cotton.*

3.2.4.2 *Example: A manufacturing process from the Higg MSI that is specific to a single factory can be compared to a globally representative similar process, except in instances where a regionalized similar process option exists.*

3.2.4.3 Example: Synthetic leather processes should be compared to a benchmark with the same ratio of substrate to PU.

3.2.4.4 *Example: Should the Higg MSI include regional cotton processes, a regional conventional cotton should not be compared to global conventional cotton. A regional organic cotton should be compared to a regional conventional cotton.*

3.3 Approved Material Benchmarks

3.3.1 The approved list of material benchmarks is shown in Appendix A. Materials and processes which are benchmarked to themselves are not shown. Materials and processes benchmarked to themselves can still be used as part of the Product Material Footprint, but do not contribute to any impact reductions needed for Achievement Levels. This list is expected to grow over time as more material categories and material manufacturing processes are included into the material benchmarks.

4. Impact Reduction Thresholds

4.1 Overview

4.1.1 The impact reduction thresholds determine the achievement level for a product making a Higg Index Transparency claim. All impact reductions are calculated at the product level using information from the Product Material Footprint and as compared to the relevant Material Benchmarks.

4.2 The impact Impact Reduction Criteria

4.2.1 To qualify for any level of achievement, a product must show a significant reduction in its carbon and water footprints..

4.2.2 The carbon footprint is made up of two elements, Global Warming Potential and Fossil Fuel Depletion. These measure different but complementary elements to a carbon footprint: a reduction in climate impacts (Global Warming Potential) and a reduction in the reliance on and use of non-renewable fossil fuels (Fossil Fuel Depletion).

4.2.3 The water footprint is measured with two elements, Water Scarcity and Eutrophication. Water Scarcity measures the impacts of blue water consumption (i.e. water that is removed from a surface or groundwater source that is not returned to the same watershed) and weights it by its potential for water deprivation. The chosen impact method, AWARE, factors in both water availability and demand (including both human and ecosystem demand). Eutrophication is the amount of nutrient pollution (specifically Nitrogen and Phosphorus) that are emitted into the environment and end up in waterways. There, the excess nutrients can cause algae blooms and hypoxic (low oxygen) dead zones. Eutrophication can be caused by agricultural processes such as overapplication of fertilizers as well as manufacturing processes, such as nitrous oxides emitted while burning coal or other fossil fuels.

4.2.4 In order to qualify for an achievement level, a product must have a relative decrease in Global Warming Potential compared to its material benchmarks. The Sustainable Apparel Coalition has a goal to see our membership reduce their absolute greenhouse gas footprint by 45% by 2030. Products are an important focus area to achieve this goal and all materials must contribute to reductions to achieve this goal.

4.2.5 For Fossil Fuel Depletion, Water Scarcity, and Eutrophication, products must either show a relative impact decrease compared to their material benchmarks or to the average apparel/footwear material.

4.2.6 Note: The description on how the average apparel/footwear material is calculated is included in the Higg MSI methodology document and is equivalent to 10 MSI points for each impact category.

4.3 Product Performance Levels - Impact Reduction Thresholds

4.3.1 There are three levels of achievement possible. The highest performance level (Level 3) was selected such that only products that are on a trajectory to meet the SAC goal of a 45% reduction in greenhouse gas footprint will qualify. Selecting any threshold lower than a 50% reduction would send a mixed message as a product could qualify for the top achievement level even while it falls short of what is required to meet this climate goal. The other two performance levels each represent a further halving of the minimum achievement towards this goal. A product must meet the thresholds in all four impact measures to earn each Achievement Level. As described previously, all impact reductions are measured as compared to their material benchmarks.

4.3.1.1 Minimum Thresholds for Level 1 Achievement

- 12.5% reduction in Global Warming Potential
- 12.5% reduction in Fossil Fuel Depletion or under 8.75 MSI points[3]
- 12.5% reduction in Water Scarcity or under 8.75 MSI points[3]
- 12.5% reduction in Eutrophication or under 8.75 MSI points[3]

4.3.1.2 Minimum Thresholds for Level 2 Achievement

- 25% reduction in Global Warming Potential
- 25% reduction in Fossil Fuel Depletion or under 7.5 MSI points[4]
- 25% reduction in Water Scarcity or under 7.5 MSI points[4]
- 25% reduction in Eutrophication or under 7.5 MSI points[4]

4.3.1.3 Minimum Thresholds for Level 3 Achievement

- 50% reduction in Global Warming Potential
- 50% reduction in Fossil Fuel Depletion or under 5 MSI points[5]
- 50% reduction in Water Scarcity or under 5 MSI points[5]
- 50% reduction in Eutrophication or under 5 MSI points[5]

[3] 12.5% reduction vs. average material

[4] 25% reduction vs. average material

[5] 50% reduction vs. average material

4.3.2 Impact reduction thresholds are expected to increase over time, reflecting the relative requirements to achieve an absolute reduction in greenhouse gas impacts as the industry continues to grow.

4.4 Impact Category Visualization Bars

4.4.1 Individual impact category results can be displayed separately from the overall product performance level. This provides further transparency and details into the environmental impacts and aids further understanding.

4.4.2 Each impact category will have its own visual horizontal bar with a scale 0-100. The filled in portion of the bar reflects the percentage reduction in that particular category.

4.4.3 It should be noted that the impact bars are always displaying the relative reduction for that impact category. This means that it can be possible for a product to meet a higher performance level than is indicated by an individual impact category visual bar in cases where the product meets the absolute MSI point threshold in water scarcity, fossil fuel depletion, or eutrophication footprint.

1. Product Example

5.1 An insulated jacket is being assessed to determine its achievement level for material performance. The fiber content is known to be "Shell: 100% Recycled Nylon; Insulation: 50% Recycled Polyester, 50% Polyester; Lining: 100% Recycled Polyester".

5.2 Step 1: Product Material Footprint Disclosure

5.2.1 Unfortunately, no Bill of Materials was available for this product. To determine the relative weight of each material, the jacket is disassembled. The result was:

Shell: 160 grams
Insulation: 220 grams
Lining: 120 grams
Trims (zippers, elastic cuffs, cord, cord lock, thread): 30 grams

5.2.2 The total weight of the materials is 160 + 220 + 120 = 500 grams and the total product (including trims) weighs 500 + 30 = 530 grams. The trims are unknown content but only make up 30 / 530 = 5.6% of the total product weight and can be excluded from the Product Material Footprint disclosure.

5.2.3 Out of the 500 grams of materials, the content is determined:

Shell: 160 / 500 = 32% (of 100% Recycled Nylon raw material)
Insulation: 220 / 500 = 44% (of 50% Recycled Polyester and 50% Polyester raw materials)
Lining: 120 / 500 = 24% (of 100% Recycled Polyester raw materials)

5.2.4 Since the Insulation has multiple raw materials, it needs to be further divided:

50% Recycled Polyester from 44% overall = 22% Recycled Polyester
50% Polyester from 44% overall = 22% Polyester

5.2.5 Which means the total Product Material Footprint contains the following material percentages:

32% Recycled Nylon Fabric

22% Recycled Polyester Insulation
22% Polyester Insulation
24% Recycled Polyester Fabric

5.2.6 These materials are matched up with the appropriate materials from the list of materials in the Higg MSI:

Product Material Name	**Higg MSI Material Name**
Recycled Nylon Fabric	Nylon fabric, recycled
Recycled Polyester Insulation	Polyester insulation, mechanically recycled
Polyester Insulation	Polyester insulation
Recycled Polyester Fabric	Polyester fabric, mechanically recycled

5.2.7 These materials and their percentages make up the complete Product Material Footprint for this product.

5.3 Step 2: Material Benchmark Matching

5.3.1 Each of the materials in the Product Material Footprint are automatically matched to their benchmark materials:

Higg MSI Material	**Higg MSI Benchmark Material**
Nylon fabric, recycled	Nylon fabric
Polyester insulation, mechanically recycled	Polyester insulation
Polyester insulation	Polyester insulation
Polyester fabric, mechanically recycled	Polyester fabric

5.4 Step 3: Calculating Impact Reductions

5.4.1 The impact reductions for the Product Material Footprint are calculated by looking at the aggregate bill of materials against the benchmark materials and the impact results for each category for this product are:

5.4.1.1 Product Impact Reductions (Relative)

Global Warming Potential	Water Scarcity	Fossil Fuel Depletion	Eutrophication
-41%	-15%	-52%	-19%

5.4.1.2 Product Impact Reductions (Higg MSI Points - Absolute)

Global Warming Potential	Water Scarcity	Fossil Fuel Depletion	Eutrophication
5.24	0.74	5.57	2.17

5.5 Step 4: Assigning Achievement Level

5.5.1 The product achieves greater than 25% reduction in Global Warming Potential, but below 50% reduction (Level 2 performance).

5.5.2 The product only achieves 15% reduction in Water Scarcity but has an absolute value of 0.74 Higg MSI points, below the 5 Higg MSI point absolute threshold required for Level 3 performance (Level 3 performance)

5.5.3 The product archives greater than 50% reduction in Fossil Fuel Depletion (Level 3 performance)

5.5.4 The product only achieves 19% reduction in Eutrophication but has an absolute value of 2.17 Higg MSI points, below the 5 Higg MSI point absolute threshold required for Level 3 performance (Level 3 performance)

5.5.5 The final level assignment is based on the impact area with the lowest performance. For this product, the limiting impact category is Global Warming Potential which only achieves Level 2. Therefore, this product is assigned **Level 2 Achievement Level**.

2. Related Documents

6.1 Higg Index Material Transparency Program Verification Protocol

6.2 Higg MSI Methodology Document

6.3 Higg MSI Content Guidance

3. Document Change Log

Date	Section	Summary of Changes
5/3/2021	all	Updates and clarifications per legal review
5/12/2021	all	Formatting and numbering
01/25/2022	Section 1, 3, 4, Appendix A, Appendix B, and Appendix C.	**Section 1:** Updates to language **Section 3:** Updates on Benchmark Criteria to signal the potential for groupings and provide clarity on industry agreement and the characteristics of LCAs. Expanded Approved Material Benchmarks definition to include all raw materials and processes (previously only textiles and insulation were considered)

		Section 4: Updated language on 'Impact Category Visualization Bars'. **Added Appendix A:** Approved Materials Benchmarks table moved from Section 3 to appendix A; expanded list now includes all raw material categories. **Addition of Appendices B and C**: Grouping Methodology and MET discussion record) **Updates to formatting and numbering**

APPENDIX A: APPROVED MATERIAL BENCHMARKS TABLE

Raw Material Name	Benchmark Process
TEXTILES	
Cotton fiber, organic	Cotton fabric
Cotton fiber, recycled	Cotton fabric
LENZING™ ECOVERO™ Viscose	Viscose/Rayon fabric
LENZING™ Viscose, Indonesia	Viscose/Rayon fabric
Nylon, mechanically recycled	Nylon fabric
Polyethylene terephthalate (PET), chemically (BHET) recycled	Polyester fabric
Polyethylene terephthalate (PET), chemically (methanolysis) recycled, for textiles	Polyester fabric
Polyethylene terephthalate (PET), mechanically recycled, for textiles	Polyester fabric
Polyethylene terephthalate (PET), semi-mechanically recycled	Polyester fabric
Polypropylene (PP), recycled, for textile	Polypropylene (PP) fabric
TENCEL™ Lyocell {Lenzing}	Viscose/Rayon fabric*
TENCEL™ Modal {Lenzing}	Viscose/Rayon fabric**
TENCEL™ Modal Eco Color (color/black) {Lenzing}	Viscose/Rayon fabric**
Wool fiber, recycled from waste textile, for textiles	Wool fabric
INSULATION MATERIAL	
Duck down, recycled	Duck Down insulation
Goose down, recycled	Goose Down Insulation
Polyethylene terephthalate (PET) plastic, chemically (BHET) recycled, for insulation	Polyester insulation

Polyethylene terephthalate (PET), chemically (methanolysis) recycled, for insulation	Polyester insulation
Polyethylene terephthalate (PET), mechanically recycled, for insulation material	Polyester insulation
Polyethylene terephthalate (PET) plastic, semi-mechanically recycled, for insulation	Polyester insulation
Wool fiber, recycled from waste textile, for insulation	Sheep Wool insulation
COATINGS AND LAMINATIONS	
Polyethylene terephthalate (PET), mechanically recycled, for coatings and laminations	Monolithic Laminate
FOAM	
Ethylene-vinyl acetate (EVA), recycled	Ethylene-vinyl acetate (EVA) foam
Polyethylene (PE), recycled, for foam	Polyethylene (PE) foam
METALS	
Steel billet, recycled, electric arc furnace (EAF)	Steel
PLASTICS	
Nylon, mechanically recycled, for plastic	Nylon/Polyamide (PA) plastic
Polycarbonate, recycled	Polycarbonate (PC) plastic
Polyethylene (PE), recycled, for plastic	Polyethylene (PE) plastic
Polyethylene terephthalate (PET) plastic, chemically (BHET) recycled, for plastic	Polyester plastic
Polyethylene terephthalate (PET) plastic, mechanically recycled	Polyester plastic
Polyethylene terephthalate (PET) plastic, semi-mechanically recycled, for plastic	Polyester plastic

Polyethylene terephthalate (PET), chemically (methanolysis) recycled, for plastic	Polyester plastic
Polypropylene (PP), recycled for plastic	Polypropylene (PP) plastic
Thermoplastic Polyurethane (TPU), recycled	Thermoplastic Polyurethane (TPU) plastic
RUBBERS/ELASTOMERS	
Polybutadiene, recycled	Polybutadiene rubber (BR)
SYNTHETIC LEATHER	
Polyethylene terephthalate (PET) substrate, mechanically recycled (55% substrate, 45% PU)	Polyurethane (PU) synthetic leather
Polyethylene terephthalate (PET) substrate, mechanically recycled (65% substrate, 35% PU)	Polyurethane (PU) synthetic leather
Polyethylene terephthalate (PET) substrate, mechanically recycled (75% substrate, 25% PU)	Polyurethane (PU) synthetic leather
WOOD-BASED MATERIALS	
Cardboard, recycled	Cardboard
Paper, recycled	Paper
Note: This list is based on the MSI 3.3 data update. *This benchmark is based on the grouping of MMC proposed on Appendix B Part IV. Previous benchmark was Lyocell fabric. ** This benchmark is based on the grouping of MMC proposed on Appendix B Part IV. Previous benchmark was Modal fabric.	

APPENDIX B: GROUPING METHODOLOGY

PART I: CRITERIA FOR GROUPINGS

Groupings of raw materials or processes, beyond existing example material/process groupings, take place when:

1. LCA data is available in the Higg MSI to support in-group comparisons,

2. The materials or processes within the group are generally considered functionally equivalent in material development decisions, such as quality, production decisions, hand feel, etc. (i.e. design/developers often substitute them as they fulfill similar product requirements), and

3. Ranking materials or processes by price has a different order than ranking by environmental impact and thus adding environmental impact considerations would potentially affect price-based sourcing decisions (i.e. the material with lowest environmental impact is not the lowest in price).

NOTE: *Criteria are based on expert judgment and industry insights, and are subject to review. Functionally equivalent is a 'general consideration' and not individually verified e.g. quality of materials is not tested, etc. Price is not revised on a year-by-year basis, but from a 'general' price change perspective e.g. 10 year price trends, etc.*

PART II: BENCHMARK FOR GROUPINGS

The benchmark for groupings, beyond existing example material/process groupings, will be the 'most widely used' material or process.

- The determination of 'most widely used' is based on expert judgment and overall industry insights.

- The benchmark for groupings will be updated if/when the benchmark is no longer considered 'most widely used' for the group. Changes on benchmark will require further alignment by MET/industry consultation. Note: Changes that occur due to modification of benchmark will be additional to Achievement level changes that might occur due to routine background data updates and primary data updates through MSI Contributor.

- Only generic fibers/processes will be considered for the benchmark.

NOTE: *'Most widely used' was determined as the benchmark for groupings after extensive examination by the MET. Prior to selecting this option, the MET explored a Benchmark defined by Production Volumes of the materials in the group. After critical exploration, the benchmark by production volumes was removed from consideration due to:*

- *Challenges to access reliable and timely production volume data (particularly for Other Raw materials i.e.Leather, Synthetic leather, Plastics, Rubber, Foam, Metal, Wood-based Materials, Insulation, and Coatings and Laminations);*
- *Being applicable to raw materials only;*
- *Challenges on timeliness of updates that would pose difficulties on external communication of claims and clarity to consumers.*

Part III: Industry Alignment

Every materials or processes groupings proposed require industry alignment as follows:

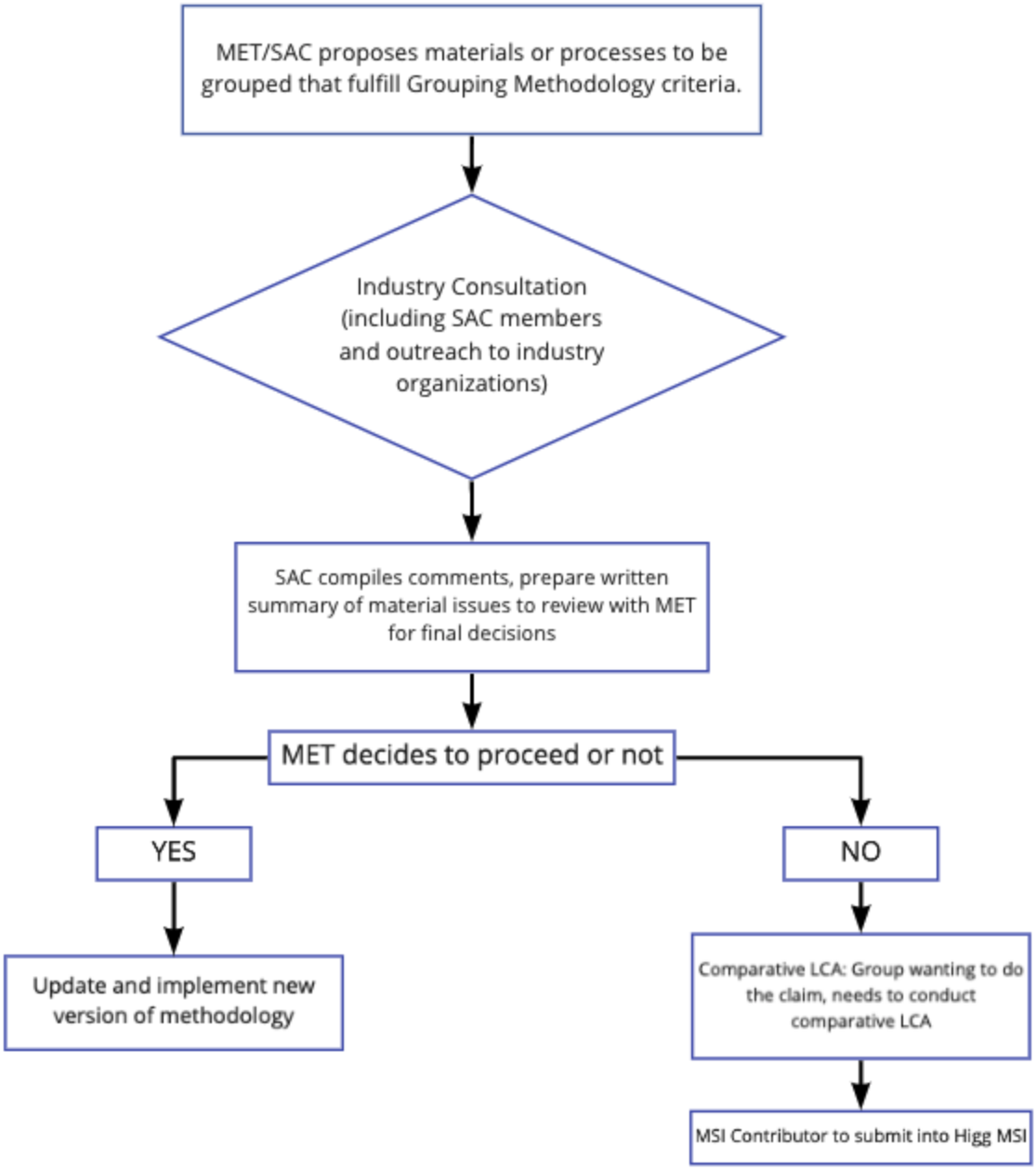
- MET/SAC proposes materials or processes to be grouped that fulfill Grouping Methodology criteria. Other groupings proposed outside of the MET (e.g. by SAC or industry members) will need to undergo the MET review and evaluation process before proceeding to the next layer of alignment and industry consultation.
- Proposal undergoes industry consultation, including SAC members and outreach to industry organizations.
    - Where grouping affects specific industry segments, active outreach to representative organizations will be conducted e.g. outreach to MMCF Roundtable for the grouping of MMC.
    - The industry consultation phase shall be available for at least 60 days for comment submissions.
- After industry consultation is closed, SAC will

  a. compile all comments received during consultation period;

  b. prepare a written summary of material issues to review with MET for final decisions (see below);

  c. and summarize output
- Where there is agreement, methodology is updated and grouping is implemented on the next cohort.

- Where feedback results in reverse recommendations:
    - Company, manufacturer, or industry organization that wants to do a claim about equivalencies of materials or processes not currently grouped, need to conduct a comparative LCA that conform with the relevant ISO standards (14040,14044) and that is publicly available (as determined on Criterion 3.1.3.)
    - Results of the comparative LCA need to be submitted into Higg MSI through the MSI Contributor process. All LCA submissions must follow the same methodological requirements for inclusion as per Higg MSI Methodology document and MSI Gatekeeper process.


MET/SAC proposes materials or processes to be grouped that fulfill Grouping Methodology criteria.
Industry Consultation (including SAC members and outreach to industry organizations)
SAC compiles comments, prepare written summary of material issues to review with MET for final decisions
MET decides to proceed or not
YES
NO
Update and implement new version of methodology
Comparative LCA: Group wanting to do the claim, needs to conduct comparative LCA
MSI Contributor to submit into Higg MSI

Part IV: Grouping of Man Made Cellulosics (MMC)

- All Acetate, Lyocell, Modal, and Viscose fibers (including both generic and proprietary fibers) are grouped as Man Made Cellulosic fibers (MMC) to have a single benchmark following the above Criteria for Groupings (Part I).
- The fibers under the MMC grouping are all benchmarked to Viscose/Rayon (generic), regenerated cellulose from wood pulp, seen on the Approved Material Benchmarks table in Section 3 as 'Viscose/Rayon fabric'. The selection of 'Viscose/Rayon fabric' as benchmark is aligned to the Benchmark for Groupings (Part II) as it is the most widely used fiber in the MMC category.
- The MMC grouping is exclusive for the Higg Index Transparency Program and does not affect the material impacts and scores on the MSI. The grouping has effects on the Achievement Levels of proprietary fibers but does not increase the achievement level (i.e. representation of impact reductions) of generic fibers formerly benchmarked against themselves.

APPENDIX C: MET DISCUSSION RECORD

This Appendix reflects the main discussion topics and expert advice of the 'Transparency Materials Methodology - Member Expert Team (MET)' that ran from July 26, 2021 until December 7, 2021.

- **Expanded processes benchmarks:** Aside from the expansion of raw material categories (included in Appendix A: Approved Material Benchmarks table), the processing stages beyond these raw materials remain fixed, with few exceptions. Expanding into these processing stages will provide expanded pathways to meeting the Achievement Levels, but more data in the Higg MSI is needed to enable this. The MET recommends expanding to the full processing stages of Leather and Coatings & Laminations, and to expand to the wet processing stage of Textiles.

  The MET reviewed the Textile wet processing stages (Preparation, Coloration, and Finishing) and concluded that processes will need to be compared to themselves until more data is available on MSI to define the comparable processes and benchmarks. There were no conclusive recommendations for the processing stages of all other material categories.

- **Benchmark for groupings:** The MET explored four potential scenarios to define the benchmark for groupings: Scenario A: Weight by Production Volumes, Scenario B: Weight materials equally, Scenario C: Most Widely Used, and Scenario D: Worst impact. Ultimately 'Most widely used' was selected. Weighting materials equally did not reflect reality sufficiently and choosing 'worst impact' would result in more materials considered preferred even if they were most widely used. Production Volume weighting was investigated but there was no clear method to deal with data gaps around quantifiable production volumes and the benchmark results were very similar to "most widely used" due to the weighting.

- **Textile materials groupings:** The MET discussed the potential to group textile materials that could sometimes be considered to be functionally equivalent, for example grouping cotton and hemp, grouping all bast fibers (i.e. hemp, flax, and jute), grouping MMC (acetate, lyocell, modal, and viscose), grouping synthetic fibers (Nylon, Polyester, Polypropylene, and Acrylic fabric), and grouping alpaca and wool. This conversation was used as a basis to define the Criteria for

Groupings (Appendix B - Part I), focusing on what will accelerate the adoption of lower impact material processing. Following this discussion, the MET conducted a meticulous scenario analysis of MMC and Synthetics to evaluate how the groupings would benefit or impact the achievement levels of conventional materials. The MET proposed the grouping of MMC (included by this methodology update). The grouping of synthetics was vetted against the proposed Criteria for Groupings (Appendix B - Part I) and was not proposed for grouping since it does not fulfill the criteria.

- **Verification:** Verification for material achievement was discussed by the MET including following Chain-of-custody or different verification pathways (e.g. Brands should be able to provide a proof order sheet or contract specifying the process claimed, and facilities will provide proof / acknowledgement of chemical manufacturer, machine supplier, etc). Ultimately, there was agreement that best practices for claims verification should be followed and that this can be different across material categories and processing stages. Some challenges recognized by the MET were ensuring that the submission process is clear to guarantee scalability and best practices, and having a centralized location for certificates. Ultimately, the proposal is to align with the FEM validation process, with an additional attestation that the facility has the capability to process the claim being made. The final verification document is being developed by the Higg Index Transparency Program team and will be reviewed by the relevant certification bodies and industry stakeholders.