



Textile
Exchange



apparel
alliance

Supply Chain Taxonomy

For the textile, apparel,
and fashion industry

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Overview

The apparel alliance is a partnership among four organizations: Apparel Impact Institute, Cascale (formerly Sustainable Apparel Coalition), Textile Exchange, and ZDHC. It is working on aligning goals, solutions, tools, reporting, events, and training to create a connected, end-to-end path to action for the entire apparel and footwear industry. The primary objective is to reduce greenhouse gas (GHG) emissions by at least 45% by 2030.

One key area of focus is the development of “Standardized Goals & Measurements”. This harmonized Supply Chain Taxonomy is part of a larger effort to align the four organizations and the broader industry.

The use of supply chain tiers (1, 2, 3, and 4) is widespread in the textile industry, helping categorize and organize the stages of production, sourcing, and distribution. However, inconsistent interpretation of these tiers often arises due to misaligned definitions and classifications. For example, some categorize ‘pulp’ and ‘fiber’ in tier 4, while others place them in tier 3. Such discrepancies can lead to differing results, such as variations in GHG emissions modeling or inconsistencies in supplier disclosure measurements across tiers. A tiered classification helps companies, stakeholders, and regulators manage the complexities of the supply chain more effectively.

This project aims to establish a uniform classification system of the textile supply chain. The goal is to align this system across all apparel alliance partners, developed in consultation with key industry stakeholders for input and calibration. The classification system is now publicly available to encourage widespread and consistent adoption across the industry.

An industry-aligned supply chain classification offers several key benefits:

- **Clarity and consistency in communication:** A standardized tiered classification ensures all stakeholders use the same terminology, reducing misunderstandings and enhancing more effective collaboration and messaging.
- **Transparency and accountability in reporting:** Uniform reporting of fiber and materials production across tiers promotes transparency and accountability, making it easier to track, compare, and report production data throughout the supply chain.
- **Risk management:** A consistent framework for allocating impact data helps manage risks by clearly defining environmental and social impact boundaries.
- **Efficient collaboration:** Standardization reduces duplicative efforts, leading to more efficient, cost-effective operations and identifying collaboration opportunities.
- **Driving industry improvements:** A consistent approach allows for easier comparison of practices and enhances collaboration among stakeholders, driving improvements and alignment on key industry initiatives.

Methodology

The [apparel alliance](#) partners – Textile Exchange, Cascale (formerly Sustainable Apparel Coalition), Apparel Impact Institute (Aii), and ZDHC Foundation – collaborated to create a harmonized Supply Chain Taxonomy, published in November 2024.

This taxonomy builds on previous foundational work in supply chain mapping and classifications, including:

- WRI and Aii (2021). *Roadmap to Net Zero: Delivering Science-Based Targets in the Apparel Sector*, p. 4. ([Link](#))
- UNEP (2022). *Sustainability and Circularity in the Textile Value Chain - A Global Roadmap*, p. 13 and p. 18. ([Link](#))
- The Leather Working Group – Leather processing inputs & outputs
- UNECE (2021) - *Traceability and Transparency in the Textile and Leather Sector, Part 1: High-Level Process and Data Model* ([Link](#)).

This taxonomy also incorporates key terms and definitions, including those outlined in the EU regulations, international standards and voluntary standards, including:

- EU regulation on textile labeling and fiber composition. ([Link](#))
- EU regulation related to labeling materials used in footwear components. ([Link](#))
- ISO standards such as ISO 14009:2020(en) for defining “raw material”. ([Link](#))
- Textile Exchange’s raw materials, processes, and products classification, developed with the Global Organic Textile Standard (GOTS), published in the [ASR-213 Materials, Processes, & Products Classification](#) (first released in 2020 and updated in 2021, 2023, and 2024).

The development process involved consultations with both internal and external stakeholders, to whom we express our gratitude for their contributions.

The taxonomy is not intended to be comprehensive but provides a high-level overview of products and processes. While it acknowledges that certain processes, like dyeing, could be further sub-categorized (e.g., dope dyeing), the focus remains on broader categories for overarching alignment. Full alignment on specific product and process definitions is still ongoing and part of a long-term effort.

To ensure its effectiveness and applicability, the taxonomy was developed with the following guiding principles in mind:

- **Alignment with regulatory terms:** It aligns with regulated definitions, providing a standardized approach accepted across the industry.
- **Inclusivity:** It includes both fiber-based and non-fiber materials (e.g., leather, down, rubber) commonly used in the textile, apparel, and fashion sectors.
- **Simplicity with detail:** While structured around four main supply chain tiers, it offers flexibility for adding sub-tiers when needed, avoiding unnecessary complexity.
- **Upstream focus on the supply chain up to retail:** It was developed from a brand's perspective, tracing the supply chain backward to align with the most common approach for supply chain classifications in the textile industry. Though it doesn't encompass the use phase and end-of-life stages, their importance is recognized, especially in the context of circular textile value chains. For mapping fibers and related processes to the different supply chain tiers, a linear visualization was chosen, but it can also be represented as a circle or nested circles to reflect circularity.
- **Consistency in data aggregation:** Comparable processes and products across fiber and material categories are classified at the same level, enabling consistent data analysis. This approach allows for different aggregation of comparable products (e.g., cotton fiber and viscose fiber), even though primary processing for cotton involves mainly one stage (ginning), while for MMCFs it requires two stages (pulp and extrusion), ensuring consistent comparison instead of mixing inconsistent ones (e.g. cotton fiber and viscose pulp).
- **Alignment with existing industry efforts:** It is aligned with key product outputs that are measurable and commonly reported across most fibers and materials, such as ensuring that dyed yarn is not separately categorized unless it is widely measured. Additionally, it is aligned to fit within existing supply chain tier scopes used in existing GHG modeling and Life Cycle Assessments (LCA), including the World Resources Institute (WRI) and Apparel Impact Institute's *Roadmap to Net Zero*, based on impact data from Cascale and production volumes from Textile Exchange, ensuring it supports broader sustainability and carbon reduction efforts.

Several key areas of alignment were established to ensure consistency and clarity across the contributors:

- **Processed raw materials (fibers):** Commoditized raw materials having undergone primary processing are classified as Tier 4, not Tier 3. This decision is crucial because classifying them in Tier 3 would require reallocating and recalculating the GHG footprint for the industry in ways that are not currently possible. This classification of tier 4 "Raw Material Production & Primary Processing" aligns with the first processing step "Obtain fibers for spinning" in the UNECE Textile Value Chain data model ([UNECE, 2021](#)).
- **Non-fiber materials (e.g., leather):** "Raw hides" are categorized as processed raw materials in Tier 4, while "leather" is classified as a finished material in Tier 2. This distinction ensures clarity and consistency in material categorization within the supply chain.
- **Vertically integrated facilities:** For facilities handling multiple processes, specific data points may be challenging to allocate to individual tiers. In such cases, transparency about the allocation method used and compliance with relevant requirements are essential. This approach allows for flexibility while preserving classification system's consistency.

Framework

The diagram outlines the Supply Chain Taxonomy framework.

The following key fibers and raw materials are included in this version:

- Cotton
- Flax (linen), hemp, jute, nettle, and ramie
- Wool, alpaca, angora, camel, cashmere, guanaco, llama, mohair, vicuña, yak, and horsehair
- Silk
- Acetate, diacetate, triacetate, cupro, lyocell, modal, and viscose (rayon)
- Acrylic, elastane (spandex), polyamide (nylon), polyester, polyethylene, polyethylene terephthalate (PET), polylactic acid (PLA), and polypropylene
- Down and feathers
- Leather
- Natural rubber
- Composite materials¹

Additional fibers and raw materials may be included in future versions.²

¹Combination of any of the above and potentially additional materials

²Not covered but listed in the ASR 213: Acrylonitrile Butadiene Styrene (ABS), Elastomultiester (elasterell-P), Ethylene vinyl acetate, Modacrylic, Polycarbonate (PC), Polycarbonateacrylonitrile butadiene styrene (PC-ABS), Polystyrene, Polyurethane, Thermoplastic Elastomer (TPE), Thermoplastic Rubber (TPR), inorganic materials.

Supply Chain Taxonomy Framework³

	Tier 4 (T4) Raw Material Production & Primary Processing				Tier 3 (T3) Intermediate Material Processing		Tier 2 (T2) Material Manufacturing		Tier 1 (T1) Finished Product Manufacturing		Tier 0 (T0) Branding, Retailing & Distribution
	Tier 4 Extraction, Production, Collection	Raw Material (RMF)	Tier 4 Primary Processing ⁴	Processed Raw Material (PRM)	Tier 3 Processes	Intermediate Material (IM)	Tier 2 Processes	Finished Material (FM)	Tier 1 Processes	Finished Product (FP)	Tier 0 Processes
Primary Raw Materials											
Cotton	Farming, Harvesting	Seed cotton (raw cotton)	Ginning	Lint cotton	Spinning	Yarn	Knitting, Weaving, Non-woven manufacturing, --- Dyeing, Printing, Embellishing	Knitted fabric, Woven fabric, Non-woven fabric --- Dyed fabric, Printed fabric	Manufacturing, --- Washing, Laundering, Dyeing, Printing, Embellishing, Cleaning	Finished product, --- Apparel, Home textiles, Accessories, Worn accessories, Personal care, hygiene, Medical, Bedding, Footwear, Functional accessories, Outdoor, Industrial, technical	Retail sales, Branding, Warehousing & distribution
Flax (linen), Hemp, Jute, Nettle, Ramie	Farming, Harvesting	Harvested plants	Retting, Scutching, Hackling, Degumming, Decortication	Staple fiber							
Wool, Alpaca, Angora, Camel, Cashmere, Guanaco, Lama, Mohair, Vicuna, Yak, Horsehair	Farming, Shearing	Greasy wool ⁵ , Greasy animal fibers	Scouring, Cleaning	Scoured fibers, Combed fibers, Tops							
Silk	Farming, Harvesting, Boiling ⁶	Raw silk	Cleaning, Degumming	Silk filament							
Cupro, Lyocell, Modal, Viscose (rayon)	Forestry, Farming, Capturing from air/emissions ⁷	Wood, Bio-based raw materials, CO ₂ -based raw materials	Pulp making, Extrusion	Staple fiber, Filament							
Acetate, Diacetate, Triacetate	Forestry, Farming, Extracting from the earth (e.g. oil, gas) ⁸	Wood, Bio-based raw materials, Fossil-based raw materials	Pulp making, Extrusion	Staple fiber, Filament							
Acrylic, Elastane (spandex), Polyamide (nylon), Polyester, Polyethylene, Polyethylene terephthalate (PET), Polylactic acid (PLA), Polypropylene	Extracting from earth (e.g. oil, gas), Farming + Refining ⁹ , Capturing from air/emissions ¹⁰	Fossil-based raw material, Bio-based raw materials, Carbon captured from the air	Pre-treatment, Extrusion	Staple fiber, Filament							
Down & Feathers	Farming	-	Slaughtering, Down processing	Down, feather		Filling, stuffing					
Leather	Farming	-	Slaughtering	Raw hide	Tanning	Tanned hide wet blue	Re-tanning, Finishing				
Natural rubber	Forestry, Latex tapping	Liquid latex	Latex processing	Pre-vulcanized rubber latex		Rubber crepes					
Composite materials	Often a combination of two or more of the above	Often a combination of two or more of the above	Often a combination of two or more of the above	Often a combination of two or more of the above		Semi-finished composite material	Finishing				
Secondary Raw Materials											
Reclaimed (any of the above)	Collecting, Sorting	Reclaimed materials	Mechanical recycling, Chemical recycling, Biological recycling, Extrusion	Recycled staple fiber, Recycled filament, Recycled down, Recycled leather fibers	Mixing	One or more of any of the above		One or more of any of the above		One or more of any of the above	One or more of any of the above

³ The above Supply Chain Taxonomy Framework is not comprehensive, nor do all products and processes apply in all cases (e.g. spinning fiber into yarn is not used for non-woven materials). It displays examples of the most common processes and products. Primary and secondary raw materials of different kinds can and often are also mixed at different stages across the supply chain.

⁴ It's important to note that Tier 4 processing may include multiple processing steps as specified in the table.

⁵ In the case of "pulled wool", the greasy wool is the output after the slaughtering.

⁶ "Boiling" is not applied for "ahimsa" silk.

⁷ "Capturing from air/emissions" is only applicable for CO2e-based manmade cellulose.

⁸ "Extracting from the earth" only applicable in the case of acetate, diacetate, and triacetate that uses virgin fossil raw materials as partial feedstock.

⁹ "Farming & refining" is only applicable for partially or fully biobased synthetics.

¹⁰ "Capturing from air/emissions" is only applicable for CO2e-based synthetics.

Taxonomy and definitions

Supply chain tiers

Code	Tier	Name	Description
T0	Tier 0	Branding, Retailing & Distributions	Marketing and distribution of final products without production process. Output: Finished products (e.g., apparel, home textiles, footwear).
T1	Tier 1	Finished Product Manufacturing	Assembly and manufacturing of final products. Output: Finished products (e.g., apparel, home textiles, footwear).
T2	Tier 2	Material Manufacturing	Production and finishing of materials (e.g., fabrics, trims) that go directly into finished product. Output: Finished materials (e.g., fabrics, finished leather, composite material).
T3	Tier 3	Intermediate Material Processing	Processing of raw materials into yarn and equivalent state. Output: Intermediate material (e.g., yarn).
T4	Tier 4	Raw Material Production & Primary Processing	The extraction and farming of primary raw materials from the earth (e.g., fossil fuels), plants (e.g., cotton), or animals (e.g., wool), and the collection of secondary raw materials (e.g., reclaimed textiles), as well as the processing of these raw materials into a commodity state. Production: Extraction and farming of primary raw materials and collection of secondary raw materials. Primary processing: Primary processing of (primary/secondary) raw materials into commodity state. Output: Raw material (e.g. seed cotton, greasy wool, reclaimed materials, latex, petrochemicals, wood, and raw hides). Processed raw material (e.g. staple fiber and filament and hides).

Output categories

Code	Term	Description
RMF	Raw material / Feedstock	Primary or secondary material that is used to produce a product (ISO 14009:2020). Where: Virgin material / Primary raw material: Material which has never been processed into any form of end-use product (ISO 14009:2020). These include both finite materials (e.g., iron ore extracted from the ground) and renewable materials (e.g., newly grown cotton). Reclaimed material / Secondary raw material / Recovered material / Non-virgin material: Material that would have otherwise been disposed of as waste or used for energy recovery but has instead been collected and reclaimed as a material input, in lieu of new primary raw material, for a recycling process. (TE-101-V1.4)
PRM	Processed raw material	Raw material that has been refined into a commodity state that can be further processed into any form of finished or end-use textile product (e.g., staple fiber and filament and raw hide).
IM	Intermediate material	Refined raw material that has been processed into yarn and equivalent state for use as intermediate textile products.
FM	Finished material	Processed material that has be further processed into fabric and equivalent state for use as intermediate textile products.
FP	Finished product	Processed material that has been manufactured and transformed for use as end-use-product.

Disclaimer

The apparel alliance partners collaborated on establishing a common Supply Chain Taxonomy framework for high level aggregation and reporting of key fibers and raw materials. However, due to the complexities of the apparel, footwear, and textiles supply chain, the alignment of specific and detailed production processes, product outputs, and related definitions is an ongoing process. Exceptions to the processes and products defined in the framework may still exist.