Curtains
Key Performance Indicators

Version 02.06

THESIS
BY THE SUSTAINABILITY CONSORTIUM

About the Curtains Key Performance Indicators

This THESIS Performance Assessment covers textile products for decorating windows. This includes, but is not limited to, curtains, drapes, valences, shades. It does not include hardware, curtain rods, blinds. The information you collect for these KPIs should cover your global production and not be specific to any region or buyer (e.g., retailer).
Remember to download the assessment documents to help you in completing the KPIs. Make sure to review the detailed guidance and resources for each KPI. Your work is saved automatically but not shared until you are ready.

Introduction

The Sustainability Insight System, THESIS, from The Sustainability Consortium (TSC) is a comprehensive and holistic solution for understanding environmental and social performance in consumer goods supply chains. These key performance indicators (KPIs) can be used to assess action, transparency, and continuous improvement on the material sustainability issues for brands, manufacturers, and producers.

TSC created this KPI set using its science-based, multi-stakeholder, and full life-cycle development process. TSC members and partners, including manufacturers, retailers, suppliers, service providers, NGOs, civil society organizations, governmental agencies, and academics, contributed valuable perspectives and expertise.

TSC is a global organization dedicated to improving the sustainability of consumer products that also offers a portfolio of services to help drive effective implementation. For more information please visit www.sustainabilityconsortium.org

Contents

Key Performance Indicators

QUESTION	RESPONSE OPTION
1. Cellulosic material sourcing – Chemical use What percentage of the viscose or cellulosic fiber (e.g., rayon, modal) in your product comes from viscose mills that are low risk for chemical use and emissions?	**A.** Not applicable. We do not use viscose or cellulosic fiber in our products or our mills are not listed in the CanopyStyle Hot Button Report. **B.** We are unable to determine at this time. **C.** We have begun mapping our viscose or cellulosic material supply chain to the mills. **D.** We are able to report the following: **D1.**_____% of the viscose or cellulosic material in our product, by mass, comes from producers or mills that are associated with low risk for chemical use and emissions in the CanopyStyle Hot Button Report.
2. Cellulosic material sourcing – Deforestation What percentage of the viscose or cellulosic fiber (e.g., rayon, modal) in your products comes from viscose mills that are low risk for sourcing from ancient and endangered forests?	**A.** Not applicable. We do not use viscose or cellulosic fiber in our products or our mills are not listed in the 2020 CanopyStyle Hot Button Report. **B.** We are unable to determine at this time. **C.** We have begun mapping our fabric supply chain to the viscose mills. **D.** We are able to report the following: **D1.**_____% of the viscose or cellulosic fiber in our product, by mass, comes from viscose mills that are associated with low risk of sourcing from ancient & endangered forests and other controversial sources in the CanopyStyle Hot Button Report.
3. Plant-derived material sourcing What percentage of your plant-derived material supply was traced to the processing facility, covered by a verifiable comprehensive plan for managing farm-level environmental impacts, and covered by a verifiable comprehensive plan for farm-level social impacts?	**A.** Not applicable. Our products do not contain any plant-derived materials. **B.** We are unable to determine at this time. **C.** We are able to report the following for our plant-derived material supply: **C1.**_____% of our plant-derived material supply, by mass, was traced to the processing facility. **C2.**_____% of our plant-derived material supply, by mass, was covered by a verifiable comprehensive plan for managing farm-level environmental impacts. **C3.**_____% of our plant-derived material supply, by mass, was covered by a verifiable comprehensive plan for farm-level social impacts. **C4.**_____% of our plant-derived material supply for which we are able to report in response options C1-3 is cotton.
4. Synthetic material sourcing What percentage of your synthetic material supply was traced to the production facility of origin, covered by a verifiable comprehensive plan for managing facility environmental impacts, and covered by a verifiable comprehensive plan for facility social impacts?	**A.** Not applicable. Our products do not contain synthetic materials. **B.** We are unable to determine at this time. **C.** We are able to report the following for our synthetic material supply: **C1.**_____% of our synthetic material supply, by mass, was traced to the production facility of origin. **C2.**_____% of our synthetic material supply, by mass, was covered by a verifiable comprehensive plan for managing facility environmental impacts. **C3.**_____% of our synthetic material supply, by mass, was covered by a verifiable comprehensive plan for facility social impacts. **C4.**_____% of our synthetic material supply for which we are able to report in response options C1-3 is polyester.
5. Wool and down sourcing What percentage of your wool and down supply, by mass, was traced to the animal farm operation of origin and had certifications or verifiable, regularly conducted audits for animal welfare and environmental impacts?	**A.** Not applicable. We do not use wool or down in any of our products. **B.** We are unable to determine at this time. **C.** We are able to report the following for our wool and down supply: **C1.**_____% of our wool and down supply, by mass, was traced to the animal farm operation of origin. **C2.**_____% of our wool and down supply, by mass, was covered by a current comprehensive certification for farm-level environmental impacts or by verifiable, regularly conducted audits for farm-level environmental impacts. **C3.**_____% of our wool and down supply, by mass, was covered by a current comprehensive animal welfare certification or by verifiable, regularly conducted animal welfare audits.

6. Greenhouse gas emissions - Supply chain What percentage of textile fabric used in your final product, by mass purchased, was produced by suppliers that reported their annual Scope 1 and 2 greenhouse gas emissions?	**A.** We are unable to determine at this time. **B.** The following percentage of fabric, by mass purchased, was produced by suppliers that reported Scope 1 and 2 greenhouse gas emissions: **B1.**_____%.
7. Wastewater generation - Supply Chain What percentage of textile fabric used in your final product, by mass purchased, was provided by suppliers' whose processing facilities have undergone supplier audits and meets or exceeds standards for wastewater quality for the five following metrics: biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), temperature, and pH?	**A.** We are unable to determine at this time. **B.** We are able to report the following for the textile fabric used in our products: **B1.**_____% of our textile fabric was produced in facilities that met or exceeded the standard for COD. **B2.**_____% of our textile fabric was produced in facilities that met or exceeded the standard for BOD. **B3.**_____% of our textile fabric was produced in facilities that met or exceeded the standard for TSS. **B4.**_____% of our textile fabric was produced in facilities that met the standard for pH. **B5.**_____% of our textile fabric was produced in facilities that met the standard for temperature.
8. Water use - Supply chain What percentage of textile fabric used in your final product, by mass purchased, was produced by suppliers that reported their total annual water use?	**A.** We are unable to determine at this time. **B.** The following percentage of fabric, by mass purchased, was produced by suppliers that reported total water use: **B1.**_____%.
9. Worker Health and Safety - Supply Chain How did your organization manage worker health and safety risks in the operations that produced the textile fabric supply used in your final product?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our supply: **B1.**_____% of the textile fabric supply used in our final product, by mass, was produced in operations that have performed a risk assessment to identify high-risk areas for health and safety. **B2.**_____% of the textile fabric supply used in our final product, by mass, was produced in operations that train workers on health and safety procedures. **B3.**_____% of the textile fabric supply used in our final product, by mass, was produced in operations that implement a verifiable worker health and safety plan. **B4.**_____% of the textile fabric supply used in our final product, by mass, was produced in operations that have a worker health and safety performance monitoring system in place. **B5.**_____% of the textile fabric supply used in our final product, by mass, was produced in operations that were audited in the last three years on worker health and safety issues.
10. Air quality - Manufacturing What percentage of this product, by mass, comes from company-owned and contract manufacturing facilities performing final cut, sew, and dyeing operations that tracked and reported their annual air emissions?	**A.** We are unable to determine at this time. **B.** The following percentage of this product, by mass, comes from facilities that tracked and reported their annual air emissions: **B1.**_____%.
11. Greenhouse gas emissions intensity - Manufacturing What was the greenhouse gas emissions intensity associated with final manufacture of your product?	**A.** We are unable to determine at this time. **B.** Our greenhouse gas emissions intensity was: **B1.**_____ kg CO2e per metric tonne of product. **B2.**_____% of our product, by mass produced, is represented by the number reported above.

12. Labor Rights - Manufacturing How did your organization manage labor rights risks in the company-owned and contract manufacturing facilities performing final cut, sew, and dyeing operations for your final product?	**A.** We are unable to determine at this time. **B.** We are able to report the following: **B1.**_____% of our final product, by mass, was produced in facilities that were covered by an internal policy that has quantitative time-bound goals related to child labor, discrimination, forced labor, and freedom of association and collective bargaining. **B2.**_____% of our final product, by mass, was produced in facilities that were reviewed by a risk assessment that identifies high-risk areas for labor rights abuses. **B3.**_____% of our staff responsible for procurement activities have been trained on labor rights issues in the supply chain. **B4.**_____% of our staff responsible for procurement activities have been evaluated via performance metrics on labor rights improvements in the supply chain. **B5.**_____% of our final product, by mass, was produced in facilities that were low-risk, that were high-risk but corrective actions were taken, or that were audited on child labor, discrimination, forced labor, and freedom of association and collective bargaining in the last three years.
13. Microfiber release – Manufacturing How does your company address microfiber release during manufacturing?	**A.** Not applicable, we only use plant-based fibers that biodegrade in water. **B.** We are unable to determine at this time. **C.** We are able to report the following: **C1.**_____% of our synthetic textile supply, by mass, comes from manufacturers who monitor microfiber release. **C2.**_____% of our synthetic textile supply, by mass, comes from manufacturers who utilize alternatives to wet processing. **C3.**_____% of our synthetic textile supply, by mass, comes from manufacturers who have implemented practices and technologies to minimize microfiber release.
14. Worker Health and Safety - Manufacturing What was the injury and illness rate at company-owned or contract manufacturing facilities that produced your final product?	**A.** We are unable to determine at this time. **B.** Our injury and illness rate over our last twelve-month reporting period was: **B1.**_____. **B2.**_____% of our product, by mass produced, is represented by the number reported above.
15. Hazardous Chemical Discharge Management What is your organization's approach to managing chemicals on the ZDHC Manufacturing Restricted Substances List in your products?	**A.** Not applicable, we have a policy to not use any chemicals on the ZDHC Manufacturing Restricted Substances List at any of our manufacturing facilities and we verify that this is true using analytical methods. **B.** We ensure legal and regulatory compliance. **C.** In addition to (B), we have programs with goals to prioritize and continuously reduce, eliminate, or restrict the use of chemicals on the ZDHC Manufacturing Restricted Substances List in our products using various tools and protocols to make informed substitutions of the identified substances. **D.** In addition to (C), we publicly disclose our goals and progress concerning the reduction, elimination, or restriction of chemicals on the ZDHC Manufacturing Restricted Substances List in our products. **E.** In addition to D, the following percentage of our manufacturing facilities have had a reduction in the use of chemicals on the ZDHC Manufacturing Restricted Substance List: **E1.**_____%.
16. Product Design What percentage of your product, by unit volume, was designed to reduce manufacturing, use, and end-of-life impacts?	**A.** We are unable to determine at this time, or we do not address these impacts. **B.** We are able to report the following about our products: **B1.**_____% of our products, by unit volume, underwent a lifecycle assessment. **B2.**_____% of our products, by unit volume, were designed to maximize material efficiency. **B3.**_____% of our products, by unit volume, were designed to reduce laundering impacts. **B4.**_____% of our products, by unit volume, were assessed for durability as part of the design process. **B5.**_____% of our products, by unit volume, were designed for resource reutilization.

17. Recycled content What is the ratio of the mass of recycled fiber to the total mass of fiber used in your final products?	**A.** We are unable to determine at this time. **B.** We are able to report the following for our products: **B1.**_____ is the ratio of the mass of recycled fiber to the total mass of fiber used in our final products. **B2.**_____ % of our products, by mass, is represented by the number reported above. **B3.**_____% of our recycled material supply, for which we are able to report in response options B1-B2 is polyester.

Key Performance Indicators with Guidance

1. CELLULOSIC MATERIAL SOURCING – CHEMICAL USE

Question	Response Options
What percentage of the viscose or cellulosic fiber (e.g., rayon, modal) in your product comes from viscose mills that are low risk for chemical use and emissions?	**A.** Not applicable. We do not use viscose or cellulosic fiber in our products or our mills are not listed in the CanopyStyle Hot Button Report. **B.** We are unable to determine at this time. **C.** We have begun mapping our viscose or cellulosic material supply chain to the mills. **D.** We are able to report the following: **D1.**_____% of the viscose or cellulosic material in our product, by mass, comes from producers or mills that are associated with low risk for chemical use and emissions in the CanopyStyle Hot Button Report.

Guidance

Calculation & Scope	CanopyStyle's Hot Button Ranking and Report is the primary viscose and cellulosic fiber sourcing analysis tool for the fashion sector. Calculate D1 as the mass of your cellulosic material that was supplied by producers or mills included in the CanopyStyle Hot Button Report and ranked in the yellow to green bottle range for the Chemical Use and Emissions column, divided by your total mass of cellulosic material supply, then multiply by 100. Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.
Certifications, Standards & Tools	**2020 CanopyStyle Hot Button Report:** The 2020 Hot Button Ranking of viscose producers is conducted using the consistent application of the tools and standards of the CanopyStyle initiative, including the CanopyStyle Audit. https://hotbutton.canopyplanet.org/ **Button up to Protect Forests — Producer Progress Criteria:** The audit standard and process were developed by Canopy, in partnership with NEPCon, and is supported by the CanopyStyle Leaders for Forest Conservation and brands, retailers and designers looking to implement their sourcing policies for man-made cellulosic textiles. https://hotbutton.canopyplanet.org/ranking-criteria-explained/
Hotspots Addressed	***5.*** *Chemical use - Textile Production*

2. CELLULOSIC MATERIAL SOURCING – DEFORESTATION

Question

What percentage of the viscose or cellulosic fiber (e.g., rayon, modal) in your products comes from viscose mills that are low risk for sourcing from ancient and endangered forests?

Response Options

- **A.** Not applicable. We do not use viscose or cellulosic fiber in our products or our mills are not listed in the 2020 CanopyStyle Hot Button Report.
- **B.** We are unable to determine at this time.
- **C.** We have begun mapping our fabric supply chain to the viscose mills.
- **D.** We are able to report the following:
  D1._____% of the viscose or cellulosic fiber in our product, by mass, comes from viscose mills that are associated with low risk of sourcing from ancient & endangered forests and other controversial sources in the CanopyStyle Hot Button Report.

Guidance

Calculation & Scope

CanopyStyle's Hot Button Ranking and Report is the primary viscose and cellulosic fiber sourcing analysis tool for the fashion sector. Calculate D1 as the mass of your cellulosic material that was supplied by producers or mills included in the Canopy Hot Button Report and ranked in the yellow to green shirt range for the Hot Button Assessment column, divided by your total mass of cellulosic material supply, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

2020 CanopyStyle Hot Button Report: The 2020 Hot Button Ranking of viscose producers is conducted using the consistent application of the tools and standards of the CanopyStyle initiative, including the CanopyStyle Audit.
https://hotbutton.canopyplanet.org/

Button up to Protect Forests — Producer Progress Criteria: The audit standard and process were developed by Canopy, in partnership with NEPCon, and is supported by the CanopyStyle Leaders for Forest Conservation and brands, retailers and designers looking to implement their sourcing policies for man-made cellulosic textiles.
https://hotbutton.canopyplanet.org/ranking-criteria-explained/

ForestMapper: This interactive tool is the only one of its kind to visually represent ancient and endangered forests at a global scale. ForestMapper includes information on numerous ecological values divided into four categories: forests, species, carbon and landscapes.
https://canopyplanet.org/tools/forestmapper/

Definitions

Ancient and Endangered Forests: Intact forest landscape mosaics, naturally rare forest types, forest types that have been made rare due to human activity, and/or other forests that are ecologically critical for the protection of biological diversity. As a starting point to geographically locate ancient and endangered forests, maps of High Conservation Value Forests (HCVF), as defined by the Forest Stewardship Council (FSC), and of intact forest landscapes (IFL), can be used and paired with maps of other key ecological values like the habitat range of key endangered species and forests containing high concentrations of terrestrial carbon and High Carbon Stocks (HCS).

Hotspots Addressed

1. *Cultivation impacts - Plant-derived materials*

3. PLANT-DERIVED MATERIAL SOURCING

Question

What percentage of your plant-derived material supply was traced to the processing facility, covered by a verifiable comprehensive plan for managing farm-level environmental impacts, and covered by a verifiable comprehensive plan for farm-level social impacts?

Response Options

- **A.** Not applicable. Our products do not contain any plant-derived materials.
- **B.** We are unable to determine at this time.
- **C.** We are able to report the following for our plant-derived material supply:
  - **C1.**_____% of our plant-derived material supply, by mass, was traced to the processing facility.
  - **C2.**_____% of our plant-derived material supply, by mass, was covered by a verifiable comprehensive plan for managing farm-level environmental impacts.
  - **C3.**_____% of our plant-derived material supply, by mass, was covered by a verifiable comprehensive plan for farm-level social impacts.
  - **C4.**_____% of our plant-derived material supply for which we are able to report in response options C1-3 is cotton.

Guidance

Calculation & Scope

Plant derived materials include cotton, linen, and hemp. Regenerated or semisynthetic cellulosic materials such as rayon and viscose are considered in the Synthetic Material Sourcing KPI.

Calculate C1 as the mass of your plant-derived material supply that was traced to the processing facility, divided by the total mass of your plant-derived material supply, then multiply by 100. The processing facility is where pre-spinning material processing takes place such as ginning for cotton, or scutching and heckling/hackling for linen.

Calculate C2 as the mass of your plant-derived material supply that was covered by a verifiable comprehensive plan for managing farm-level environmental impacts, divided by the total mass of your plant-derived material supply, then multiply by 100. A comprehensive plan will address pesticide use, fertilizer use, water use, greenhouse gas emissions and all other impacts relevant for the farm. Supply that has been certified by Better Cotton Initiative and Global Organic Textile Standard can be included in the numerator for this calculation.

Calculate C3 as the mass of your plant-derived material supply that was covered by a verifiable comprehensive plan for farm-level social impacts, divided by the total mass of your plant-derived material supply, then multiply by 100. A comprehensive plan will address worker health and safety, community health and safety, support for smallholders where present, and labor rights, including child labor, as well as all other impacts relevant for the farm. Supply that has been certified by Better Cotton Initiative, Fair Trade International, and Fair for Life can be included in the numerator for this calculation.

Calculate C4 as the mass of your cotton material supply that was assessed and met criteria for C1, C2, and C3, divided by the total mass of your material supply, then multiply by 100. The percent entered cannot exceed 100%.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

Better Cotton Initiative: The Better Cotton Initiative offers a standard that addresses environmental and social issues present in the growing of cotton.
https://bettercotton.org/

Cotton USA: Cotton USA is the trademark of the nonprofit Cotton Council International (CCI) which works through quality, sustainability, transparent partnerships, and ethical standards to make US cotton the preferred fiber for the clothing, footwear, and textiles value chain. Through their sustainability value, they aim to make US cotton the most sustainably produced in the world.
https://cottonusa.org/

Fair for Life Certification Program: The Fair Life program provides certification for fair trade and responsible supply chains. The goal of Fair for Life is to ensure social and economic benefits to socioeconomically disadvantaged agricultural producers and workers and to ensure that smallholder producers receive a fair share.
http://www.fairforlife.org/

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

Global Organic Textile Standard: This is an example of textile chemical use standards.
http://www.global-standard.org/the-standard/general-description.html

Recycled Claim Standard (RCS) and Global Recycled Standard (GRS): The Recycled Claim Standard and Global Recycled Standard have the goal to increase recycled materials in consumer products by developing voluntary standards for the certification of recycled input. These standards also cover chain of custody, environmental processing, and chemical restrictions.
https://textileexchange.org/standards/recycled-claim-standard-global-recycled-standard/

THESIS Help Center Video: Plant-derived material sourcing KPI: Short video tutorial on the Plant-derived material sourcing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/533750670

Definitions

Farming operation: An area of land and its buildings, comprised of one or more locations managed together that is used for growing crops that are delivered for further processing or as ingredients to other final products.

Verifiable: Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.

Hotspots Addressed

***1.** Cultivation impacts - Plant-derived materials*

4. SYNTHETIC MATERIAL SOURCING

Question

What percentage of your synthetic material supply was traced to the production facility of origin, covered by a verifiable comprehensive plan for managing facility environmental impacts, and covered by a verifiable comprehensive plan for facility social impacts?

Response Options

- **A.** Not applicable. Our products do not contain synthetic materials.
- **B.** We are unable to determine at this time.
- **C.** We are able to report the following for our synthetic material supply:
  - **C1.**_____% of our synthetic material supply, by mass, was traced to the production facility of origin.
  - **C2.**_____% of our synthetic material supply, by mass, was covered by a verifiable comprehensive plan for managing facility environmental impacts.
  - **C3.**_____% of our synthetic material supply, by mass, was covered by a verifiable comprehensive plan for facility social impacts.
  - **C4.**_____% of our synthetic material supply for which we are able to report in response options C1-3 is polyester.

Guidance

Calculation & Scope

This KPI covers synthetic (e.g., polyester, nylon) and semisynthetic (e.g., rayon, viscose, lyocell) materials.

Calculate C1 as the mass of your synthetic material supply that was traced to the production facility of origin, divided by the total mass of your synthetic material supply, then multiply by 100. The production facility is where the chemical processes (e.g., synthesis, regeneration) to produce the fiber or material are carried out.

Calculate C2 as the mass of your synthetic material supply that was covered by a verifiable comprehensive plan for managing facility environmental impacts, divided by the total mass of your synthetic material supply, then multiply by 100.

Calculate C3 as the mass of your synthetic material supply that was covered by a verifiable comprehensive plan for facility social impacts, divided by the total mass of your synthetic material supply, then multiply by 100.

Calculate C4 as the mass of your synthetic material supply that was assessed and met criteria for C1, C2, and C3 that is polyester divided by the total mass of your synthetic material supply, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Definitions

Verifiable: Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.

Hotspots Addressed

3. *Production impacts - Synthetic materials*

5. WOOL AND DOWN SOURCING

Question

What percentage of your wool and down supply, by mass, was traced to the animal farm operation of origin and had certifications or verifiable, regularly conducted audits for animal welfare and environmental impacts?

Response Options

- **A.** Not applicable. We do not use wool or down in any of our products.
- **B.** We are unable to determine at this time.
- **C.** We are able to report the following for our wool and down supply:
  - **C1.**_____% of our wool and down supply, by mass, was traced to the animal farm operation of origin.
  - **C2.**_____% of our wool and down supply, by mass, was covered by a current comprehensive certification for farm-level environmental impacts or by verifiable, regularly conducted audits for farm-level environmental impacts.
  - **C3.**_____% of our wool and down supply, by mass, was covered by a current comprehensive animal welfare certification or by verifiable, regularly conducted animal welfare audits.

Guidance

Calculation & Scope

Calculate B1 as the mass of your wool and down supply that was traced to the animal farm operation of origin, divided by the total mass of your wool and down supply, then multiply by 100.

Calculate B2 as the mass of your wool and down supply that was covered by a current comprehensive certification for farm-level environmental impacts or by verifiable, regularly conducted audits for farm-level impacts, divided by the total mass of your wool and down supply, then multiply by 100. The certification or audits should address all material environmental impacts including, but not limited to, soil health and erosion, biodiversity and deforestation, fertilizer use, and pesticide use. Material certified to the Responsible Wool Standard may be included in the calculation of B2.

Calculate B3 as the mass of your wool and down supply that came from animal farm operations that either maintain a current comprehensive animal welfare certification or verifiable, regularly conducted animal welfare audit, divided by the total mass of your wool and down supply, then multiply by 100.

To be included in B3, verifiable, regularly conducted audits should be performed by a second party or third party. Government regulations or parties in the supply chain can initiate these audits. Regulations, audits, and certifications that align with the animal welfare standards as described in Section 7 of the World Organisation for Animal Health (OIE) Terrestrial Animal Health Code and are well-enforced by the implementation of auditing systems can be included in your calculation.

Efforts should be taken to achieve minimization of pain, risk of injury, and transmission of diseases or parasites to animals; a physical environment in which the air quality, temperature, and humidity support good animal health; a structural and social environment that allows animals to rest comfortably, provides opportunities for physical and cognitive activity, and allows for the opportunity to perform all beneficial natural, individual, and social behaviors.

Animals should have access to sufficient water and appropriate feed, so as to be free from hunger and thirst. The handling of animals should foster a positive relationship between humans and animals and should not cause injury, panic, lasting fear, or avoidable stress.

Genetic selection should take into account the health and welfare of animals

Material certified to the Responsible Wool Standard and Responsible Down Standard may be included in the calculation of B3.

Certifications, Standards & Tools	**Responsible Down Standard:** The Responsible Down Standard is a voluntary standard for the certification of down from ducks and geese. It addresses issues of animal welfare at the farm, transport, and slaughter stages. http://responsibledown.org/for-business/certification/ **Responsible Wool Standard:** The Responsible Wool Standard is a voluntary standard for the certification of wool from sheep. It addressees issues of animal welfare, land management, and traceability. https://textileexchange.org/standards/responsible-wool/
Definitions	**Animal farm operations:** An area of land and its buildings, comprised of one or more locations managed together, that is used for rearing animals. This includes the growing of crops for animal feed on this land. **Animal welfare:** Animal welfare refers to the well-being of an animal and how an animal is coping with the conditions in which it lives. A good state of welfare varies substantially between different contexts, but in general an animal is in a good state of welfare if it is healthy, comfortable, well-nourished, safe, able to express innate behavior, and not suffering from pain, fear, and distress. Ensuring animal welfare is a human responsibility that requires treatments such as good housing, good care, good feed, humane handling and humane slaughter/killing. The treatments that an animal receives is covered by other terms such as animal care, animal husbandry, and humane management (adapted from The World Organisation for Animal Health (OIE)). **Verifiable:** Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.
Hotspots Addressed	***2.** Production impacts - Wool and down*

6. GREENHOUSE GAS EMISSIONS - SUPPLY CHAIN

Question	Response Options
What percentage of textile fabric used in your final product, by mass purchased, was produced by suppliers that reported their annual Scope 1 and 2 greenhouse gas emissions?	**A.** We are unable to determine at this time. **B.** The following percentage of fabric, by mass purchased, was produced by suppliers that reported Scope 1 and 2 greenhouse gas emissions: **B1.**_____%.

Guidance

Calculation & Scope

Scope 1 and 2 emissions are defined by the Greenhouse Gas Protocol Corporate Standard (2015).

Calculate B1 as the mass purchased from fabric suppliers that reported emissions, divided by total mass purchased from all fabric suppliers, then multiply by 100.

Reporting can occur through public disclosure or private disclosure from the supplier to your organization directly or through another party.

Perform this calculation using data from a 12-month period that ended within 12 months of the date you respond to this question.

If suppliers completed the CDP Climate Change 2020 Questionnaire, refer to C6.1 and C6.3 to determine if they report emissions.

Suppliers who have entered and communicated information required by the Higg Index Facility Environmental Module 3.0 (Higg FEM) "Energy Use & GHG - Level 1" for their facilities may be used to answer this KPI.

If using Field to Market's Fieldprint Platform to determine greenhouse gas emissions associated with cotton production, include energy use for field operations and activities through the first point of sale. This may include on-farm drying and any transport of the crop prior to sale.

Certifications, Standards & Tools

Energy Efficiency Assessment and Greenhouse Gas Emission Reduction Tool for the Textile Industry (EAGER Textile): This tool was developed by the Lawrence Berkeley National Laboratory to aid in evaluating the impacts of introducing energy efficiency measures into a textile facility. According to the China Energy Group, "the EAGER tool will calculate the typical energy savings (electricity, fuel, final, and primary energy), CO2 emissions reduction, cost, and simple payback period...[the tool] is designed to work for textile facilities that have one or more of the following processes: spinning, weaving/knitting, dyeing, printing, finishing, and man-made fiber production."
https://china.lbl.gov/eager-textile

Field to Market's Continuous Improvement Accelerator: Harnessing the power of collaboration across the agricultural value chain and locally-led conservation solutions, Field to Market's Continuous Improvement Accelerator provides a process-based standard for delivering sustainable outcomes for agriculture, people and the planet. The hallmark of the Accelerator's approach lies in a process-based approach to advancing continuous improvement, which is grounded in a foundation that delivers solutions to global sustainable development priorities while also addressing local natural resource concerns. These projects utilize the power of voluntary, and often market-driven, solutions to incentivize improved environmental outcomes and enhance farmer livelihoods. By following a standardized and validated approach, these project pathways can leverage the collective action of the value chain to support resilient ecosystems and enhance farmer livelihoods. The Accelerator currently covers alfalfa, barley, corn, cotton, peanuts, potato, rice, sorghum, soy, sugar beet, and wheat produced in the U.S. and Canada.
https://fieldtomarket.org/our-programs/

Greenhouse Gas Protocol: Calculation Tools: This site provides a list of sector toolsets developed by GHG Protocol, third-party databases, and other tools based on the GHG Protocol standards that can be used to calculate greenhouse gas inventories for use in emissions calculations.
https://ghgprotocol.org/calculation-tools

SAC Higg Index: The Sustainable Apparel Coalition has developed indicator-based assessment tools called the Higg Index, which evaluates the sustainable practices associated with production of apparel and footwear.

https://apparelcoalition.org/the-higg-index/

THESIS Help Center Video: Greenhouse Gas Emissions - Supply Chain KPI: Short video tutorial on the Greenhouse Gas Emissions - Supply Chain KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/465914322

Background Information

CDP Climate Change Questionnaire: The CDP Climate Change Questionnaire provides questions that assess a company's greenhouse gas emissions, goals, and management. The report provided by CDP provides the overview of the results from companies responding to the request.
https://www.cdp.net/en/guidance/guidance-for-companies

Greenhouse Gas (GHG) Protocol Corporate Standard: The Greenhouse Gas (GHG) Protocol provides guidance and is a useful resource published by the World Resources Institute with the World Business Council for Sustainable Development as a guide for monitoring and accounting for greenhouse gas emissions.
https://ghgprotocol.org/corporate-standard

GRI G4 Sustainability Reporting Guidelines: The GRI G4 Sustainability Reporting Guidelines provide a standard set of metrics for companies to report on material environmental, social, and economic impacts, actions, and outcomes.
https://www.globalreporting.org/standards/

Definitions

Greenhouse gas: Gases that contribute to the greenhouse effect by absorbing infrared radiation in the atmosphere, e.g., carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.

Hotspots Addressed

6. *Energy consumption - Yarn spinning*

7. *Energy consumption - Wet processing*

7. WASTEWATER GENERATION - SUPPLY CHAIN

Question

What percentage of textile fabric used in your final product, by mass purchased, was provided by suppliers' whose processing facilities have undergone supplier audits and meets or exceeds standards for wastewater quality for the five following metrics: biochemical oxygen demand (BOD), chemical oxygen demand (COD), total suspended solids (TSS), temperature, and pH?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following for the textile fabric used in our products:

B1._____% of our textile fabric was produced in facilities that met or exceeded the standard for COD.

B2._____% of our textile fabric was produced in facilities that met or exceeded the standard for BOD.

B3._____% of our textile fabric was produced in facilities that met or exceeded the standard for TSS.

B4._____% of our textile fabric was produced in facilities that met the standard for pH.

B5._____% of our textile fabric was produced in facilities that met the standard for temperature.

Guidance

Calculation & Scope

Calculate B1 as the mass of textile fabric from wet processing facilities that have undergone supplier audits and met or exceeded the standard for COD, divided by the total textile fabric from all wet processing facilities, then multiply by 100.

Calculate B2 as the mass of textile fabric from wet processing facilities that have undergone supplier audits and met or exceeded the standard for BOD, divided by the total textile fabric from all wet processing facilities, then multiply by 100.

Calculate B3 as the mass of textile fabric from wet processing facilities that have undergone supplier audits and met or exceeded the standard for TSS, divided by the total textile fabric from all wet processing facilities, then multiply by 100.

Calculate B4 as the mass of textile fabric from wet processing facilities that have undergone supplier audits and met the standard for pH, divided by the total textile fabric from all wet processing facilities, then multiply by 100.

Calculate B5 as the mass of textile fabric from wet processing facilities that have undergone supplier audits and met the standard for temperature, divided by the total textile fabric from all wet processing facilities, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Audits should include verification that discharged wastewater is meeting the standards set forth by the American Apparel & Footwear Association Global Textile Effluent Guidelines for 95% of the sampling period:

- Measurements for BOD and TSS should be below or equal to 30 ppm.

- Measurements for COD should be below or equal to 100 ppm.

- Measurements for temperature should be below or equal to 37 degrees Celsius.

- Measurements for pH should be between 6.0 - 9.0.

Testing should follow a rigorous and internationally accepted methodology and frequency. Local or corporate standards may be stricter. The water quality metrics ideally approach ambient conditions.

Suppliers who have entered and communicated information required by the Higg Index Facility Environmental Module 3.0 (Higg FEM) "Wastewater - Level 2, Question 7" may be used in responding to B1-B5 if the chosen wastewater standard meets or exceeds the values listed above, or if the values of the parameters listed in the detection table meet or exceed the values listed above. The information reported to the FEM is at the facility level; if your products are produced in multiple facilities you may aggregate the data to represent the entirety of final product produced.

Certifications, Standards & Tools

American Apparel & Footwear Association (AAFA) - Restricted Substance List: The AAFA provides guidelines for restricted chemicals and substances.
https://www.aafaglobal.org/AAFA/Solutions_Pages/Restricted_Substance_List

AWS International Water Stewardship Standard: The International Water Stewardship Standard is a globally-applicable framework that helps water users understand their water use and impacts. Developed by the Alliance for Water Stewardship, the standard addresses 1) sustainable water balance, 2) good water quality, 3) healthy important water-related areas, and 4) good water governance.
https://a4ws.org/the-aws-standard-2-0/

BHive: The BHive enables the creation and management of chemical inventories, identifies chemical products that meet sustainability credentials. The BHive enhances supply chain transparency as factories, brands, and retailers can view and compare the safety of chemical products.
https://www.thebhive.net/

Detox to Zero by OEKO-TEX: This analysis and assessment tool creates transparency and provides textile and leather producers the ability to control the use of hazardous substances. The tool focuses on continuous improvement and gradual reduction of harmful substances in production processes.
https://www.oeko-tex.com/en/our-standards/detox-to-zero-by-oeko-tex

SAC Higg Index: The Sustainable Apparel Coalition has developed indicator-based assessment tools called the Higg Index, which evaluates the sustainable practices associated with production of apparel and footwear.
https://apparelcoalition.org/the-higg-index/

Sustainable Textile Solutions (STS): Sustainable Textile Solutions programs support brands, retailers, and industry partners in their efforts to achieve compliance to environmental, health, and safety standards.
https://sustexsolutions.com/

THESIS Help Center Video: Wastewater generation - Supply Chain KPI: Short video tutorial on the Wastewater generation - Supply Chain KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/448595442

Background Information

Roadmap to Zero by ZDHC (Zero Discharge of Hazardous Chemicals): This plan is intended to reduce and eliminate the discharge of hazardous chemicals.
https://www.roadmaptozero.com/

Textile Effluent Treatment Technology: The Journal of Cotton Science has produced a document addressing the treatment of textile effluent and specific wastewater management methods.
http://www.cotton.org/journal/2007-11/3/upload/jcs11-141.pdf

U.S. Environmental Protection Agency - Effluent Limitation Guidelines: This source provides current wastewater discharge guidelines and provides resources for reducing environmental impacts from wastewater discharge.
https://www.epa.gov/eg

Wastewater 101 Toolbox: A free online resource for the textile industry to learn, act, and share experiences related to the treatment of wastewater.
https://wastewater.sustainabilityconsortium.org/

Definitions

Biological oxygen demand (BOD): An indicator for the amount of oxygen required/consumed for the microbiological decomposition (oxidation) of organic material in water bodies.

Chemical oxygen demand (COD): An indicator for the amount of oxygen required to oxidize an organic compound to carbon dioxide, ammonia, and water. The measurement is a proxy for the amount of organic compounds in water. Measuring COD in wastewater provides an estimated level of organic pollutants. The standard for measurement can be referenced in ISO 6060.

pH: A measure of a substance's acidity or basicity. The measurement is based upon the molar concentration of hydrogen (H) ions in an aqueous solution of the substance. Pure water is at a neutral pH of 7. For wastewater quality testing, measuring pH allows for benchmarking pH levels to ambient conditions existing naturally in the surrounding environment.

Total suspended solids (TSS): A water quality measurement that reflects the amount of particulates in a sample. The dry weight of residue in a filter is used to calculate units in milligrams per liter (mg/L).

Water use: Water use is defined as total withdrawals from municipal and private water providers, surface water, groundwater, or wells.

Hotspots Addressed

5. *Chemical use - Textile Production*

9. *Wastewater generation - Wet processing*

8. WATER USE - SUPPLY CHAIN

Question	Response Options
What percentage of textile fabric used in your final product, by mass purchased, was produced by suppliers that reported their total annual water use?	**A.** We are unable to determine at this time. **B.** The following percentage of fabric, by mass purchased, was produced by suppliers that reported total water use: **B1.**_____%.

Guidance

Calculation & Scope

Calculate B1 as the mass purchased from fabric suppliers that reported their annual water use, divided by the total mass purchased from all fabric suppliers, then multiply by 100.

Perform this calculation using purchasing data from a 12-month period that ended within 12 months of the date you respond to this question.

Water use is defined as the total amount of withdrawals from municipal and private water providers, surface water, groundwater, or wells. Supplier water use reporting can occur through public disclosure or private disclosure from the supplier to your organization directly or through another party.

If suppliers completed the CDP Water Security 2020 Questionnaire, refer to W1.2b, W1.2h, and W5.1a to determine if they report water use.

Suppliers who have entered and communicated the information required by the Higg Facility Environmental Module 3.0 (Higg FEM) "Water Use - Level 1" may be included in percentage calculated for response option B1.

If using Field to Market's Fieldprint Platform to determine water use during cotton production, report data from the "Irrigated yield" field of the summary report, not the "Yield difference due to irrigation" field.

Certifications, Standards & Tools

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https://fieldtomarket.org/our-programs/

Background Information

CDP Water Information Request: The CDP Water Information Request provides questions that assess a company's water use, goals, and management. The report provided by CDP provides the overview of the results from companies responding to the request. CDP can be contacted to respond to the Water Information Request.
https://www.cdp.net/en/guidance/guidance-for-companies

GRI G4 Sustainability Reporting Guidelines: The GRI G4 Sustainability Reporting Guidelines provide a standard set of metrics for companies to report on material environmental, social, and economic impacts, actions, and outcomes.
https://www.globalreporting.org/standards/

Definitions	**Water use:** Water use is defined as total withdrawals from municipal and private water providers, surface water, groundwater, or wells.
Hotspots Addressed	***8.*** *Water use - Wet processing*

9. WORKER HEALTH AND SAFETY - SUPPLY CHAIN

Question

How did your organization manage worker health and safety risks in the operations that produced the textile fabric supply used in your final product?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following for our supply:

B1._____% of the textile fabric supply used in our final product, by mass, was produced in operations that have performed a risk assessment to identify high-risk areas for health and safety.

B2._____% of the textile fabric supply used in our final product, by mass, was produced in operations that train workers on health and safety procedures.

B3._____% of the textile fabric supply used in our final product, by mass, was produced in operations that implement a verifiable worker health and safety plan.

B4._____% of the textile fabric supply used in our final product, by mass, was produced in operations that have a worker health and safety performance monitoring system in place.

B5._____% of the textile fabric supply used in our final product, by mass, was produced in operations that were audited in the last three years on worker health and safety issues.

Guidance

Calculation & Scope

To be included in B1-B5, risk assessments, training programs, safety plans, performance monitoring systems, and audits must be verifiable and address health and safety issues such as worker injury and worker exposure to harmful elements. The assessments and audits must be conducted by second or third parties. The risk assessment must be conducted once per year while the audit must have been conducted at least once every three years, both using a standard based on internationally-recognized principles such as International Labour Organization Occupational Safety and Health Conventions (e.g., No. 155). The standards and websites listed in Background Information below may be helpful for conducting your risk assessment(s) and for understanding appropriate corrective actions, which can inform your responses. See the Certifications, Standards & Tools for examples of initiatives that meet these requirements.

Calculate B1 as the mass of the textile fabric supply used in your final product that came from operations that have performed a risk assessment to identify high risk areas for health and safety, divided by the total mass of the textile fabric supply used in our final product, then multiply by 100.

To determine if an operation is high risk for health and safety, you may utilize a country risk analysis tool. The tool should measure the strength of a country's ability to govern and enforce laws, regulations, and internationally recognized principles. The country risk assessment may be a first party systematic review assessment, or external risk analyses tools may be utilized. It must be conducted at least once per year. The country risk assessment can be complemented with risks associated with specific activities, regions, and suppliers.

Calculate B2 as the mass of the textile fabric supply used in your final product that came from operations that train workers on health and safety procedures, divided by the total mass of the textile fabric supply used in your final product, then multiply by 100. To be included in B2, the training on health and safety procedures must be available in the language of the employee, including migratory and seasonal workers, and must be renewed as appropriate to maintain competency and implementation of good practices for workers on health and safety procedures and to prevent training exhaustion. Additional worker training may be required to perform job duties. On-site audits, where necessary, should be conducted by second or third parties and must be conducted at least once every three years using a standard based on internationally-recognized principles.

Calculate B3 as the mass of the textile fabric supply used in your final product that came from operations that implement a verifiable worker health and safety plan, divided by the total mass of the textile fabric supply used in your final product, then multiply by 100. To be included in B3, a worker health and safety plan must be verifiable and must be available in the language of the employee, including migratory and seasonal workers, and be prominently displayed in the workplace where employees normally report. The plan should include best practices specific to ergonomics; repetitive motions; chemical and particulate exposure; appropriate use of personal

protective equipment (PPE); and proper use of tools, machinery. On-site audits, where necessary, should be conducted by second or third parties and must be conducted at least once every three years using a standard based on internationally-recognized principles.

Calculate B4 as the mass of the textile fabric supply used in your final product, that came from operations that have a worker health and safety performance monitoring system in place, divided by the total mass of the textile fabric supply used in your final product, then multiply by 100. To be included in B4, a worker health and safety performance monitoring system should include metrics on issues including, but not limited to, incidence of worker injuries and prevalence of diseases. On-site audits, where necessary, should be conducted by second or third parties and must be conducted at least once every three years using a standard based on internationally-recognized principles.

Calculate B5 as the mass of the textile fabric supply used in your final product, that came from operations that were audited in the last three years on worker health and safety issues, divided by the total mass of the textile fabric supply used in your final product, then multiply by 100. Audits should be conducted by second or third parties at least once every three years, or more often depending on the requirements of the standard organization. See the Certifications, Standards & Tools for more information. Government regulations or parties in the supply chain may initiate these audits.

To be included in B5, the audits must be verifiable and address preventive measures, freely provided personal protective equipment, identification of worker health and safety hazards and effects on the exposed people, statistics and reasons behind injuries, design of work area, processes, installations, machinery/work equipment, operating processes and work organization, as outlined by internationally-recognized labor principles. Examples include, but are not limited to, principles outlined by the United Nations Global Compact, the International Labour Organization Standards on Occupational Health and Safety.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question. Audits must have been conducted in the 36 months prior to the end of the 12-month period.

Certifications, Standards & Tools

Amfori Country Risk Classification: This list classifies countries' risk of social injustice in an effort to assist companies in determining high and low risk for their sourcing and operations.
http://duediligence.amfori.org/CountryRiskClassification

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

SA8000® Standard: Social Accountability International (SAI) is a global non-governmental organization that aims to advance human rights at work via the SA8000® Standard. SA 8000 measures social performance in eight areas that are relevant for workplaces in factories and organizations worldwide.
https://sa-intl.org/programs/sa8000/

THESIS Help Center Video: Worker health and safety - Supply chain KPI: Short video tutorial on the Worker health and safety - Supply chain KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/536528345

Background Information

United Nations Global Compact Human Rights and Business Dilemmas Forum: United Nations Global Compact Human Rights and Business Dilemmas Forum present an introduction to, analysis of, and business recommendations for minimizing social sustainability risks in the supply chain.
https://www.unglobalcompact.org/library/9

Definitions

First party systematic risk assessment: A first party systematic risk assessment is conducted by the organization itself for management review and other internal purposes and may form the basis for an organization's declaration of conformity.

Risk assessment: A systematic process to evaluate potential risks within an operation, system, or supply chain. It can include an on-site audit by a second party or third party or a country risk classification analysis that judges the site risk due to prevailing conditions, controls, or other mitigating factors.

Second-party audit: An audit conducted by a party having an interest in the organization, such as customers, or by another entity on their behalf.

Third-party audit: An audit conducted by external, independent auditing organizations, such as those providing certification of conformity to a standard.

Verifiable: Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.

Worker exposure to harmful elements: Contact with potentially harmful chemical, physical, or biological elements that occurs as a result of one's job-related activities. Examples include chronic interaction with chemicals, dusts, radiation, environmental elements, allergens, noise, and vibrations.

Worker health and safety: Worker health and safety consists of worker injury and worker exposure to harmful elements. Please see the corresponding terms.

Worker injury: Physical damage to an individual due to a single act that causes immediate damage or repetitive acts that cause damage over time. Examples of causes of injury include repetitive motions, non-ergonomic motions, damage from use of tools and machinery, falls, and burns.

Hotspots Addressed

5. *Chemical use - Textile Production*

10. AIR QUALITY - MANUFACTURING

Question	Response Options
What percentage of this product, by mass, comes from company-owned and contract manufacturing facilities performing final cut, sew, and dyeing operations that tracked and reported their annual air emissions?	**A.** We are unable to determine at this time. **B.** The following percentage of this product, by mass, comes from facilities that tracked and reported their annual air emissions: **B1.**_____%.

Guidance

Calculation & Scope

Calculate B1 as the mass of products that were produced in final cut, sew, and dyeing facilities that tracked and reported annual air emissions, divided by the total mass of products produced by all final cut, sew, and dyeing facilities, then multiply by 100. Include all company-owned or contract manufacturing facilities that performed final cut, sew, and dyeing operations. If the final cut, sew, and dyeing steps are performed in different facilities, then each must report their air emissions in order to be included in your calculation. Facilities included in this calculation must track all air emissions required by locally applicable regulations, as well as those emissions for which there is scientific evidence of serious effects to human health or the environment. Air emissions may include, but are not limited to, nitrogen and sulphur oxides from boilers, hydrocarbons from drying ovens, carbon monoxide from sizing, aniline vapors, and ammonia from printing/dyeing, and VOCs and ozone from textile finishing, and may be emitted as dust, oil mists, acid vapors, odors, and boiler exhausts. Testing of emissions must occur according to a rigorous and internationally accepted testing methodology.

Perform this calculation using data from a 12-month period that ended within 12 months of the date you respond to this question.

Information entered into the Higg Index Facility Environment Module 3.0 (Higg FEM) "Air Emissions - Level 1, Questions 1-3" may be used in responding to B1. The information reported to the FEM is at the facility level; if your products are produced in multiple facilities you may aggregate the data to represent the entirety of final product produced.

Certifications, Standards & Tools

Safer Choice (EPA): In order to identify scientific evidence of probable serious effects to human health and the environment, organizations should reference relevant criteria in the U.S. EPA Safer Choice Program.
https://www.epa.gov/saferchoice

THESIS Help Center Video: Air quality - Manufacturing KPI: Short video tutorial on the Air quality - Manufacturing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/533750750

Hotspots Addressed

4. *Air quality - Manufacturing*

5. *Chemical use - Textile Production*

11. GREENHOUSE GAS EMISSIONS INTENSITY - MANUFACTURING

Question	Response Options
What was the greenhouse gas emissions intensity associated with final manufacture of your product?	**A.** We are unable to determine at this time. **B.** Our greenhouse gas emissions intensity was: **B1.**_____ kg CO2e per metric tonne of product. **B2.**_____% of our product, by mass produced, is represented by the number reported above.

Guidance

Calculation & Scope

Included in the scope of this question are fuels combusted and electricity used in facilities that perform final manufacturing activities, as well as trace gases released during manufacture. This may include some or all of your organization's corporate scope 1 and 2 emissions, as well as scope 1 and 2 emissions from any final manufacturing facilities not within your organization's financial or operational control (e.g., contract manufacturers). Excluded from the scope of this question are GHG allowances, offsets, and credits.

You may calculate B1 using product-specific data or estimate intensity via facility data that is not product specific. If using product-specific data, calculate B1 as the average of each product's greenhouse gas emissions intensity, weighted by the total mass produced of each product.

If using facility data, calculate B1 as the average of each final manufacturing facility's greenhouse gas emissions intensity, weighted by the total mass of final product produced/revenue from final product produced/number of units produced. If the manufacturing facilities produce more than one category of product, only weight using the total mass of production specific to the product category in question.

Calculate B2 as the mass of final products for which you are able to obtain data, divided by total mass of final products produced, then multiply by 100. For each final manufacturing facility, follow the instructions in the Greenhouse Gas Protocol Corporate Standard (2015) to calculate scope 1 and 2 greenhouse gas emissions generated from electricity purchased or produced, fuels combusted, and trace gases released, and then add them together. Worksheets are available on the GHG Protocol web site to facilitate these calculations.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

The data required for the CDP Climate Change 2020 Questionnaire combined with production data can be used to calculate your response (refer to C7.3b and C7.6b). The data required for "Disclosure 302-1 Energy consumption within the organization" in GRI 302: Energy 2016 or "Disclosure 305-1 Direct (Scope 1) GHG emissions" and "Disclosure 305-2 Energy indirect (Scope 2) GHG emissions" in GRI 305: Emissions 2016 can also be used to calculate your response.

Information entered into the Higg Index Facility Environmental Module 3.0 (Higg FEM) "Energy Use & GHG - Level 1" may be used to answer this KPI.

Certifications, Standards & Tools

CDP Climate Change Questionnaire: The CDP Climate Change Questionnaire provides questions that assess a company's greenhouse gas emissions, goals, and management. The report provided by CDP provides the overview of the results from companies responding to the request.
https://www.cdp.net/en/guidance/guidance-for-companies

Energy Efficiency Assessment and Greenhouse Gas Emission Reduction Tool for the Textile Industry (EAGER Textile): This tool was developed by the Lawrence Berkeley National Laboratory to aid in evaluating the impacts of introducing energy efficiency measures into a textile facility. According to the China Energy Group, "the EAGER tool will calculate the typical energy savings (electricity, fuel, final, and primary energy), CO2 emissions reduction, cost, and simple payback period...[the tool] is designed to work for textile facilities that have one or more of the following processes: spinning, weaving/knitting, dyeing, printing, finishing, and man-made fiber production."
https://china.lbl.gov/eager-textile

Greenhouse Gas Protocol: Calculation Tools: This site provides a list of sector toolsets developed by GHG Protocol, third-party databases, and other tools based on the GHG Protocol standards that can be used to calculate greenhouse gas inventories for use in emissions calculations.
https://ghgprotocol.org/calculation-tools

GRI G4 Sustainability Reporting Guidelines: The GRI G4 Sustainability Reporting Guidelines provide a standard set of metrics for companies to report on material environmental, social, and economic impacts, actions, and outcomes.
https://www.globalreporting.org/standards/

SAC Higg Index: The Sustainable Apparel Coalition has developed indicator-based assessment tools called the Higg Index, which evaluates the sustainable practices associated with production of apparel and footwear.
https://apparelcoalition.org/the-higg-index/

Background Information

Greenhouse Gas (GHG) Protocol Corporate Standard: The Greenhouse Gas (GHG) Protocol provides guidance and is a useful resource published by the World Resources Institute with the World Business Council for Sustainable Development as a guide for monitoring and accounting for greenhouse gas emissions.
https://ghgprotocol.org/corporate-standard

Definitions

Greenhouse gas: Gases that contribute to the greenhouse effect by absorbing infrared radiation in the atmosphere, e.g., carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbons.

Hotspots Addressed

7. *Energy consumption - Wet processing*

11. *Energy consumption - Finished goods production*

12. LABOR RIGHTS - MANUFACTURING

Question

How did your organization manage labor rights risks in the company-owned and contract manufacturing facilities performing final cut, sew, and dyeing operations for your final product?

Response Options

- **A.** We are unable to determine at this time.
- **B.** We are able to report the following:
  - **B1.**_____% of our final product, by mass, was produced in facilities that were covered by an internal policy that has quantitative time-bound goals related to child labor, discrimination, forced labor, and freedom of association and collective bargaining.
  - **B2.**_____% of our final product, by mass, was produced in facilities that were reviewed by a risk assessment that identifies high-risk areas for labor rights abuses.
  - **B3.**_____% of our staff responsible for procurement activities have been trained on labor rights issues in the supply chain.
  - **B4.**_____% of our staff responsible for procurement activities have been evaluated via performance metrics on labor rights improvements in the supply chain.
  - **B5.**_____% of our final product, by mass, was produced in facilities that were low-risk, that were high-risk but corrective actions were taken, or that were audited on child labor, discrimination, forced labor, and freedom of association and collective bargaining in the last three years.

Guidance

Calculation & Scope

The scope of this KPI includes company owned and contract manufacturing facilities performing final cut, sew, and dyeing operations for final product.

Calculate B1 as the mass of your final product that is covered by an internal policy that has quantitative time-bound goals related to child labor, discrimination, forced labor, and freedom of association and collective bargaining, divided by the total mass of your final product, then multiply by 100. Where freedom of association and collective bargaining are restricted by law, employers can use other forms of non-union employee representation and relations to respect this aspect of workers' rights.

Calculate B2 as the mass of your final product that has been reviewed by a risk assessment which identifies high-risk areas for labor rights abuses, divided by the total mass of your final product, then multiply by 100.

To be included in B2, a risk assessment must have been conducted by second or third parties and must have been conducted at least once every three years using a standard based on internationally-recognized principles. The risk assessments and standard must be verifiable and must address labor rights abuses such as discrimination on grounds of gender, age, ethnicity or disability, physical violence, sexual harassment and abuse, child labor, forced labor, and freedom of association and collective bargaining or any other range of behaviors and practices as outlined by internationally-recognized labor standards. The standards and websites listed in Background Information below may be helpful for conducting your risk assessment(s) and for understanding appropriate corrective actions which can inform your responses.

In addition, to determine if an operation is in a high-risk area for labor rights abuses, you may utilize a country risk analysis tool. The tool should measure the strength of a country's ability to govern and enforce laws, regulations, and internationally-recognized principles. The country risk assessment may be a first party systematic risk assessment, or external risk analyses tools may be utilized. The AMFORI Countries' Risk Classification tool listed below may be used to inform your response. The country risk assessment can be complemented with risks associated with specific activities, regions, and suppliers.

Calculate B3 as the number of staff responsible for procurement activities that have been trained on labor rights issues in the supply chain, divided by the total number of staff responsible for procurement activities, then multiply by 100. Include both full-time and contracted employees. The training must be verifiable. Staff training should cover child labor, discrimination, forced labor, and freedom of association and collective bargaining, as outlined by internationally-recognized labor principles. Staff training should be renewed as appropriate to maintain

competency and implementation of good practices for labor rights issues and to prevent training exhaustion. Additional staff training may be required to perform job duties.

Calculate B4 as the number staff responsible for procurement activities that have been evaluated via performance metrics on labor rights improvements in the supply chain, divided by the total staff responsible for procurement activities, then multiply by 100. Evaluation on labor rights should include, child labor, discrimination, forced labor, and freedom of association and collective bargaining, as outlined by internationally-recognized labor principles. Examples of improvements include decreased incidence of child labor, forced labor, or discrimination, or an Increased worker participation in collective bargaining.

Calculate B5 as the mass of your final product that was produced in operations that were low risk, that were high risk but corrective actions were taken, or that were audited on child labor, discrimination, forced labor, and freedom of association and collective bargaining in the last three years, divided by the total mass of your final product, then multiply by 100. To be included in B5, audits must be verifiable and address child labor, discrimination, forced labor, and freedom of association and collective bargaining, as outlined by internationally-recognized labor principles. Examples include, but are not limited to, principles outlined by the United Nations Global Compact, the International Labour Organization Declaration on Fundamental Principles and Rights at Work. Where freedom of association & collective bargaining is restricted by law, employers can use other forms of non-union employee representation and relations to respect this aspect of workers' rights. Audits should be conducted by second or third parties at least once every three years, or more often depending on the requirements of the standard organization See the Certifications, Standards & Tools for more information. Government regulations or parties in the supply chain may initiate these audits.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question. Audits must have been conducted in the 36 months prior to the end of the 12-month period.

Certifications, Standards & Tools

Amfori Country Risk Classification: This list classifies countries' risk of social injustice in an effort to assist companies in determining high and low risk for their sourcing and operations.
http://duediligence.amfori.org/CountryRiskClassification

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

SA8000® Standard: Social Accountability International (SAI) is a global non-governmental organization that aims to advance human rights at work via the SA8000® Standard. SA 8000 measures social performance in eight areas that are relevant for workplaces in factories and organizations worldwide.
https://sa-intl.org/programs/sa8000/

THESIS Help Center Video: Labor Rights - Manufacturing KPI: Short video tutorial on the Labor Rights - Manufacturing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/520093618

Background Information

International Labour Organization Declaration on Fundamental Principles and Rights at Work: This declaration outlines the universal rights of all workers regardless of citizenship status, gender, or the local level of economic development.
http://www.ilo.org/declaration/lang--en/index.htm

United Nations Global Compact Human Rights and Business Dilemmas Forum: United Nations Global Compact Human Rights and Business Dilemmas Forum present an introduction to, analysis of, and business recommendations for minimizing social sustainability risks in the supply chain.
https://www.unglobalcompact.org/library/9

Definitions

First party systematic risk assessment: A first party systematic risk assessment is conducted by the organization itself for management review and other internal purposes and may form the basis for an organization's declaration of conformity.

Forced labor: Any task or service performed by a person against their will or under threat of negative consequence. Forced labor includes debt bondage, human trafficking, withholding of wages or identity papers, threats of violence, unreasonable restriction of movement, and exploitation of marginalized workers.

Freedom of collective bargaining: The right to negotiate the conditions of employment as a group rather than individually without fear of repercussions.

Internationally-recognized labor principles: Internationally-recognized labor principles include the United Nations Global Compact and International Labour Organization Declaration on Fundamental Principles and Rights at Work or equivalent.

Labor rights: The universal rights of workers, regardless of race, gender, nationality, or other distinguishing characteristic. These include protection from the worst forms of child labor, forced labor, and discrimination, as well as freedom of association and collective bargaining as outlined by the United Nations Global Compact or the International Labour Organization Declaration on Fundamental Principles and Rights at Work.

Risk assessment: A systematic process to evaluate potential risks within an operation, system, or supply chain. It can include an on-site audit by a second party or third party or a country risk classification analysis that judges the site risk due to prevailing conditions, controls, or other mitigating factors.

Second-party audit: An audit conducted by a party having an interest in the organization, such as customers, or by another entity on their behalf.

Third-party audit: An audit conducted by external, independent auditing organizations, such as those providing certification of conformity to a standard.

Verifiable: Having the ability to demonstrate, through a reputable assessor, the truth or accuracy of a claim.

Hotspots Addressed

10. *Labor rights - Textile production*

13. MICROFIBER RELEASE – MANUFACTURING

Question	Response Options
How does your company address microfiber release during manufacturing?	**A.** Not applicable, we only use plant-based fibers that biodegrade in water. **B.** We are unable to determine at this time. **C.** We are able to report the following: **C1.**_____% of our synthetic textile supply, by mass, comes from manufacturers who monitor microfiber release. **C2.**_____% of our synthetic textile supply, by mass, comes from manufacturers who utilize alternatives to wet processing. **C3.**_____% of our synthetic textile supply, by mass, comes from manufacturers who have implemented practices and technologies to minimize microfiber release.

Guidance

Calculation & Scope

Answer A if your company only works with plant-derived materials (e.g., cotton, linen) which have been proven to biodegrade in water.

Calculate C1 as the mass of your synthetic textile supply that was sourced from manufacturers, either contracted or company owned, who monitored microfiber release during wet processing, divided by your total mass of synthetic textile supply, then multiply by 100. Monitoring may include, but is not limited to, wastewater and lint analysis.

Calculate C2 as the mass of your synthetic textile supply that was sourced from manufacturers, either contracted or company owned, who utilized alternatives to wet processing, divided by your total mass of synthetic textile supply, then multiply by 100.

Alternatives should replace at least one full stage of wet processing to qualify. Examples include, but are not limited to inkjet printing and plasma technologies, which replace the dyeing stage of wet processing.

Calculate C3 as the mass of your synthetic textile supply that was sourced from manufacturers, either contracted or company owned, who have implemented practices and technologies to minimize microfiber release, divided by your total mass of synthetic textile supply, then multiply by 100.

Practices and technologies that minimize microfiber release include, but are not limited to, lowering the melting temperature of yarn to improve tensile strength, and adding coatings to yarn to reduce fiber loss.

Definitions

Microfiber release: Small synthetic fibers less than 10 micrometers in diameter that are released into the environment via wastewater during textile manufacturing that cause a variety of impacts to humans and wildlife, in addition to persisting in rivers, streams, and oceans.

Hotspots Addressed

3. *Production impacts - Synthetic materials*

13. *Microfiber Release - Laundering*

14. WORKER HEALTH AND SAFETY - MANUFACTURING

Question	Response Options
What was the injury and illness rate at company-owned or contract manufacturing facilities that produced your final product?	**A.** We are unable to determine at this time. **B.** Our injury and illness rate over our last twelve-month reporting period was: **B1.**_____. **B2.**_____% of our product, by mass produced, is represented by the number reported above.

Guidance

Calculation & Scope

This question aligns with the United States Occupational Safety and Health Administration (OSHA) Injury and Illness rate. This rate can be normalized for global applicability.

Calculate B1 according to OSHA's injury and illness rate by multiplying the number of recordable injuries and illnesses by 200,000. Divide this number by the total employee hours worked to produce your final product. If multiple facilities manufacture the final product, the injury and illness rate will need to be adjusted using a weighted average based on each facility's percentage of total production. Include all employees at a facility that participate in the production of the final product. This includes both full-time and contracted employees.

Calculate B2 as the mass of your final product for which you were able to obtain data, divided by the total mass of your final product, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

THESIS General Guidance document provides guidance to calculate the weighted average. See Background Information for access to this document.

The Incidence Rate Calculator and Comparison Tool is an online calculator that will compute your injury and illness rate. The OSHA Forms for Recording Work-Related Injuries and Illnesses provides forms and information for computing your facility injury and illness rate.

Certifications, Standards & Tools

Incidence Rate Calculator and Comparison Tool: This tool calculates the injury and illness incidence rate for employers.
https://data.bls.gov/iirc/

OSHA Forms for Recording Work-Related Injuries and Illnesses: This webpage contains information on how to record workplace injuries and illnesses and provides the worksheets needed to correctly do so.
https://www.osha.gov/recordkeeping/forms

THESIS Help Center Video: Worker Health and Safety - Manufacturing KPI: Short video tutorial on the Worker Health and Safety - Manufacturing KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/520108472

Background Information

Accord on Fire and Building Safety in Bangladesh: The Accord on Fire and Building Safety in Bangladesh is an agreement between brands and trade unions to improve worker health and safety. It can be a model for factory inspections, remediation, and worker participation & training.
https://bangladeshaccord.org/

How to Compute a Firm's Incidence Rate for Safety Management: This website from the U.S. Bureau of Labor Statistics provides in-depth guidance on computing injury and illness numbers.
https://www.bls.gov/iif/osheval.htm

SA8000® Standard: Social Accountability International (SAI) is a global non-governmental organization that aims to advance human rights at work via the SA8000® Standard. SA 8000 measures social performance in eight areas that are relevant for workplaces in factories and organizations worldwide.
https://sa-intl.org/programs/sa8000/

Definitions

Company-owned or contract manufacturing facilities: Facilities responsible for manufacturing and assembly of final products, whether these facilities are internal or external to the respondent's organization.

Worker exposure to harmful elements: Contact with potentially harmful chemical, physical, or biological elements that occurs as a result of one's job-related activities. Examples include chronic interaction with chemicals, dusts, radiation, environmental elements, allergens, noise, and vibrations.

Worker health and safety: Worker health and safety consists of worker injury and worker exposure to harmful elements. Please see the corresponding terms.

Worker injury: Physical damage to an individual due to a single act that causes immediate damage or repetitive acts that cause damage over time. Examples of causes of injury include repetitive motions, non-ergonomic motions, damage from use of tools and machinery, falls, and burns.

Hotspots Addressed

5. *Chemical use - Textile Production*

12. *Worker health and safety - Finished goods production*

15. HAZARDOUS CHEMICAL DISCHARGE MANAGEMENT

Question

What is your organization's approach to managing chemicals on the ZDHC Manufacturing Restricted Substances List in your products?

Response Options

- **A.** Not applicable, we have a policy to not use any chemicals on the ZDHC Manufacturing Restricted Substances List at any of our manufacturing facilities and we verify that this is true using analytical methods.
- **B.** We ensure legal and regulatory compliance.
- **C.** In addition to (B), we have programs with goals to prioritize and continuously reduce, eliminate, or restrict the use of chemicals on the ZDHC Manufacturing Restricted Substances List in our products using various tools and protocols to make informed substitutions of the identified substances.
- **D.** In addition to (C), we publicly disclose our goals and progress concerning the reduction, elimination, or restriction of chemicals on the ZDHC Manufacturing Restricted Substances List in our products.
- **E.** In addition to D, the following percentage of our manufacturing facilities have had a reduction in the use of chemicals on the ZDHC Manufacturing Restricted Substance List:
  E1._____%.

Guidance

Calculation & Scope

For C, informed substitution implies that factors such as cost and performance, technical feasibility, life cycle impacts, economic and social accountability, and potential to result in lasting change have been taken into consideration to ensure that substitutes and the final product are safer based on their health and environmental profiles.

For D, goals should be specific, measurable, achievable, relevant, and time-bound. Public disclosure of goals and progress must have occurred within 12 months of the date you respond to this question.

Examples of tools and protocols for screening chemicals and assessing alternatives include green chemistry, alternatives analysis, restricted substances lists, and other tools that are listed in the Background Information.

To calculate E1, subtract the number of chemicals on the ZDHC Manufacturing Restricted Substances List used this year across all manufacturing facilities where your product is cut and sewed from the number of chemicals on the ZDHC Manufacturing Restricted Substances List used last year across all manufacturing facilities where your product was cut and sewed. If more chemicals on the ZDHC Manufacturing Restricted Substances List were used this year than last, enter zero.

Calculate E1 as the number of manufacturing facilities where your product is cut and sewed that reduced the use of chemicals on the ZDHC Manufacturing Restricted Substances List this year compared to last year divided by the total number of manufacturing facilities where your product is cut and sewed, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

American Apparel & Footwear Association (AAFA) - Restricted Substance List: The AAFA provides guidelines for restricted chemicals and substances.
https://www.aafaglobal.org/AAFA/Solutions_Pages/Restricted_Substance_List

BHive: The BHive enables the creation and management of chemical inventories, identifies chemical products that meet sustainability credentials. The BHive enhances supply chain transparency as factories, brands, and retailers can view and compare the safety of chemical products.
https://www.thebhive.net/

Detox to Zero by OEKO-TEX: This analysis and assessment tool creates transparency and provides textile and leather producers the ability to control the use of hazardous substances. The tool focuses on continuous improvement and gradual reduction of harmful substances in production processes.

https://www.oeko-tex.com/en/our-standards/detox-to-zero-by-oeko-tex

Greenlist Process: According to their website, "In 2001, SC Johnson developed the Greenlist Process to classify ingredients in order to minimize the human and environmental impacts of their products." The process is now available for license to other companies and organizations.
https://www.scjohnson.com/en/our-purpose/sustainability-report/explaining-the-sc-johnson-greenlist-program-an-excerpt-from-our-2017-sustainability-report

GreenScreen for Safer Chemicals: GreenScreen is a "Chemical Hazard Assessment" method that can be used to identify chemicals of high concern and determine safer alternatives. The tool was developed and is administered by Clean Production Action. A second tool, the GreenScreen List Translator, is a publicly available abbreviated version that screens and classifies chemicals based solely on their presence on authoritative hazard lists.
https://www.greenscreenchemicals.org/

GreenSuite: GreenSuite is an environmental sustainability tool that can be customized to specific users' needs. Environmental issues throughout the supply chain are covered by this web based solution.
http://greensuite360.com/index.html

NSF/GCI/ANSI 355-2011 - Greener Chemicals and Processes Information: According to this website, "The purpose of the Information Standard is to provide the chemical enterprise with a voluntary and standardized way to define and report environmental and human health hazards associated with a chemical product and its gate-to-gate manufacturing process impacts."
http://www.worldcat.org/title/nsfgciansi-355-2011-greener-chemicals-and-processes-information/oclc/772118815

PRIO: PRIO is a web-based tool developed by the Swedish government to facilitate the assessment of environmental and health risks of chemicals.
https://www.kemi.se/prioguiden/english/start

Roadmap to Zero Discharge of Hazardous Chemicals (ZDHC): This plan is intended to reduce and eliminate the discharge of hazardous chemicals.
https://www.roadmaptozero.com/

SAC Higg Index: The Sustainable Apparel Coalition has developed indicator-based assessment tools called the Higg Index, which evaluates the sustainable practices associated with production of apparel and footwear.
https://apparelcoalition.org/the-higg-index/

Safer Choice (EPA): In order to identify scientific evidence of probable serious effects to human health and the environment, organizations should reference relevant criteria in the U.S. EPA Safer Choice Program.
https://www.epa.gov/saferchoice

Sustainable Textile Solutions (STS): Sustainable Textile Solutions programs support brands, retailers, and industry partners in their efforts to achieve compliance to environmental, health, and safety standards.
https://sustexsolutions.com/

THESIS Help Center Video: Priority Chemicals - Management KPI: Short video tutorial on the Priority Chemicals - Management KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/536528286

United States Environmental Protection Agency (EPA): Exposure Assessment Tools and Models: According to their website, "The Office of Pollution Prevention and Toxics (OPPT) has developed several exposure assessment methods, databases, and predictive models to help in evaluating what happens to chemicals when they are used and released to the environment and how workers, the general public, consumers and the aquatic ecosystems may be exposed to chemicals."
https://www.epa.gov/ceam/tools-data-exposure-assessment

United States Environmental Protection Agency (EPA): Sustainable Futures: According to their website, "The goal of the Sustainable Futures Initiative (SF) is to make new chemicals safer, available faster, and at lower cost. It works by giving chemical developers the same risk-screening models that EPA uses to evaluate new chemicals before they enter the market."
https://www.epa.gov/sustainable-futures

Background Information	**BizNGO Chemical Alternatives Assessment Protocol:** The BizNGO Chemical Alternatives Assessment Protocol is a "decision framework for substituting chemicals of concern to human health or the environment with safer alternatives." https://www.bizngo.org/alternatives-assessment/chemical-alternatives-assessment-protocol **United States Environmental Protection Agency (EPA) Existing Chemicals Program:** According to their website, "EPA's existing chemical programs address pollution prevention, risk assessment, hazard and exposure assessment and characterization, and risk management for chemical substances in commercial use." The current chemicals management program is undergoing review and update, including how the agency identifies and prioritizes priority chemicals for review and assessment under TSCA. https://www.epa.gov/compliance/toxic-substances-control-act-tsca-compliance-monitoring#chemicals **United States Environmental Protection Agency (EPA) Safer Choice - Alternatives Assessments:** The EPA's Safer Choice [formerly Design for the Environment (DfE)] partnership program provides guidance for informed decision-making regarding the hazards posed by different materials used in consumer goods. https://www.epa.gov/saferchoice
Hotspots Addressed	***5.*** *Chemical use - Textile Production*

16. PRODUCT DESIGN

Question

What percentage of your product, by unit volume, was designed to reduce manufacturing, use, and end-of-life impacts?

Response Options

- **A.** We are unable to determine at this time, or we do not address these impacts.
- **B.** We are able to report the following about our products:
  - **B1.**_____% of our products, by unit volume, underwent a lifecycle assessment.
  - **B2.**_____% of our products, by unit volume, were designed to maximize material efficiency.
  - **B3.**_____% of our products, by unit volume, were designed to reduce laundering impacts.
  - **B4.**_____% of our products, by unit volume, were assessed for durability as part of the design process.
  - **B5.**_____% of our products, by unit volume, were designed for resource reutilization.

Guidance

Calculation & Scope

Calculate B1 as the unit volume of your products that underwent a life cycle assessment, divided by the total unit volume of your product, then multiply by 100.

A life cycle assessment should be conducted against ISO 14040:2006 (Life Cycle Assessment - Principles and Guidelines.)

Calculate B2 as the unit volume of your products that were designed to maximize material efficiency, divided by the total unit volume of your product, then multiply by 100.

Material efficiency may include, but is not limited to, design to reduce total amount of materials needed to cut and sew a product, design to reduce material waste during cut and sew process.

Addressing material efficiency during the design stage may include, but is not limited to employing zero waste patternmaking to reduce material waste during the cut and sew process, and using whole garment knitting techniques to reduce the amount of yarn wasted during the knitting process.

Calculate B3 as the unit volume of your products designed to reduce laundering impacts, divided by the total unit volume of your product, then multiply by 100.

Laundering impacts may include, but are not limited to, energy use during laundering and microfiber release during laundering.

Addressing laundering impacts at the design stage may include, but is not limited to choosing fabrics made from natural fibers that biodegrade, or adding care instructions to a garment's label that specify practices known to reduce energy use like cold water wash.

Calculate B4 as the unit volume of your products that underwent a durability assessment as part of the design process, divided by the total unit volume of your product, then multiply by 100.

Both physical and emotional durability should be considered in this assessment.

Attributes to consider while assessing physical durability may include, but are not limited to stability/longevity of materials used, and strength/quality of cut and sew techniques.

Attributes to consider while assessing emotional durability include a product's flexibility or changeability to adapt to changing tastes over time.

Calculate B5 as the unit volume of your products that were designed to maximize resource utilization, divided by the total unit volume of your product, then multiply by 100.

Resource utilization maximization may include, but is not limited to, materials that are able to be reused or recycled.

Addressing resource utilization maximization during the design stage may include, but is not limited to choosing single fiber fabrics that can be recycled, and using simple construction methods that can be disassembled after use.

Perform this calculation using data from a 12-month period that ended within 12 months of the date you respond to this question.

Certifications, Standards & Tools

THESIS Help Center Video: Product Design KPI: Short video tutorial on the Product Design KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/520107448

Background Information

B Corp Certification: B Corp offers certification at a company level and focuses on social and environmental performance, public transparency, and legal accountability.
https://bcorporation.net/

BlueSign: Bluesign is a third party verification and consultant service. Verification is performed for social and environmental impacts, and consulting services are available for multiple supply chain, manufacturing, and production stages.
https://www.bluesign.com/en/business/services

Cradle to Cradle Certified (TM) - Material Health: The Cradle to Cradle Products Innovation Institute, a non-profit organization, administers the Cradle to Cradle Certified™ Product Standard, and provide guidance on chemical hazard assessments and their use for material assessments. The Cradle to Cradle™ Material Health Assessment Methodology examines product chemical composition break down and data collection rules and guidelines, guidance and criteria for chemical profiling methods, assessment of metabolism considerations, and guidance for the evaluation of material assessments.
http://www.c2ccertified.org/get-certified/product-certification

Cradle to Cradle Product Certification™: Cradle to Cradle Product Certification™ provides a standard of performance for manufacturers regarding product sustainability and material safety. Individual product assessments are performed by independent and trained third parties and certifications are made by the Cradle to Cradle Products Innovation Institute.
http://www.c2ccertified.org/product_certification

Fairtrade International Certification: Fairtrade International provides several standards (e.g. for smallholders and workers), and a certification through FLOCERT. Fairtrade aims to improve the livelihoods of smallholders and workers amongst others via fair trade relationships.
https://www.fairtrade.net/about/certification

ISO 14040:2006: ISO 14040:2006 is the International Organization for Standardization's "Principles and Framework" document for conducting life cycle assessments.
https://www.iso.org/standard/37456.html

ISO 14044:2006: ISO 14044:2006 is the International Organization for Standardization's "Requirements and Guidelines" standard for conducting life cycle assessments.
https://www.iso.org/standard/38498.html

ISO/TC 207/SC 5: ISO/TC 207/SC 5 is the International Standardization Organization's life cycle assessment standard.
https://www.iso.org/committee/54854.html

Hotspots Addressed

***2.** Production impacts - Wool and down*

***3.** Production impacts - Synthetic materials*

***13.** Microfiber Release - Laundering*

***14.** Product Disposal - Landfilling*

17. RECYCLED CONTENT

Question

What is the ratio of the mass of recycled fiber to the total mass of fiber used in your final products?

Response Options

A. We are unable to determine at this time.

B. We are able to report the following for our products:

B1._____ is the ratio of the mass of recycled fiber to the total mass of fiber used in our final products.

B2._____ % of our products, by mass, is represented by the number reported above.

B3._____% of our recycled material supply, for which we are able to report in response options B1-B2 is polyester.

Guidance

Calculation & Scope

Calculate B1 as the mass of fiber in your final products that can be defined as recycled content, divided by the total mass of fiber in your final products. Only include post-consumer recycled content. Exclude packaging from this calculation.

Calculate B2 as the mass of your products for which you were able to obtain data on recycled content, divided by the total mass of your products, then multiply by 100.

Perform these calculations using data from a 12-month period that ended within 12 months of the date you respond to this question.

Recycled material available for textile manufacturing can vary based on fiber type. This should be considered when evaluating the ratio of recycled content based upon specific textile products.

Calculate B3 as the mass of your recycled material supply that was assessed and met criteria for B1 and B2 that is polyester divided by the total mass of your recycled material supply, then multiply by 100.

Certifications, Standards & Tools

Cradle to Cradle Product Certification™: Cradle to Cradle Product Certification™ provides a standard of performance for manufacturers regarding product sustainability and material safety. Individual product assessments are performed by independent and trained third parties and certifications are made by the Cradle to Cradle Products Innovation Institute.
http://www.c2ccertified.org/product_certification

THESIS Help Center Video: Recycled Content KPI: Short video tutorial on the Recycled Content KPI. Use case-sensitive password 'thesis' when prompted.
https://vimeo.com/531017179

Definitions

Post-consumer recycled material: "Material generated by households or by commercial, industrial, and institutional facilities in their role as end-users of the product that can no longer be used for its intended purpose. This includes returns of materials from the distribution chain." (ISO 14021:2016 - Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling))

Pre-consumer recycled material: "Material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it." (ISO 14021:2016 - Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling))

Hotspots Addressed

***2.** Production impacts - Wool and down*

***3.** Production impacts - Synthetic materials*

Category Sustainability Profile

Hotspots

Hotspots are activities in a product's life cycle that have a documented environmental or social impact. TSC evaluates the quality and quantity of the scientific sources of evidence for each hotspot according to a defined decision tree before they are included in the CSP. Items marked with an asterisk (*) are *additional issues* that have not achieved the same level of evidence as a hotspot. For more information on the methodology TSC uses to identify hotspots visit: http://www.sustainabilityconsortium.org/toolkit-methodology

AGRICULTURE AND LIVESTOCK

1. Cultivation impacts - Plant-derived materials

Activities associated with the cultivation of plant-derived materials may create negative social and environmental impacts. Social impacts may include child labor use, forced labor, access to material and immaterial resources, fair income, and worker health and safety. Environmental impacts may include greenhouse gas emissions, water use, fertilizer runoff, and pesticide exposure.

Related Improvement Opportunities

2. *Implement precision agriculture technologies*
3. *Implement benchmarking tools, monitoring, and management plans on-farm*
4. *Implement integrated pest management*

KPIs

2. *Cellulosic material sourcing – Deforestation*
3. *Plant-derived material sourcing*

References

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- Khabbaz, Chen, & Baillie, 2010
- Page & Ritchie, 2009
- United States Department of Labor, 2012a
- World Wildlife Fund, 2013

2. Production impacts - Wool and down

Production of wool may lead to impacts from land use change, greenhouse gas emissions, soil erosion and degradation, and biodiversity loss. Farm animals may suffer from inadequate housing, painful procedures, improper handling and transportation conditions, and inhumane slaughtering methods, which can have adverse effects on their well-being and productivity as well as product quality.

Related Improvement Opportunities

5. *Implement animal welfare programs, plans, and practices on-farm*
6. *Map the geographic origins of agricultural supply chains*

KPIs

5. *Wool and down sourcing*
16. *Product Design*
17. *Recycled content*

References

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- Toro-Mujica, Aguilar, Vera, & Bas, 2017
- Wiedemann, Yan, Hnery, & Murphy, 2016

INTERMEDIATE PRODUCTION

3. Production impacts - Synthetic materials

Production of synthetic (polyester, nylon, etc.) and semisynthetic (rayon, viscose, etc.) materials for use in textile manufacturing may lead to impacts from energy consumption, wastewater generation, resource use, worker exposure to chemicals and other hazards, as well as risk of labor rights issues.

Related Improvement Opportunities

1. *Apply a wastewater pretreatment after PET fiber production*
23. *Use life cycle assessments to understand human health and environmental impacts of product life cycles*
24. *Implement an environmental management system*

KPIs

4. *Synthetic material sourcing*
13. *Microfiber release – Manufacturing*
16. *Product Design*
17. *Recycled content*

References

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4. Air quality - Manufacturing*

Volatile organic compounds are released during fabric cleaning with organic solvents. In the drying and curing of finishing agents, air emissions are produced from the finishing agents themselves as well as from other substances carried over from upstream processes.

Related Improvement Opportunities

11. *Implement a corporate policy to regulate and monitor the use of chemicals*
16. *Use air emission reduction techniques*

KPIs

10. *Air quality - Manufacturing*

References

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- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

5. Chemical use - Textile Production

Dyes, dyeing accelerants, and other chemicals used in textile production can lead to adverse health effects for workers, residual contamination of products, consumer health hazards, release of harmful chemicals into the wastewater and ecosystems, and leaching from landfills upon product disposal.

Related Improvement Opportunities

7. *Automate preparation and dispensing of chemicals*
19. *Use plasma technology in dyeing and finishing*
21. *Waterless dyeing technologies*

KPIs

1. *Cellulosic material sourcing – Chemical use*
7. *Wastewater generation - Supply Chain*
9. *Worker Health and Safety - Supply Chain*
10. *Air quality - Manufacturing*
14. *Worker Health and Safety - Manufacturing*
15. *Hazardous Chemical Discharge Management*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

6. Energy consumption - Yarn spinning

Energy use for yarn spinning leads to non-renewable resource depletion and to climate change from greenhouse gas emissions.

Related Improvement Opportunities

12. *Implement industrial energy management programs and goals*
13. *Invest in less energy-intensive yarn spinning technologies*

KPIs

6. *Greenhouse gas emissions - Supply chain*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

7. Energy consumption - Wet processing

Energy use for heating water during wet processing leads to greenhouse gas emissions, particulate emissions, and contributes to fossil fuel resource depletion.

Related Improvement Opportunities

7. *Automate preparation and dispensing of chemicals*
12. *Implement industrial energy management programs and goals*
18. *Use of enzymatic processes*

KPIs

6. *Greenhouse gas emissions - Supply chain*
11. *Greenhouse gas emissions intensity - Manufacturing*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

8. Water use - Wet processing

Large amounts of water are used to pretreat, dye, print, and finish textile materials, which leads to resource depletion. Delivering dyes to the yarn or fabric requires high water use. Additional water is required to remove excess dyes and chemicals in the final wash and rinse operations.

Related Improvement Opportunities

17. *Use low-liquor ratio dyeing machinery*
20. *Use real-time online monitoring systems in textile production*
21. *Waterless dyeing technologies*

KPIs

8. *Water use - Supply chain*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

MANUFACTURING AND ASSEMBLY

9. Wastewater generation - Wet processing

Wastewater from wet processing of textiles produces a significant volume of contaminated or untreated effluent from preparation agents, spin finishes, dyes, and fabric finishing treatments. When released into the environment, the effluent can cause ecosystem damage and human toxicity from eutrophication and chemical contamination.

Related Improvement Opportunities

11. *Implement a corporate policy to regulate and monitor the use of chemicals*
17. *Use low-liquor ratio dyeing machinery*
21. *Waterless dyeing technologies*

KPIs

7. *Wastewater generation - Supply Chain*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

10. Labor rights - Textile production Workers may face several labor rights issues in contracted and sub-contracted operations. These include unfair pay, discrimination, challenges to join unions and collectively bargain, long working hours, child and forced labor, and dangerous working conditions. Women, migrants, and other marginalized populations are at an increased risk of facing these challenges. **Related Improvement Opportunities** ***8.*** *Corporate policy and action plan for improving the sub-contracting process in textile manufacturing* ***9.*** *Accident and disease compensation protocol* **KPIs** ***12.*** *Labor Rights - Manufacturing*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
11. Energy consumption - Finished goods production Energy use for textile finished goods production leads to non-renewable resource depletion and climate change from greenhouse gas emissions. **Related Improvement Opportunities** ***12.*** *Implement industrial energy management programs and goals* ***17.*** *Use low-liquor ratio dyeing machinery* ***20.*** *Use real-time online monitoring systems in textile production* **KPIs** ***11.*** *Greenhouse gas emissions intensity - Manufacturing*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016
12. Worker health and safety - Finished goods production Workers are at risk of several health and safety challenges associated with the production of finished goods. These challenges include injuries associated with working with machinery as well as injuries sustained from insufficient building safety, including fires and building collapse. Workers may also inhale airborne particulates such as fibers that can have adverse effects on their respiratory systems. **Related Improvement Opportunities** ***10.*** *Develop a factory fire safety improvement program* ***14.*** *Provide adequate onsite medical care* ***15.*** *Require appropriate use of personal protective equipment (PPE) and post informational guidelines for worker safety* **KPIs** ***14.*** *Worker Health and Safety - Manufacturing*	**References** ▪ Ahmed & Hossain, 2009 ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016

USE

13. Microfiber Release - Laundering

Synthetic textiles may release microfibers into marine environments as they are laundered. Microfibers and microplastic aggregate masses may pose a threat to marine ecosystems, making them inhabitable to marine flora and fauna. Microfibers and microplastic may also accumulate in digestive systems of marine animals, including those ingested by humans.

Related Improvement Opportunities

22. *Use natural fibers to reduce the release of microfibers*

KPIs

13. *Microfiber release – Manufacturing*
16. *Product Design*

References

- Barrows, A., Cathey, S. E., & Petersen, C. W., 2018
- Hartline, N. L., Bruce, N. J., Karba, S. N., Ruff, E. O., Sonar, S. U., & Holden, P. A., 2016.
- Miller, R. Z., Watts, A. J., Winslow, B. O., Galloway, T. S., & Barrows, A. P. 2017
- Pirc, U., Vidmar, M., Mozer, A., & Kržan, A. 2016
- Zambrano, M. C., Pawlak, J. J., Daystar, J., Ankeny, M., Cheng, J. J., & Venditti, R. A.

END-OF-LIFE AND DISPOSAL

14. Product Disposal - Landfilling

Chemical presence, such as dyes, thalates, and plasticizers, in textile production can leach out of landfills upon product disposal leading to ecotoxicity in surrounding ecosystems. Combustion of fossil fuels for transportation to landfills leads to greenhouse gas emissions.

Related Improvement Opportunities

25. *Resource recovery - Recycling of product back into the supply chain*
26. *Implement business models for product reuse*

KPIs

16. *Product Design*

References

- Birtwistle, G., & Moore, C
- Singh, U. K., Kumar, M., Chauhan, R., Jha, P. K., Ramanathan, A., & Subramanian, V.

Improvement Opportunities

Improvement opportunities are practices that address one or more environmental or social hotspots and are actionable by brand manufacturers or their suppliers. TSC evaluates the quality of the evidence supporting each improvement opportunity according to a defined decision tree before including it in the CSP. For more information on the methodology TSC uses to identify hotspots visit: http://www.sustainabilityconsortium.org/toolkit-methodology

RAW MATERIAL PROCESSING

1.	**Apply a wastewater pretreatment after PET fiber production** Before sending wastewater from PET production to a wastewater treatment plant, apply a wastewater pretreatment such as stripping or recycling. **Related Hotspots** ***3.*** *Production impacts - Synthetic materials*	**References** ▪ European Commission, 2007c

AGRICULTURE AND LIVESTOCK

2.	**Implement precision agriculture technologies** Precision agriculture technologies can use field data, remote sensing, and global positioning systems (GPS) to control the variable rate and precise placement of fertilizers and crop protection chemicals by farm machinery. Precision agriculture can reduce on-farm energy consumption as well as the negative environmental and human health impacts that can be associated with fertilizer and crop protection chemical application. **Related Hotspots** ***1.*** *Cultivation impacts - Plant-derived materials*	**References** ▪ Pieri, Evers, Landers, O'Connell, & Terry, 2002 ▪ Sustainable Agriculture Initiative Platform, 2009
3.	**Implement benchmarking tools, monitoring, and management plans on-farm** Tool(s) or method(s) should be 1) accessible for review by scientists (metric and methodology are transparent) 2) science-based (peer reviewed, piloted) 3) feasible for user to implement (easily accessible, ability to use conservative default values when data is not available, cost/time implications considered) 4) developed using multi-stakeholder input 5) actionable outcomes that reduce impacts 6) relevant 7) reproducible and 8) governed to ensure periodic review. **Related Hotspots** ***1.*** *Cultivation impacts - Plant-derived materials*	**References** ▪ Better Cotton Initiative, 2010
4.	**Implement integrated pest management** Integrated pest management (IPM) is defined as an ecosystem-based strategy that focuses on the long-term prevention of pests or their damage through a combination of techniques such as biological control, biopesticides, habitat manipulation, modification of cultural practices, and the use of resistant varieties. Proper cropping practices can reduce crop protection chemical and harvest aid requirements. **Related Hotspots** ***1.*** *Cultivation impacts - Plant-derived materials*	**References** ▪ du Jardin, 2015 ▪ Kooistra, Pyburn, & Termorshuizen, 2006 ▪ Le Mire et al., 2016 ▪ University of California Agriculture & Natural Resources, 2011 ▪ World Wildlife Fund, 2013
5.	**Implement animal welfare programs, plans, and practices on-farm** Implement programs, plans, and practices to improve animal welfare of livestock on-farm. This includes housing design, stocking density and disease prevention. **Related Hotspots** ***2.*** *Production impacts - Wool and down*	**References** ▪ European Parliament and Council Directive 98/58/EC, 1998

6. Map the geographic origins of agricultural supply chains Knowing the geographic origins of agricultural supply chains can inform planning and policy for the sustainable management of social and environmental farm practices. **Related Hotspots** ***2.*** *Production impacts - Wool and down*	**References** ▪ Maloni & Brown, 2006 ▪ Roth, Tsay, Pullman, & Gray, 2008

MANUFACTURING AND ASSEMBLY

7. Automate preparation and dispensing of chemicals Automating the preparing and dispensing of chemicals allows for more control of the process, improved performance, reduced energy consumption, and a safer and healthier working environment. **Related Hotspots** ***5.*** *Chemical use - Textile Production* ***7.*** *Energy consumption - Wet processing*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
8. Corporate policy and action plan for improving the sub-contracting process in textile manufacturing Create a corporate policy and action plan for monitoring, setting goals, and tracking progress for improving safety conditions for subcontractors. **Related Hotspots** ***10.*** *Labor rights - Textile production*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
9. Accident and disease compensation protocol Companies should develop a protocol that assesses the appropriate compensation for workers and their families who are affected by occupational injuries and exposures. **Related Hotspots** ***10.*** *Labor rights - Textile production*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
10. Develop a factory fire safety improvement program Sufficient and clear emergency exit signage, communicating evacuation protocol to workers, accessible and unlocked emergency exits, and safe electrical wiring at garment manufacturing facilities can lead to reduced health and safety risks from factory fires. **Related Hotspots** ***12.*** *Worker health and safety - Finished goods production*	**References** ▪ Akhter, Salahuddin, Iqbal, Malek, & Jahan, 2010

11. Implement a corporate policy to regulate and monitor the use of chemicals Corporate policies can provide guidance for facilities by setting goals and targets related to regulating and monitoring the use of chemicals. These policies can align with broader initiatives and local regulations. **Related Hotspots** ***4.*** *Air quality - Manufacturing* ***9.*** *Wastewater generation - Wet processing*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
12. Implement industrial energy management programs and goals Implementing energy-management programs and setting goals can optimize energy use. Examples of programs include the formation of energy teams, assigning management responsibilities to an energy director, and tracking energy use at the facility level. Goals can include energy efficiency benchmarks and energy reduction targets. **Related Hotspots** ***6.*** *Energy consumption - Yarn spinning* ***7.*** *Energy consumption - Wet processing* ***11.*** *Energy consumption - Finished goods production*	**References** ▪ Greer, Egan, & Lin, 2010 ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
13. Invest in less energy-intensive yarn spinning technologies Vortex, friction-spinning, and jet spinning machines have lower energy demand than ring and open-end rotor spinning systems. However, all spinning systems do not produce the same quality of yarn. Therefore, product specifications must also be taken into account when choosing a spinning technology. **Related Hotspots** ***6.*** *Energy consumption - Yarn spinning*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
14. Provide adequate onsite medical care Provide full-time medical care and first aid treatment to workers. It is recommended for textile facilities with a female workforce that the primary doctor and nurses be female. **Related Hotspots** ***12.*** *Worker health and safety - Finished goods production*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016

15. Require appropriate use of personal protective equipment (PPE) and post informational guidelines for worker safety Providing personal protective equipment (masks, gloves, protective clothing) and posting informational guidelines for use and worker safety may help to reduce exposure to hazardous chemicals and particulates where interventions are ineffective. **Related Hotspots** ***12.*** *Worker health and safety - Finished goods production*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
16. Use air emission reduction techniques Air emission reduction techniques can be used to reduce volatile organic compounds, particulates, and toxic substances emitted to the air in the drying and curing of textiles following dyeing, printing, and finishing processes. Techniques may include installation of modern exhaust filtration units, scrubbers, and heat exchangers. **Related Hotspots** ***4.*** *Air quality - Manufacturing*	**References** ▪ European Commission, 2003a
17. Use low-liquor ratio dyeing machinery The use of low-liquor ratio dyeing machinery reduces the consumption of energy and water in the dyeing process. **Related Hotspots** ***8.*** *Water use - Wet processing* ***9.*** *Wastewater generation - Wet processing* ***11.*** *Energy consumption - Finished goods production*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016
18. Use of enzymatic processes Use of enzymatic processes can increase water quality following some dyeing processes, reduce energy use and emissions, and reduce water use by improving efficiencies of textile production. **Related Hotspots** ***7.*** *Energy consumption - Wet processing*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016
19. Use plasma technology in dyeing and finishing Plasma technology involves the use of mixtures of partially ionized gases to cleave covalent bonds on the surfaces of textiles. Plasmas can be used in applications of pre-treatment for dyeing and printing and in the application of other finishing treatments. Plasma treatment, as compared to traditional techniques, reduces energy use, uses less water, uses no solvents, produces no effluent, and results in savings in dyestuff and finishing auxiliaries. **Related Hotspots** ***5.*** *Chemical use - Textile Production*	**References** ▪ The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016 ▪ The Sustainability Consortium (Cotton Textiles), 2016 ▪ The Sustainability Consortium (Nylon Textiles), 2016 ▪ The Sustainability Consortium (Polyester Textiles), 2016 ▪ The Sustainability Consortium (Rayon Textiles), 2016

20. Use real-time online monitoring systems in textile production

Online monitoring of production processes for closed-loop controls potentially reduces energy use, water consumption, chemical use, and wastewater.

Related Hotspots

8. *Water use - Wet processing*
11. *Energy consumption - Finished goods production*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

21. Waterless dyeing technologies

Technologies developed that use carbon dioxide as solvent to dye textile materials have the potential to reduce water use, energy use, and water contamination in the dyeing process.

Related Hotspots

5. *Chemical use - Textile Production*
8. *Water use - Wet processing*
9. *Wastewater generation - Wet processing*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

USE

22. Use natural fibers to reduce the release of microfibers

Using natural fibers instead of synthetic fibers reduces the amount of microfiber and microplastic that is released into municipal water supply during laundering.

Related Hotspots

13. *Microfiber Release - Laundering*

References

- Barrows, A., Cathey, S. E., & Petersen, C. W., 2018
- Hartline, N. L., Bruce, N. J., Karba, S. N., Ruff, E. O., Sonar, S. U., & Holden, P. A., 2016.
- Miller, R. Z., Watts, A. J., Winslow, B. O., Galloway, T. S., & Barrows, A. P. 2017
- Pirc, U., Vidmar, M., Mozer, A., & Kržan, A. 2016

IMPROVEMENT OPPORTUNITIES FOR MULTIPLE LIFE CYCLE STAGES

23. Use life cycle assessments to understand human health and environmental impacts of product life cycles

Product life cycle assessments (LCAs) provide a resource for improved decision-making based on an assessment of many environmental and human health impacts associated with a product life cycle.

Related Hotspots

3. *Production impacts - Synthetic materials*

References

- The Sustainability Consortium (Cotton Polyester Blend Textiles), 2016
- The Sustainability Consortium (Cotton Textiles), 2016
- The Sustainability Consortium (Nylon Textiles), 2016
- The Sustainability Consortium (Polyester Textiles), 2016
- The Sustainability Consortium (Rayon Textiles), 2016

24. Implement an environmental management system Implement an environmental management system that follows an established standard, such as ISO 14000, to provide procedures for detecting and improving environmental and efficiency issues. **Related Hotspots** ***3.*** *Production impacts - Synthetic materials*	**References** ▪ European Commission, 2003a ▪ Ho & Choi, 2012
25. Resource recovery - Recycling of product back into the supply chain Implement programs for collecting and chemically or mechanically recycling used fiber back into the supply chain at the end-of-life stage. **Related Hotspots** ***14.*** *Product Disposal - Landfilling*	**References** ▪ Hayes, 2011 ▪ Ho & Choi, 2012 ▪ Kalliala & Nousiainen, 1999 ▪ Van der Velden, Patel, & Vogtlander, 2013
26. Implement business models for product reuse Product design and stewardship programs can extend useful life and reclaim reusable or recyclable material. **Related Hotspots** ***14.*** *Product Disposal - Landfilling*	**References** ▪ Armstrong & Lang, 2013 ▪ Cartwright et al., 2011 ▪ Waste and Resources Action Programme, 2012d ▪ Waste and Resources Action Programme, 2013a

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B Barrows, A., Cathey, S. E., & Petersen, C. W. (2018). Marine environment microfiber contamination: Global patterns and the diversity of microparticle origins. Environmental Pollution, 237, 257-284. doi:10.31230/osf.io/xajp2

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Release Notes

*** 02.06.10, May 2021 ***
- In-text references and broken resource links (URLs) included in the KPI guidance were updated to the most recent available versions. Where no alternative resource was available, the item was substituted with a comparable resource or was removed.
The KPI Equality of Treatment for Homeworkers - Manufacturing has been deleted as part of the 2021 revision cycle due to this KPI meeting criteria for problematic scoring, answerability, or year over year tracking.
Plant-Derived Material Sourcing:
- Response Options: Previous response options quantitatively tracking plant derived material supply have been retained.
- Response Options: A response option to track the percentage of supply quantitatively reported in the KPI that is cotton has been added.
- Calculation & Scope: Text added to support the response option addition above.
- Certifications, Standards & Tools: References added to support the response option changes and additions above.
Priority chemicals - Management:
- KPI Title: Renamed to “Hazardous Chemical Discharge Management”.
- KPI Question: Reworded to cover chemicals on the ZDHC Manufacturing Restricted Substances List.
- Response Options: The term “priority chemicals” has been replaced with “chemicals on the ZDHC Manufacturing Restricted Substances List”
- Response Options: A response option to track reduction in the number of chemicals on the ZDHC Manufacturing Restricted Substances List has been added.
- Calculation & Scope: Text added to support the response option changes and additions above.
- Certifications, Standards & Tools: References added to support the response option changes and additions above.
Recycled content:
- Response Options: A response option for the percentage recycled material supply that is polyester has been added.
- Response Options: The existing response options addressing the mass of recycled fiber were retained.
- Calculation & Scope: Text added to support the added response options above.
- Certifications, Standards & Tools: References added to support the new response option above.
NEW KPI - “Cellulosic material sourcing – Chemical use”
NEW KPI - “Cellulosic material sourcing – Deforestation”
Synthetic material sourcing:
- Response Options: Quantitative response option added to track percentage of supply that is polyester.
NEW KPI - “Microfiber release – Manufacturing”
Wastewater generation - Supply chain:
- Certifications, Standards & Tools: References updated to support recent initiatives.
02.05.10, May 2020
-In-text references and broken resource links (URLs) included in the KPI guidance were updated to the most recent available versions. Where no alternative resource was available, the item was substituted with a comparable resource or was removed.

-Product design KPI: some linked items were not properly displaying in the guidance; these errors have been corrected and the linked items restored. In addition, the following certifications, standards, tools, and/or definitions will be added: Cradle to Cradle Certification, Bluesign standard, B Corp certification, ISO 14044:2006, ISO 14040:2006, and ISO /TC 207/SC 5.

-Equality of treatment for homeworkers - Manufacturing KPI: Due to an error in the TSC database, some linked items were not properly displaying in the guidance. These errors have been corrected and the linked items restored.

-Alignment with Higg FEM was made explicit by including specific language in guidance for the following KPIs:
- Greenhouse Gas Emissions Intensity - Supply Chain
- Wastewater Generation - Supply Chain
- Water Use - Supply Chain
- Greenhouse Gas Emissions Intensity - Manufacturing
- Priority Chemicals Management

02.04.10, June 2019
-Air Quality - Manufacturing guidance was updated to be more specific.
-Equality of Treatment for Homeworkers - Manufacturing KPI response option A was updated with language to verify that homeworkers are not used.
-Cross-sector social KPIs were updated with new questions and response options. KPIs affected:
-Worker Health and Safety - Supply Chain
-Labor Rights - Manufacturing
-Product Design KPI was updated with new question, guidance, and response options in order to assess every stage of product's life cycle.

02.03.10, June 2018

-Product category description updated
-References in KPI guidance to the SAC Higg Index were updated to correspond to the most recent version
- Broken links referenced in the KPI guidance were corrected.
- KPI guidance language referencing CDP's Information Requests for Climate Change and Water were updated to reflect the 2018 versions.

Plant-derived material sourcing:
-New KPI addressing traceability and assessment of environmental and social impacts of farm-level activities
-Supporting hotspot, improvement opportunities, and references added

Synthetic material sourcing KPI:
-New KPI addressing traceability and assessment of environmental and social impacts of polymer production facilities
-Scope includes synthetics (polyester, nylon, etc.) and semisynthetics (rayon, viscose, etc.)
-Supporting hotspot, improvement opportunities, and references added

Wool and down sourcing KPI:
-New KPI addressing traceability, animal welfare, and certification or audit for farm-level environmental impacts
-Supporting hotspot, improvement opportunities, and references added

02.02.10, June 2017
Language referring to the "last twelve months" was removed from the question and/or response options text to avoid any confusion with the related statement in the "Calculation and Scope" of the Guidance. The following KPIs were affected:
Greenhouse gas emissions – Supply chain
Greenhouse gas emissions intensity – Manufacturing
Worker health and safety – Manufacturing

Recycled Content
- Response Options: Added another response option to track the % products where the supplier is able to report the amount of recycled content.
Wastewater Generation
- Response Options: Different response options were revised for tracking wastewater quality metrics with each metric being defined in a separate response option and equally weighted.

TSC's Multi-stakeholder Process
The Sustainability Consortium (TSC) is a multi-stakeholder organization comprised of leading companies, non-profit organizations, and other members that represent broad perspectives on sustainability. To build a KPI set that can be deployed widely, TSC acknowledges that members have diverse points of view. As such, the attributes, activities, KPIs, and scoring used in this KPI set represent a composite perspective of the current market and are not necessarily the views, policies, or program of any single member of TSC.