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Circular Materials Guidelines 1.0

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Introduction

Fashion Positive leads the vision, definition and use of safer and circular materials for the fashion industry.

We Have Three Goals

1. **Define and educate** members and industry on the term “circular materials.”
2. **Enable** and encourage development of safer and circular materials.
3. **Accelerate** the use of circular materials.

We Have Three Principles

1. **Waste and pollution is designed out.**

   Fibers and materials are designed for longevity, resource efficiency, non-toxicity, compostability, and recyclability.

2. **Products and materials are kept in use at maximum value**

   Material choices should align with the available options for recycling after use.

3. **Focus on ambitious continuous improvement.**

   Identify what is available now and highlight and drive attention toward future solutions.

Where We Came From

Fashion Positive was launched at the Cradle to Cradle Products Innovation Institute in 2014. Since the launch of Fashion Positive, the emergence of Circular Economy has gained attention, due to the foundational work done by Cradle to Cradle founders, William McDonough and Dr. Michael Braungart and by the Ellen MacArthur Foundation.

As of 2020, Fashion Positive operates out of the global non-profit, Textile Exchange. In 2020 the Circular Materials Guidelines were published—the first-ever publicly available Guidelines that defines Circular Materials. These Guidelines are for producers of fibers, both commercially-available and innovative, and clarifies the pathway to what we can call “circular,” meaning that the fibers come from safer, recycled and renewable sources.

These Guidelines are connected to existing, globally-used verifications standards, including Cradle to Cradle Certification, to demonstrate how standards fit into the vision of a circular fashion industry from the beginning of fiber production. The Guidelines have been reviewed in close collaboration with the standards and certifications organizations, industry leaders and stakeholders, critical to circular materials innovation. In addition, Fashion Positive is a membership organization and the following brands contributed to the development and publication of these Guidelines.

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Circular Material Guidelines Co-Sponsored by

TextileExchange

Fashion Positive Brand Members

ATHLETA

BANANA REPUBLIC

EILEEN FISHER

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KERING

OUTERKNOWN

LOOMSTATE

M&S EST. 1884

MARA HOFFMAN

Standards, Certifications and Organizations Included in the Guidelines.

CERTIFIED cradle to cradle

bluesign

Global Recycled Standard

Recycled 100 claim standard

ZDHC

OEKO-TEX®

CLEAN by Design

Higg Index

aii

TextileExchange

canopy

Regenerative Organic Certified™

RSB

Global Organic Textile Standard GOTS

GREENSCREEN CERTIFIED

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Overview and Scope

Methodology for our Development of Fashion Positive Guidelines

The requirements have been developed based on Fashion Positive's mission, principles, definition, ambitions, scope, existing standards and experience.

The Circular Materials Guidelines consider how existing standards puzzle together to make a complete picture for how to advance and incentivize the circular economy for fashion. In a circular economy, products are created to align with the business model that will keep them at their highest value. They can be effectively disassembled to be reused or remade, and their materials recycled or - where relevant – composted. While ideally, the future will provide the systems whereby there is no such thing as "waste", we recognize currently that waste is a critical resource for feedstock as well as already recycled, high value sources.

At this time, the Guidelines are aimed at raw materials and feedstock and fiber development, including how fibers will be used, and cycled through either the biological or technical cycle after use. As our Guidelines evolve through learning, piloting, and stakeholder input, so will our scope to include material fabrication (fabric, textiles, etc.).

In most instances, there is an existing standard that fits the requirements and can be verified using a 3rd party audit or assessment. The Guidelines offer "better" and "best" categories as a way to build a "roadmap" for how companies can integrate circular-ready expectations into fiber development. "Better" and "best" are recommendations aimed at beginning down the road, and "best" does not necessarily reflect leading practice. Fashion Positive aims to spur a scaled approach toward circular-ready materials, continuous improvement, and evolution. Stakeholders may wish to go beyond our "best" categorizations.

Our long-term plan is to evolve these guidelines as existing and new standards evolve for relevance and compatibility. Fashion Positive will review the necessity for updates and changes on an annual basis. Fashion Positive will also consider, through stakeholder advisement, whether a verification process may be required to satisfy the Guidelines' intended purpose.

Circular Materials attributes

1. **Material is produced in a safer way, with respect to all living systems**. Material choices should consider how they will fit within a circular economy, including how they will be used, and cycled through either the biological or technical cycle after use, and reduces impacts to energy, water, chemistry and labor rights[1].
2. **Content comes from recycled and reclaimed materials**

[1] We have not addressed labor rights in v1.0 of the Circular Materials Guidelines. We are working with stakeholders to understand how to address labor rights for fiber and materials production for next version.

To be considered “circular,” materials must have some contents from *existing* recycled sources, such as pre-consumer or post-consumer textile waste and packaging, and/or reclaimed materials such as industrial byproducts (e.g. food crops waste).

3. **Garments can *theoretically* be recycled back into the system.**

   Material choices should align with the available options for recycling after use.

4. **Material is *actually* recycled back into the system (Future)**
   Brands and designers can track material throughout the system and prove it is getting back into the system through tools such as digital ID.

Although we support lower impact bio-based materials, this attribute alone is not sufficient to consider the material circular (see “Recycled Content” in these Guidelines for further clarification).

In Scope for Circular Materials Guidelines

- **Fiber and fibrous materials production facilities.**
- **Vertically integrated fiber and yarn manufacturing facilities.**
- **Facilities:** We are centering around the facility approach rather than the materials manufactured in those facilities as much as possible and where appropriate. This is because facilities-level change can encourage systemic, more impactful change in some instances, such as in energy use. A facility is the location where the material is made. It could be a yarn producer or a textile mill. The Guidelines may apply to the facility or to the product made in that facility, as applicable.

Out of Scope for Circular Materials Guidelines 1.0

- **Biodegradability** This is because currently, there is no viable end of use pathway for the biodegradation of textiles. This is subject to change as we evolve the Guidelines.
- **Labor standards, certifications and audits.** We recognize fair labor practice is essential for circular products. As standards evolve for labor at fiber and fabric production, and with input from stakeholders on how to include existing standards, we will evolve our guidance accordingly.

Achievement

To become a Circular Material, we are recommending either the Better OR Best category in the Requirements to be achieved.

- All four modules (recycled content, chemistry, water, energy) for “Better”, at minimum, need to be met.

- From a communication perspective, we recommend keeping it simple and not differentiate categories publicly. However, we have an expectation that transparency of how each category requirement for Better or Best has been met for public communications.
- We encourage companies to get on the pathway; as well as provide clarity of what is ambitious.
- From a continuous improvement perspective, this will provide layers of our approach as well as a roadmap.
- For this to work, there must be a revision and update to the Guidelines at minimum within 2-3 years, to assess whether both categories need to grow in ambition and requirements (for example, maybe Best requirements shift to Better requirements; and we develop new ambitious Better requirements for 2023 based on what is aspirational at this time).

Research and Stakeholder Engagement:

Fashion Positive is committed to ongoing stakeholder engagement as a critical and core tool for developing Guidelines that are ambitious yet applicable and usable for the industry. These Guidelines were finalized in July 2020 with the review of the following organizations.

- Cradle to Cradle Products Innovation Institute - Christina Raab and Stephanie Connolly
    - V4.0 Draft 2 Standard
- Textile Exchange - Ashley Gill
    - RCS and GRS Standards
- Ellen MacArthur Foundation's Make Fashion Circular Initiative
- ZDHC – Carla Chidicimo and Scott Echols
    - MRSL Conformance Guidelines, Wastewater Guidelines v1.1, MMCF Guidelines, MMCF Interim Wastewater Guidelines, ZDHC MMCF Responsible Fibre Production Guidelines
- HIGG Index, Sustainable Apparel Coalition – Joel Mertens
- Accelerating Circularity – Karla MacGruder
- Canopy – Melissa Filion
- Tox FMD – Margaret Whittaker
- Hohenstein on the Oeko Tex standards - Ben Mead
- Clean by Design – Kurt Kipka
- Tyton Biosciences – Taylor Gren and Peter Majorkowski
- Renewcell - Harald Cavalli-Bjorkman and Nora Eslander
- Scivera - Joseph Rinkevich
- Worn Again – Cyndi Rhoads and Chiara Galimberti
- ISO 14021 https://www.iso.org/standard/66652.html (G3 Guidelines Review in 2019)

Feedstock Content

Category Vision:

The Circular Economy offers an approach to get our production and industry back in balance with the planet. Incorporating existing content into supply chains is a foundational step to decouple production from the consumption of finite resources. For Fashion Positive, feedstock from waste content includes both recycled content (coming from fashion or from other industries) and by-products from agriculture. Fashion Positive does not consider materials made from 100% virgin content "circular", even if produced sustainably.

The vision of this category is centered around waste diversion and treating all types of existing feedstock as a valuable asset of the earth to pass on. That includes designing materials considering how they will be used and cycled through either the biological or technical cycle after use, and reducing greenhouse gas emissions, contaminants, water use, etc. in production methods.

Supporting principle(s):

- Products and materials are kept in use at maximum value.
- Focus on ambitious continuous improvement.
- Material choices should align with the available options for recycling after use.

Scope - Fiber (or Yarn):

This requirement applies to recycled content **as it relates to the fiber.**

Goal:

Increase the use of recycled content in the material; prevent valuable materials from entering landfill; and to incentive production of fibers for the highest value in order to support a fiber's continual reuse.

Approach:[2]

The intention of Fashion Positive is to promote an increase of recycled content in fiber over time. In this version of the Circular Materials Guidelines, we recognize both post-consumer (preferred) content and pre-consumer content.

[2] Textile Exchange experience: Textile Exchange has shared that in their experience, when applying these definitions to "recycled content in fiber" to the supply chain, they are very unclear and complex. Textile Exchange will be publishing further Guidance in 2020-2021.

These definitions, taken from ISO14021, represent the different waste content types that would be acceptable for Circular Materials requirements

Post-Consumer 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.

Examples: Plastic bottles, fishing nets, apparel

Pre-Consumer Material

Material diverted from the waste stream during the manufacturing process. Excluded is the 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.

Examples: Textiles

Reclaimed Material

Material that would have otherwise been disposed of as waste or used for energy recovery but has instead been collected and reclaimed as a material input, in lieu of new primary material, for a recycling process.

Examples: Agriculture, food crop waste, and food waste

REQUIREMENTS

Achievement: To achieve this category, either Better OR Best must be fulfilled and verified through 3rd party certification or audit, provided to Fashion Positive.

For this category, these requirements need to be met:

- **Requirement 1 – Fiber Content**
  - **A - Recycled and/or Reclaimed Material [better & best]**
    B – Renewable Sources (remaining Feedstock Content from Virgin Sources) [better & best]
    C – Incorporating recycled or reclaimed material into fabric
- **Requirement 2 – Fiber Recyclability Potential [better & best]**

Requirement 1A: Recycled and/or Reclaimed Content	**Better**	**Best**
Recycled and/or reclaimed fiber content in material. [3] This requirement is centered around incorporating recycled content in fibers.	5-74% of recycled material is incorporated into fiber/yarn contents and/or reclaimed material	A minimum of 75% of recycled material incorporated into fiber/yarn contents and incorporates post-consumer waste and/or reclaimed material

[3] Most common byproducts currently used are agricultural residue or agro-residue that are the organic material produced after harvesting and processing agricultural crops. Fashion Positive is currently only considering agricultural by products as part of requirement 1A until we learn more.

Accepted Programs and Standards for Verification of Requirements:

Accepted Programs and Standards	Rationale for including
Recycled Claim Standard (RCS)	The Recycled Claim Standard is intended for use with any product that contains at least 5% Recycled Material. This Standard will verify that the content included in the fiber is actually from recycled content.
Global Recycle Standard (GRS)	The goal of the GRS is to increase the use of Recycled materials in products and reduce/eliminate the harm caused by its production. The Global Recycled Standard is intended for use with any product that contains at least 20% Recycled Material. Only products with at least 50% Recycled Content qualify for product specific GRS labeling.
SCS Recycled content certification (SCS Global Services)	The SCS Recycled Content Certification evaluates products made from pre-consumer or post-consumer material diverted from the waste stream. Certification measures the percentage of recycled content for the purpose of making an accurate claim in the marketplace.
UL Recycled Content Verification	Authenticates the post-consumer, pre-consumer (post-industrial), closed loop or total recycled content of products. Link HERE.
Intertek's Green Leaf Mark	Recycled Content Verification. Link HERE.
C2C Certified™ Silver (draft v4)	The Cradle to Cradle Certified Product Standard is the primary governing document of the *Cradle to Cradle Certified*™ Products Program. Link available HERE.

Requirement 1B: Renewable Sources *When products are made partially from virgin cellulose and virgin protein-based materials[4] the below is required.*	**Better**	**Best**
Remaining feedstock content[5] from virgin natural sources align to organic or regenerative standards.	Certified organic or transitional organic fiber production.	Principles for regenerative farming in place including: ● Biodiversity & Soil health ● Elimination of pesticides, synthetic fertilizers, and GMOs ● Carbon sequestration ● Water management: Maximize water use efficiency in rain-fed and irrigated systems.
Remaining feedstock content from virgin sources of manmade cellulosics (MMC)	The producer has completed the CanopyStyle audit and is ranked, at minimum, with a green shirt in Canopy's Hot Button Report. 	The producer has completed the CanopyStyle audit confirming low risk of sourcing from Ancient and Endangered forests and is ranked with a darker shade green shirt in Canopy's Hot Button Report. 

[4] Cellulose-based, which include both natural fibers (such as cotton and hemp) and man-made cellulosic fibers (such as lyocell, viscose, modal, cupro, and acetate); Protein-based, which refers to materials coming from animal sources. These include both fibers such as wool and silk and other apparel materials such as feathers and leather; We DO NOT INCLUDE Plastic-based, which include, but are not limited to, polyester, nylon, elastane, and acrylic.
[5] Textile Exchange will soon be issuing a definition which will be used in the future.

Accepted Programs and Standards for Verification of Requirements:

Accepted Programs and Standards	Rationale for including
Recycled Claim Standard (RCS)	The Recycled Claim Standard is intended for use with any product that contains at least 5% Recycled Material. This Standard will verify that the content included in the fiber is actually from recycled content.
Global Organic Textile Standard (GOTS)	GOTS certified cotton defines high-level environmental criteria along the entire organic textiles supply chain and requires compliance with social criteria as well.
Organic Content Standard (OCS)	The Organic Content Standard (OCS) applies to any non-food product containing 5-100% organic material. It verifies the presence and amount of **organic** material in a final product. It tracks the flow of a raw material from the source to the final product and this process is certified by an accredited third party.
Regenerative Organic Certification (ROC)	Regenerative Organic Certification includes guidelines for farming and ranching operations, transportation, slaughter, and certain processing facilities that produce food and fiber. Regenerative Organic Certification adds criteria and builds off organic standards in the areas of soil health and land management, animal welfare, and farmer and worker fairness. Link HERE.
Roundtable for Sustainable Biomaterials (RSB)	The RSB Standard covers any bio-based feedstock, biomass-derived material and any advanced fuel or product, as well as complete supply-chains and novel technologies. The RSB Standard has been designed for certification. Link HERE.
Responsible Wool Standard (RWS)	The goals of the Responsible Wool Standard are to provide the industry with a tool to recognize the best practices of farmers; ensuring that wool comes from farms that have a progressive approach to managing their land, practice holistic respect for animal welfare of the sheep and respect the Five Freedoms of animal welfare. Link HERE.
Responsible Down Standard (RDS)	The Responsible Down Standard aims to ensure that down and feathers come from animals that have not been subjected to an unnecessary harm. It is our hope that the standard can be used to reward and influence the down and feather industry to incentivize

	practices that respect the humane treatment of ducks and geese. Link HERE.

Requirement 1C: Recycled and Reclaimed Content	**Better**	**Best**
This requirement is centered around incorporating recycled or byproduct fibers/yarns into fabric.	at least 10% to 49% of final fabric is recycled (as defined in requirement 1A and associated certification/verifications) *	A minimum of 50% of final fabric is recycled and/or reclaimed fiber (as defined in requirement 1A and associated certification/verifications) *

*Take a holistic approach to circular fabric design and keep next use in mind when choosing recycled and/or reclaimed materials in fibers

Requirement 2: Fiber Recyclability Potential	**Better**	**Best**
Recyclability potential We must ensure that all circular fibers are designed and developed to be recycled back into feedstock - not just *theoretically* (viscose is "theoretically" recyclable right now; but happens nowhere in the world.	Technology is available through small production run or pilot to recycle fiber back into feedstock for industrial use, at end of useful life.	Technology is available to run or pilot that recycles fiber back into feedstock for the fashion industry at end of useful life and is available to scale for industrial development and use.
This requirement is centered around blended fibers into fiber, yarn *Currently, there is no feasibility to separate blended protein or cellulose-based fibers with synthetic fabrications at scale. Regarding synthetic fibers, the aim is to eliminate the*	As a minimum, 95% of the total textile composition is protein or cellulose-based fiber, yarn. Remaining blended materials must account for recyclability.	As a minimum, 98% of the total textile composition is protein or cellulose-based fiber, yarn. Remaining blended fibers must account for recyclability.

shedding of fiber fragments resulting in microplastics.		

Accepted Programs and Standards	Rationale for including
3rd party audited results within the last year	A hired 3rd party consultant verifying that the technology is accessible AND available (rather than just relying on company claims) - such as Revolve Waste.

Chemistry

Category Vision:

The vision behind this category is to eliminate hazardous chemicals out of textile products and processes and promote safer alternatives.

Supporting principle(s):

Waste and pollution is designed out.
Focus on ambitious continuous improvement.

Scope - Facility and Products:

Since Fashion Positive aims for circular, systemic change, this requirement includes evaluation of all chemicals that enter a production facility. In a circular economy, hazardous chemicals must be phased out of products and processing by preventing them from entering the supply chain, or by using **safer** chemicals (see “Approach”) and planning for circular systems in the first place

Goal:

Eliminate hazardous chemicals in fiber production and processing and increase the use of safer chemicals.

Approach:

The Fashion Positive approach starts at the facility by preventing hazardous chemicals from entering the supply chain; and then ensuring “safer” chemicals are used on the product itself. To Fashion Positive “Safer” means that each chemical ingredient in a chemical formulation must be disclosed, assessed and scored by a toxicologist through a hazard-based approach prior to use, including bio-based chemicals In addition, that chemicals of concern are designed out.

One of Fashion Positive’s principals is to align with industry best practices as long as they do not compromise our mission. Two transformative chemicals management changes are happening in the textile industry, and we believe they both play a role in helping us phase out of hazardous chemicals.

1. Managing input chemistry via a MRSL rather than implementing restricted substance lists (RSL’s) that only focus on hazardous chemicals that may remain on products. Input chemistry includes process and auxiliary chemicals, some of which are hazardous, that are used in manufacturing but will not be present on finished products. We know there are hazardous chemicals in use today and so our first step in phasing them out is to prevent them from entering the supply chain in the first place. This can be achieved by

managing input chemistry to prevent hazardous chemicals from entering the supply chain.

2. Greater transparency to the chemical ingredients in textile chemical formulations. Chemical formulations are usually a mixture of many individual chemical ingredients, intentionally added to perform a certain function. The formulation often includes unintentional impurities such as unreacted monomers or residual byproducts, often at very low concentrations. Some of these ingredients may be hazardous. Chemical suppliers only disclose regulated chemicals if they are present above a certain threshold, between 0.01% to 1% of the total concentration, depending on the type of chemical. This means that hazardous chemicals may be present in a formulation at very low concentrations. Due to the high volume of textiles that are produced, these hazardous chemicals add up in the environment and cause harm to people and the planet. Increasing the use of safer chemicals can be achieved by assessing all chemical ingredients in a formulation through a hazard-based lens to allow for informed decision making. Disclosing the ingredients in a formulation through an NDA protects trade secrets and allows choose safer alternatives to chemicals of concern.

Fashion Positive is taking a two-step approach to eliminating hazardous chemicals. We support the ZDHC MRSL because it manages input chemistry and is a stepping stone to achieve our vision. However, to truly embrace circular principles, we must consider feedstock source, transparency and the transformative move towards knowing what is in a product and taking a holistic approach to its contents and their impacts.[6]

[6] An example is through Screened Chemistry that uses a documented process to evaluate and apply a quantitative score for a textile chemical formulation.

REQUIREMENTS

Achievement: To achieve this category, either Better OR Best category must be fulfilled and verified through 3rd party certification or audit, provided to Fashion Positive.

Overview of approach for this category: Eliminating hazardous chemicals by preventing them from entering the supply chain in the first place.

For this category, these requirements need to be met:

- **Requirement 1: Managing Input Chemistry [better & best]**
- **Requirement 2: Transparency into formulations [best]**
- **Requirement 3: Non-petroleum feedstock for synthetic alternatives (i.e. for polyester, nylon, etc.) [best]**

Requirement 1: Managing Input Chemistry	**Better**	**Best**
Managing input chemistry MRSL compliant formulations are used to manufacture the Circular Material. *Level 3 conformance was chosen because it includes a document review of the chemical formulation, formulation testing and a chemical supplier audit by a 3rd party.*	Implementation of the ZDHC MRSL at a level 2 conformance.	Implementation of the ZDHC MRSL at a level 3 conformance.

Accepted Programs and Standards for Verification of Requirements:

Accepted Programs and Standards	Rationale for including
ZDHC Conformance Guidance	Level 2 & 3 conformance see link HERE.

Bluesign OekoTex Eco-Passport ToxFMD Screened Chemistry® Scivera	ZDHC has integrated other chemical standards and certifications to the MRSL conformance pyramid.
Any ZDHC approved assessor at level 2 or 3	Find approved assessor link HERE.

Requirement 2: Transparency into Formulations	**Better**	**Best**
Transparency into formulations.		Facility uses chemical formulations that are fully assessed and certified through a hazard-based screening program. The facility must show an increase in the number of formulations year on year as a continuous improvement requirement.

Accepted Programs and Standards for Verification of Requirements:

Accepted Programs and Standards	Rationale for including
ToxFMD Screened Chemistry® GreenScreen® Certified SciVeraLENS Screened Chemistry	For greater transparency into the textile formulations, we require that each chemical substance within a chemical formulation is disclosed to a 3rd party Service Provider, usually a toxicologist, who then assesses each one through a hazard-based lens. Many chemical formulations have already been assessed using ToxFMD and SciveraLENS® Screened Chemistry to meet Levi's Screened Chemistry program which is now managed by ZDHC.

We understand bluesign® certified or OekoTex Eco Passport® chemical formulations may NOT have additional eco standards because they meet the MRSL conformance level 3.0.

However, for circular materials, we support better formulation transparency via full material disclosure (i.e. Cradle to Cradle Certified approach), and an increase in bio-based content.

Requirement 3: Non-petroleum Feedstock for Synthetic Alternatives	**Better**	**Best**
Non-petroleum feedstock for synthetic alternatives Our goal is to move toward non-edible non-petroleum resources meet guiding principles of the circular economy and the 12 principles green chemistry.		Some chemical formulations contain over 50% content from non-petroleum-based feedstock. For example, agricultural waste, bacteria, algae, fermentation

Accepted Programs and Standards for Verification of Requirements:

Accepted Programs and Standards	Rationale for including
USDA Bioreferred® Program. The chemical formulation must be USDA bio based at a minimum of 50%	The USDA has a standard that verifies that a chemical formulation is made up from a specific percentage of bio-based feedstock. We have chosen 50% although this may increase year on year

Glossary of Terms

Auxiliary chemicals: Chemicals that enable a processing operation in textile manufacturing. This may include spinning, weaving/knitting, preparation, dyeing, printing of finishing. Auxiliary chemicals allow processes to be carried out more effectively, or their presence may be essential if a given effect is to be obtained.

Bio-based chemicals: Chemicals sourced from plants and other renewable agricultural, marine and forestry materials. (USDA definition)

Chemical ingredients: Individual chemical substances or mixtures of chemicals that when added together form chemical formulations. For example, a dye formulation is made up from

many chemical ingredients including preservatives, anti-caking chemicals, buffers, stabilizers, by-products, active ingredients etc)

Closed loop: Manufacturing that occurs in a system that prevents the release of hazardous chemicals into the ecosystem.

Hazardous chemicals: A chemical of concern that can cause a physical or health hazard. Hazardous chemicals include those that are persistent, bio-accumulative and toxic to the environment (PBT) and/or carcinogenic, mutagenic or toxic to reproduction (CMR) as well as endocrine disruptors.

Input chemistry management: A system designed to manage and restrict hazardous chemicals at the beginning of the manufacturing process. This prevents them from entering textile supply chains so that managing and eliminating them at the end of the textile supply chain is no longer required. Input chemical management can be achieved by managing restricted hazardous chemicals via a MRSL or implementing closed loop systems that prevent hazardous chemicals from entering the environment.

Manufacturing restricted substance list (MRSL): A list of hazardous chemicals that are restricted from use in textile manufacturing. It may include auxiliary and process chemicals, as well as impurities and residual chemicals. The MRSL restricts hazardous chemicals potentially used and discharged into the environment during manufacturing, not just those chemicals that could be present in finished products. An MRSL addresses ANY chemical used within the four walls of a manufacturing facility.

Non-petroleum feedstock: Feedstock not derived from the petroleum industry. It includes sources such as agriculture, waste, bio-design and innovation.

Process chemicals: chemicals that serve a purpose during textile manufacturing by being present on a substrate temporarily. (e.g. weaving size, fabric lubricant). They are removed after they have served their purpose, typically via washing. They are eventually discharged as effluent.

Regulated chemical substances: Chemical substances that are regulated by a governmental agency for use in certain applications.

Residual byproducts. When the process of making one thing results in a second product as well, that second thing is called a byproduct. Molasses is a byproduct of refining sugar and leather is a byproduct of producing meat. A residual byproduct in a chemical formulation may be present because the reaction did not result in a 100% yield. Residual byproducts are usually impurities, and the cost to eliminate them may be prohibitively high. (Pharmaceutical grade

chemicals have much fewer residual byproducts than textile chemicals because they are more expensive and purity matters)

Restricted substance list (RSL) A list of hazardous chemicals, often regulated, that must not be present above a certain threshold on finished textile articles. The RSL is usually developed, maintained and implemented by brands. The RSL will contain a list of chemicals that are restricted in the countries where that brand sells products. In addition, a RSL may contain chemicals that are not regulated yet. They may be on watch lists or NGO lists

Safer chemicals or safer chemical formulations. In the context of these Guidelines, *safer chemicals or safer chemical formulations* address greater transparency into the chemical ingredients present in chemical formulations. Each chemical ingredient in a formulation must be disclosed and assessed by a toxicologist prior to use.

These Guidelines suggest aligning to existing credible programs such as “ZDHC Scored Chemistry” because a score is given to each individual chemical in a formulation as well as the formulation based on the inherent hazard profile. A score helps brands make informed decisions about which chemicals to use on their products

“Safer” also includes chemicals sourced from bio-based resources because in many cases, they may be inherently less hazardous than their petroleum-based counterparts. It should be noted that ZDHC is defining Safer Chemistry, and Fashion Positive may decide to align to ZDHC, which means this term and the Guideline will be updated once more information is available.

Textile chemical formulation: A combination of chemicals that results in a chemical mixture that serves a particular function. (A softener, a dye, a detergent) Textile chemical formulation consist of chemical ingredients, and many of these are proprietary to chemical suppliers and therefore not publicly disclosed.

Unintentional impurities: Chemical ingredients in a chemical formulation, usually at a low concentration, that exist as impurities. This is a general term that may include unreacted monomers, residual byproducts and other impurities that are present by the very nature of chemical reactions. Removing them, if even possible, would be expensive and in some cases difficult to do.

Unreacted monomers: A polymer is a molecule that is made from joining together many small molecules called monomers. Monomers bind to other monomers to form repeating chain molecules through a process known as polymerization. As with any chemical reaction, the yield is never 100%, which means that some monomers are not fully reacted. Some monomers are quite hazardous, even though the resulting polymer is often not and these unreacted monomers result as impurities in chemical formulations

Water

Category Vision:

In a circular economy we take a resource, use it and then we return it to the earth without causing harm. The vision behind this category is to provide a roadmap to achieving zero discharge.

Supporting principle(s):

Waste and pollution is designed out.

Scope - Facility:

Since Fashion Positive aims for circular, systemic change, this requirement is centered around water in the **facility** producing the fiber, rather than just water related to the production of the fiber itself.

Goals:

1. Ensure the effluent is cleaned up prior to discharge into waterways.
2. Use less water.
3. Ambition: Zero discharge of water at manufacturing facilities.

Approach:

While our ultimate goal is to support facilities that do not discharge water, we recognize that this might be too much of a jump to facilities already in production. However, a first step must be to clean up water so that it can be returned without causing harm.

Once water has been cleaned and enters the environment without causing harm, the next step is to use less water during manufacturing.

Eventually this will lead to manufacturing processes that either use no water, such as waterless dying techniques, or uses a closed loop[7] water recovery system that reduces freshwater withdrawal, thus achieving the goal of zero water discharge at manufacturing facilities.

[7] 'cCosed loop', meaning that water and chemicals used in the process are reused and do not exit the facility, and therefore reduces environmental impacts of production; and substitutes harmful chemicals with a less harmful organic solvents. Adapted from Changing Markets Foundation, 2017 *Dirty fashion: How pollution in the global textile supply chain is making viscose toxic* http://changingmarkets.org/wp-content/uploads/2018/02/Roadmap_towards_responsible_viscose_and_modal_fibre_manufacturing_2018.pdf
More holistically, closed loop of an entire production process "takes into account: materials, processing into recyclate, new manufacturing techniques, proper system-based collection, maximum resources recaptured, multiple reuse through the 'loop', close to zero waste as possible." https://www.ellenmacarthurfoundation.org/news/worn-agains-journey-to-closed-loop

REQUIREMENTS

Achievement: To achieve this category, either Better OR Best category must be fulfilled and verified through 3rd party certification or audit, provided to Fashion Positive.

For this category, these requirements need to be met:

- **Requirement 1 – Water**
  - **A. Quality [better & best]**
  - **B. Recycle and Reuse [best]**
  - **C. Conservation and using less [best]**

Requirement 1:	**Better**	**Best**
A. Water Quality. The water is treated prior to discharge to ensure it is returned in the same condition in which it was taken.	Implementation of the ZDHC wastewater Guidelines at a **Progressive** level. Appendix A. And for MMCFs the ZDHC MMCF Interim Wastewater Guidelines Progressive level refer to Appendix A.	Implementation of the ZDHC wastewater Guidelines at an **Aspirational** level. Appendix A. And for MMCFs the ZDHC MMCF Interim Wastewater Guidelines Aspirational level refer to Appendix A.
B. Recycled and reuse of Water. Zero discharge is aspirational and may be met by taking small steps, such as reusing and recycling process water and implementing water-free technologies and processes. All of these actions meet the principles of designing waste and pollution out and striving for continuous improvement.	Progressive level of ZDHC Guideline	90%+ of the facility's recaptured water is reused or recycled to produce less effluent. Per Aspirational level of ZDHC
C. Water Conservation Zero discharge is aspirational and may be met by taking small steps, such as using chemicals that work in less water or using new technologies and	Reduction in water use year over year. Facility implements water-saving manufacturing techniques that may include closed loop	Maximum reduction in water use. Facility implements water-saving manufacturing techniques that are closed loop processing and

equipment. All of these actions meet the principles of designing waste and pollution out and striving for continuous improvement.	processing and chemicals that work in less water.	chemicals that work in less water.

If a facility discharges to a central treatment plant, they would follow the ZDHC wastewater guidelines for this type of facility.

Accepted Programs and Standards for Verification of Requirements:

Accepted Programs and Standards	Rationale for including
The following latest ZDHC wastewater guidelines should be met MMCF Wastewater Guidelines for MMCF fibers. ● Table 1 at the **PROGRESSIVE** (**Better**) or **ASPIRATIONAL** (**Best**) level. (Table 1 contains conventional wastewater limit values) ● Tables 2A – 2N. These tables contain chemicals on the ZDHC MRSL. ● Table 3 sludge	The ZDHC Wastewater Guidelines are the most widely used guidelines across the industry, and also the most robust. They include testing for the presence of hazardous chemicals listed on the ZDHC MRSL and they have three levels of achievement: foundational, progressive and aspirational. The ZDHC guidelines are partly recognized in other standards and tools including the Higg FEM, Cradle to Cradle Certified (best) and others. These Guidelines align directly with the chemistry part of our standard.
Clean by Design (CBD) verified by a 3rd party audit	Some of the 10 best practices identified in CBD are applicable to water and help reach zero effluent. These include: ● Condensation collection and recovery ● Cooling water reuse ● Process and grey water reuse
HIGG FEM Wastewater level 3 Answer Yes ● Verified by a third party ● Reuse and/or recycle process wastewater as process water (closed loop) to recycle 50% or more	The FEM has a section dedicated to wastewater. Level 1 and 2 focus on water quality whereas level 3 supports the reuse and recycle of wastewater thus achieving less effluent

STeP by OEKO-TEX	STeP by Oeko-Tex certification waste water/sludge requirements aligned with ZDHC
3rd party audited results within the last year (Review water bills)	A hired 3rd party consultant by the facility to verify that water saving techniques have been implemented and are used
Cradle to Cradle Certified™ (draft v4) link HERE.	Cradle to Cradle Certified™ (draft v4) requires that facilities using high volumes of water and operating in water-stressed locations implement best practices leading to the maximum feasible reductions in water use by the Gold level. Other facilities that are not in stressed locations but use high volumes will have to institute at least one best practice or technology resulting in reduced use to achieve Gold.

Energy

Category Vision

The vision behind this category is to provide a roadmap to achieving as close to zero greenhouse gas emissions as technology allows.

The vision behind this category is to align with existing industry charters and commitments, such as the UN Fashion Charter, where signatories commit to a target of 30% GHG emission reductions by 2030. The requirements have been established to recognize progress that facilities and brands are making toward this goal.

Facilities aiming to achieve requirements on this category will need to provide verified evidence of reductions.

Supporting principle(s):

Waste and pollution is designed out.
Focus on ambitious continuous improvement.

Scope - Facility:

Since Fashion Positive aims for circular, systemic change, this requirement is centered around all of the energy used by the **facility** producing the fiber, rather than just the energy that is used in the production of the fiber itself.

Goal:

Decrease greenhouse gas emissions from the facility that produces the fiber.

Approach:

Through our experience with Fashion Positive, requiring facilities to use renewable energy can be cost prohibitive, resulting in no progress or reduced impact (and no engagement in the other categories).

It has been confirmed through our experience, and the experience of other industry organizations such as Clean by Design, that the economical first step to using renewables is to *first reduce the overall energy in the facility.* This will result in a lower investment for renewables, thus making renewables more accessible for the facility.

REQUIREMENTS

Achievement: To achieve this category, either Better OR Best category must be fulfilled and verified through 3rd party certification or audit, provided to Fashion Positive.

- **Requirement 1 - Decrease greenhouse gas emissions [better & best]**

Requirement 1: Decrease GHG Emissions	**Better**	**Best**
Requirement 1 - Decrease greenhouse gas emissions This requirement is centered around reduction of energy and sourcing renewable energy, both which result in lowering greenhouse gas emissions.	Proven decrease in the use of energy in the facility that results in a reduction of greenhouse gas emissions **within the last year; and year on year** with a goal for transition to renewable sources within a specific timeline, maximum within 3 years.	At least 20% of electricity used in the facility must come from a renewable source that emits no greenhouse gases, such as solar, steam, wind and/or geothermal. The energy can come from onsite or offsite resources, as long as it is verified through a Renewable Energy Certificate (REC) or STeP by OEKO-TEX certification or Cradle to Cradle v4 Silver level or above. *While greenhouse gas offsetting energy is a good transitional step, we cannot guarantee that this practice reduces greenhouse gas emissions. Our goal at Fashion Positive and for Circular Materials is to promote and encourage a pathway toward systemic change. Offsetting in this regard, is out of scope.*

Accepted Programs and Standards for Verification of Requirements:

	Accepted Programs and Standards	Rationale for including
Accepted for Better requirements	Facilities Environmental Module - 100 points in Energy Section (verified through 3rd party auditor)	The FEM has a section dedicated to energy—determines a baseline, and tracks performance. While the FEM is not a tool to identify HOW to reduce energy; it can be used to determine performance and results. At this time the SAC has shared that the only way to identify if a reduction of energy has occurred is when a facility receives 100 points in the Energy section.
	3rd party audited results within the last year	A hired 3rd party consultant by the facility to verify that there has been a reduction of energy over the last year.
Accepted for Best requirements	Renewable Energy Certificate (REC) or STeP by OEKO-TEX certification or C2C v4 Silver level or above certification	A REC is a way to verify that renewable energy is purchased from offsite sources. SteP may be used to confirm energy use and renewable energy use to certify continuous improvement, measurement of sources and consumption, and facilities are awarded additional points for documented renewable sources At C2C Certified™ Silver (draft v4) requirement includes: • Embodied emissions associated with the product from cradle to gate, or scope 1-3 emissions, are quantified. • 20% of electricity used at final manufacturing is renewably sourced or 20% of the resulting GhG emissions are offset. In addition, 20% of GhG emissions from all other sources are offset.
	3rd party audited results within the last year	This could be a hired 3rd party consultant by the facility to verify that 25% energy that emits no greenhouse gases has been used in the facility.

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