Procurement guide for sustainable and circular textiles and products made from textiles.

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Table of Contents

1 Specification vs. tender

Specifications and tenders are a bundle of requirements that describes in detail the desired product or service one wishes to purchase. One can think of this as a comprehensive contract or commitment that frames a collaboration or customer-supplier relationship.

1.1 Specifications

A **specification** is a document to regulate general communication between customer and supplier. It lists the wishes and requirements for all products purchased by a particular customer. It is possible to deviate from the specifications if there are valid reasons for doing so and if there is an agreement between customer and supplier. In addition to requirements, specifications usually include penalty clauses to regulate non-conformity of deliveries. A specification must be signed to confirm acceptance of its conditions and requirements, making it a binding contract. If signed, one confirms to work in accordance with the specifications. This is not the case if the supplier does not sign the specifications to confirm that he/she will respect them. Supplier's purchase conditions may conflict with the specifications. Be aware of this to avoid discussion. Check the terms and how they accept them to make sure there are no conflicts. When there are conflicts, resolve them in advance to avoid discussions.

1.2 Tender

A **tender** is a document that brings together the wishes and requirements in view of a specific purchase from a company or government. Public authorities are bound by Directive 2014/24/EU of the European Parliament and of the Council of 26 February 2014 on public procurement on public procurement, on the award of public contracts. This Directive has been transposed into national law, with which contracting authorities must comply. A tender is usually binding so deviations from the tender are not possible. If the estimated amount to be spent exceeds the limit, mentioned in the directive 2014/24/EU, one will have to comply with stricter rules as a contracting authority.

1.3 Wishes and requirements

One can ask both in the specifications and the tender for **evidence** of compliance, or one can just ask for a declaration stating that one will comply with that requirement. For each requirement that is set, see whether it can be verified in a uniform way via standards (see Standards). If there is no way to verify a requirement, one can draw up one's own method and specify it as a means of verification in the specifications.

Get evidence or do the checks yourself to verify compliance the requirements. Only in this way one can be sure that the requirements will be met. If you allow evidence to be provided or certification to be obtained after the contract has been awarded, you run the risk of purchasing services that do not meet the criteria. This is unfair to those who did meet these criteria even before awarding or placing the order. If one then cancels the contract, one will

have lost a lot of time. This might also lead to problems with the functioning of your organisation if you lack resources due to a delayed purchase. So, it is better to verify proof of conformity to the tender or specifications before awarding or approving the order.

Afterwards, perform **spot checks** on the delivered batches to verify whether not only the samples meet the requirements. Mistakes can occur during production or, for example, certain fabrics or accessories can be changed because they are no longer available on the market. Build in that the supplier needs to notify if this occurs and that an approval must be given.

Decide who will bear the costs of this and provide a penalty system, should an item cease to comply. A penalty system deters better than cancelling a contract.

Also consider the size of the company. Startups often do not have the financial resources to bear many costs. Both small and large companies will pass on costs in the price. For these reasons, it may be better to bear the costs yourself because one will end up paying them anyway. In the case of labels that are not product-specific, costs are shared across different customers/items or services. Startups with a limited budget may have problems with this, as mentioned above. Therefore, allow labels to be extracted only upon award certification. This does increase the chances of non-conformance as mentioned earlier.

1.4 Wishes that cannot be fulfilled yet

It is also possible to formulate wishes that cannot yet be fulfilled because, for example, technology is not advanced enough. For these wishes, ask which trajectory they are aiming for and in which timeframe they will be realised. The conditions for submitting an admissible tender are still met if these wishes or "requirements" cannot be met immediately. One can award extra points in a dossier for the efforts one will make. If one awards points, make sure the requirements can be verified. Build in penalties that are easily applicable and are legally binding when no effort is made.

When making demands, it is crucial to understand one's purchasing power. The greater the purchasing power, the more effective one can be in enforcing demands or requesting efforts to meet them. If demands are stringent and purchasing power is low, there is a real risk of not receiving any offers.

Through specifications, various requirements will be made about:

- legal compliance
- quality level
- price or budget
- delivery conditions
- packaging
- sustainability and circularity.

E.g., an improvement path during the period of cooperation, good working conditions, use of chemicals, etc. The use of recycled fibres is increasingly demanded, but keep in mind that it is not possible to provide every product with 100% recycled content (see Recycled materials)

2 Legal requirements

The first step is to assess which legislation is applicable on the product or service that one wants to purchase. This legislation is applicable to all products and services regardless the sustainable or circular aspects that are implemented. It is good to require compliance with this legislation, although the supplier must comply whether or not it is a requirement in the specification or tender. However, it is good practice to do so and will ensure that you take the necessary measures to comply with this legislation as well. Regulations that usually apply to most textile products, sometimes only a category of them, are:

- General Product Safety
- Personal Protective Equipment
- Safety of Toys
- Fibre Composition
- Organic/Organic
- REACH (chemical use and intentional added microplastics)
- Unfair Consumer Practices & Green claims
- Eco-design
- Digital Product Passport
- Due Diligence
- Waste Directive

Some legislation is being drafted and will be published in the coming years (after 2023)

2.1 Safety

2.1.1 General Product Safety

Legislation: Regulation (EU) 2023/988 of the European Parliament and of the Council of 10 May 2023 on general product safety

https://commission.europa.eu/business-economy-euro/product-safety-and-requirements/product-safety/general-product-safety-regulation_en

This legislation requires that all products placed on the European market are safe for consumers when used as intended. There are some exceptions to this legislation where very specific legislation exists for the products in question.

"Article 5: Economic operators shall place or make available on the market only safe products."

Under this legislation, many standards have been developed. These standards can be used to demonstrate that a product is safe enough for consumers. E.g., EN 16781 - "Textile childcare articles - Safety requirements and test methods for children's sleep bags for use in a cot". This and similar standards contain requirements on design, test methods and limits, requirements on labelling and instructions for use. This standard specifically states:

"4.6.1.4 All recycled fibres used as fillings shall have been heat treated to disinfect before use (see A.7.4). Recycled fibres shall only be used from a known declared source with traceability throughout the process."

This indicates that products are bound by legislation even in the case of circular products.

Part of the product safety legislation is the requirement to produce a product file, including:

- A risk assessment in which the risks in terms of chemical, physical, mechanical, fire hazards, etc. have been considered and the extent to which they expose the user to risk. The risks to be taken into account are listed in Article 6.
- Technical documentation containing at least a general description of the product and its essential characteristics relevant to assess its safety.
- Internal procedure and controls to ensure that components comply with current legislation and cannot pose a hazard.
- This document should be kept up to date. It should be retained for 10 years after the product has been placed on the market.

2.1.2 Personal Protective Equipment

Legislation: Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment

https://single-market-economy.ec.europa.eu/sectors/mechanical-engineering/personal-protective-equipment-ppe_en

PPE (Personal Protective Equipment) must be CE marked. The following steps and procedures apply:

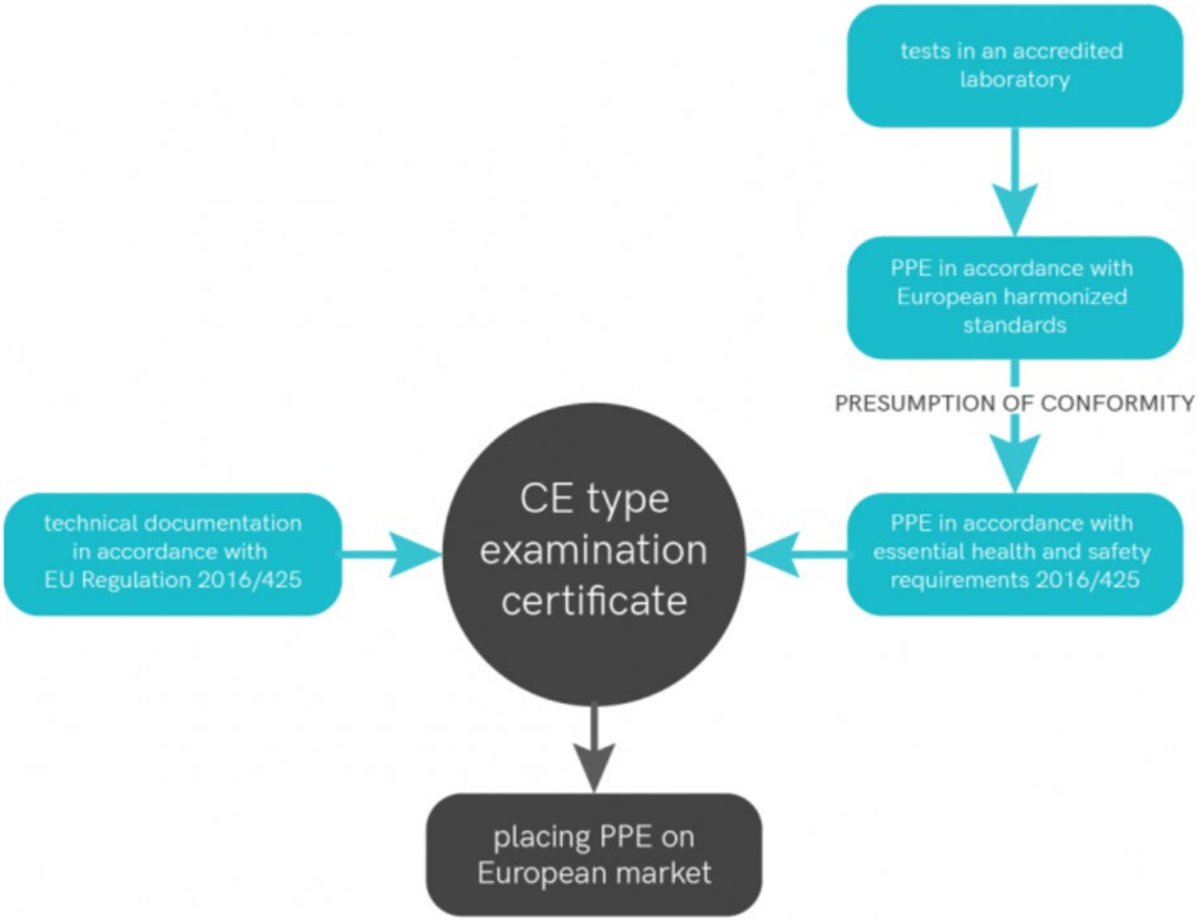


Figure 1: CE-marking procedure (De Witte, sd)

Categories and procedures

If a manufacturer or importer wants to place a PPE on the market, he/she must prove that the product complies with the fundamental requirements. One provides this proof by drawing up a technical file, keeping it and submitting it to the supervisory authority on request for 10 years after the PPE production has ended. PPE is classified into 3 categories according to the severity of the risk it protects against. The category determines the procedure one must follow to market the PPE.

- **Category I:** PPE protecting against minor risks: It is sufficient to draw up a technical file. As the manufacturer, you may then affix the CE mark as a sign of conformity, without any third-party intervention.
- **Category II**: PPE protecting against moderate risks: You draw up a technical file and have a CE type-examination carried out by an approved body (notified body). In the documentation, you mention the number of the notified body. Only after receiving a type-examination certificate from the notified body may you affix the CE marking.
- **Category III**: PPE protecting against fatal risk or permanent injury. You prepare a technical file and a CE type inspection must be carried out by a notified body.

In addition, a follow-up inspection is carried out annually by a notified body. One has two options:

1. the notified body test samples from production

2. the notified body carries out an audit of your quality system. Only when you have received a type-approval certificate and a positive follow-up inspection report can you affix the CE marking with the number of the notified body that carried out the follow-up inspection.

Declaration of conformity

The holder of a CE type-examination certificate also prepares a Declaration of Conformity. This document contains:

- details of the company
- product information
- a list of the European Directives and standards with which the product complies
- A legally binding signature on behalf of the organisation.

The certificate holder is responsible for ensuring that all products delivered are in accordance with the inspected model and remain compliant with the essential requirements of Regulation (EU) 2016/425.

Good to know

To label a product CE, one must provide evidence of conformity. This is mainly done by complying with harmonised standards, such as standards for firefighter vests, high-visibility clothing, protective clothing against rain and cold, etc.

Even though a standard is voluntary, companies will use it to comply with legislation. You will not want to take the risk of not being compliant. This makes it impossible to reuse certain PPE and therefore to make them circular. The working group that developed the standard can be asked to make adjustments if there appears to be no safety problem. However, it takes 2 to 3 years to make changes to standards before they come into force. So for many things you will have to work with the limitations imposed by certain standards.

The PPE Sector Forum started a working group to investigate possibilities for the circular economy. This might lead to the revision of existing standards or to new standards.

Product standards only guarantee the protective function of a PPE and not its quality or lifespan. If PPE wears out or breaks down due to use, it may no longer be allowed to be used. Additional requirements regarding quality and service life extension are therefore appropriate.

Consider whether each employee needs protection against a particular risk. Instead of integrating everything into 1 garment, you can use separate garments, each offering protection in a specific area. Of course, then one has to remember to use the specific protection equipment when needed. This can reduce the number of pieces of more expensive protective equipment that need to be purchased. Moreover, this allows other workwear to be more circular, as they require a less complex fibre composition.

Meeting certain standards also means using certain chemicals that are better avoided in a circular economy. Companies are constantly looking for better alternatives, but there is still a long way to go.

> Product safety can ensure that an item is not yet end-of-life, but should no longer be used because it has lost its protective properties. It should also no longer be used in its current form, as this may give the user a false sense of security (see end-of-life applications).

2.1.3 Safety of Toys

Legislation: Directive 2009/48/EC of the European Parliament and of the Council of 18 June 2009 on the safety of toys.

https://single-market-economy.ec.europa.eu/sectors/toys/toy-safety_en

When a garment, sleeping bag, blanket... contains a play element, it will fall under the Toys Directive.

The harmonised standard is the EN 71. This standard consists of several parts that include the following hazards: mechanical safety, presence of chemicals, fire safety... Again, the same rules apply as for PPE.

But toys fall under category I, so one must apply auto-certification. This means that one draws up a file and makes its own declaration, meaning there is no third-party verification. However, tests are often carried out by a third party. These test results usually complete the dossier. Make sure that the laboratory is accredited according to EN ISO/IEC 17025 and preferably that it is also accredited for the tests.

2.1.4 Waste

Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

When someone doesn't want something anymore and throws it away, it becomes waste. From that point on, the Waste Directive applies. It has to be determined whether the waste could be harmful and whether special treatment is needed, in storage and/or in transport. This means that in some cases special transport will be required, even if the waste is to be returned to the value chain via one of the R-strategies. Ensure that the end-of-life solution partner has the appropriate certificates and permits to collect and treat the waste. Use the link below to find additional regulations and information related to and supporting the Waste Directive.

https://environment.ec.europa.eu/topics/waste-and-recycling/waste-law_en

At present, there are some changes to the overall framework of waste legislation, mainly to support the circular economy. For example, Member States are required to set up separate collection of textiles by 1 January 2025.

2.1.5 Use of chemicals

2.1.5.1 REACH

Legislation: Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC.

https://environment.ec.europa.eu/topics/chemicals/reach-regulation_en

The REACH legislation regulates the use of chemicals in the European Community. It covers not only the use and storage of chemicals, but also which chemicals may be present in an article, including textiles. The continued tightening of regulations has reduced the use of harmful chemicals in the European Union. So be aware that these chemicals may still be used outside Europe. If you want to prohibit the use of certain chemicals in a production process outside Europe, you need to set your own requirements.

In addition to use, the legislation also regulates the chemicals that may be present in textiles. Again, the legislation is such that it does not apply to products and services provided outside Europe, but only to textiles placed on the European market. The person placing these textiles on the European market is considered to be the producer and is therefore responsible for complying with this legislation. This is the case with most legislation. But the rest of the chain cannot simply hide behind this responsibility. For example, a brand is also considered a

producer if it markets a product in Europe under its own name. The government does not accept this shifting of responsibility either.

The REACH regulation is becoming increasingly stringent as chemicals are added to the various REACH annexes on a regular basis. Recycled textiles may contain certain chemicals that are no longer allowed under the latest regulations. As a result, these textiles can no longer be used as raw materials and an alternative must be found. In some cases, this may lead to the textile being destroyed by a specialist company. It is therefore important to know the origin of the textile and what has happened to it, as textiles can also be contaminated with harmful chemicals during use. It also depends on which recycling technology can be used, as some can remove certain chemicals.
See Recycled materials and Chemical use).

2.1.5.2 Biocides

Legislation: Regulation (EU) No 528/2012 of the European Parliament and of the Council of 22 May 2012 concerning the making available on the market and use of biocidal products.

https://health.ec.europa.eu/biocides/regulation_en#:~:text=Regulation%20(EU)%20528%2F2012,and%20use%20of%20biocidal%20products

Biocide regulation applies to a claim relating to a biocidal effect of a textile product. For example tick-resistant clothing or clothing that prevents sweat odours.

If such textile products are recycled, biologically active products may still be present in the recycled material, without any requirement having been set.

Keep this in mind when drafting specifications, as these products are often not environmentally friendly and may present problems with future REACH compliance.

2.2 Unfair commercial practices

2.2.1 Unfair consumer practices

Legislation: Directive 2005/29/EC of the European Parliament and of the Council of 11 May 2005 concerning unfair business-to-consumer commercial practices in the internal market.

https://commission.europa.eu/law/law-topic/consumer-protection-law/unfair-commercial-practices-law/unfair-commercial-practices-directive_en

Consumers have a right to fair information. This means that suppliers cannot make claims that they cannot substantiate. Remember this legislation when you ask for information or when you are asked to make certain claims.

Although greenwashing is already forbidden by this legislation, the European Commission wants to empower its citizens and set clearer rules on green (sustainability) claims (see Green claims).

2.2.2 Fibre composition

Legislation: Regulation (EU) No 1007/2011 of the European Parliament and of the Council of 27 September 2011 on textile fibre names and related labelling and marking of the fibre composition of textile products.

https://europa.eu/youreurope/business/product-requirements/labels-markings/textile-label/index_en.htm

All textile products must have a marking or label indicating the fibre composition. The indicated composition may variate 3% from the actual (tested) composition.

Limitations:

It is not always required to mention certain fibres, or even to mention certain fibres in certain parts.

- For example, it is not required to mention the elastic yarns in the cuff of a stocking, or the reinforced yarns in the heel or toe of a stocking. This means that a so-called 100% cotton stocking may contain elastane and polyester without being mentioned. This makes recycling difficult without knowing it. Therefore, ask for the "bill of materials" on Materials.
- The indication "recycled" or "virgin" is not required by the regulation. If one wishes to communicate about this, it must be stated separately from the mandatory composition label. This is e.g. the case for the claim that the fibre is of organic origin (e.g. organic cotton).

For regulation purposes, recycled polyester and virgin polyester are both just polyester. The same goes for organic cotton or conventional cotton: The label will mention polyester or cotton regardless of whether it is recycled or organic. It is allowed to mention this separately.

Due to the lack on sustainable and circular aspects in the legislation, the EU commission decided to revise the current legislation. More information can be found via the following link:

https://www.europarl.europa.eu/legislative-train/theme-a-european-green-deal/file-textile-labeling-regulation.

2.3 Sustainability and Circularity

Deriving from the EU strategy for sustainable and circular textiles and other relevant strategies the EU is revising and adopting new legislation. Many are not in place yet but for some draft texts are available so that one can get a feeling what might be the future legislation. This could give some tools to implement in the specifications or tender.

https://environment.ec.europa.eu/strategy/textiles-strategy_en

To have a clear set of requirements us the terms that are set out in the EN ISO 5157 - "Textiles - Environmental aspects – Vocabulary"

2.3.1 Organic

Legislation: Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products.

https://agriculture.ec.europa.eu/farming/organic-farming/future-organics_en

Despite the fact that the regulation mainly aims to regulate the designation "organic production" on food, it states the following:
"*This Regulation shall also apply to certain other products closely related to agriculture and listed in Annex I to this Regulation if these products are produced in, prepared in, labelled in, distributed in, marketed in, imported into or exported from the Union or intended for that purpose.*

Textile fibres or products used in the textile industry covered by this regulation include:

- *cocoons of silkworms, suitable for reeling;*
- *natural gums and resins;*
- *beeswax;*
- *cotton, not carded or combed;*
- *wool, not carded or combed;*
- *untanned and untreated hides;*"

This means that if cotton is required to be of organic origin, the supplier must comply with regulation. Thus, the regulation merely covers fibre cultivation. What happens to the fibre afterwards is not taken into account. A label such as GOTS takes into account much more than the organic origin of cotton.

2.3.2 Green claims

Legislation: Draft proposal https://environment.ec.europa.eu/publications/proposal-directive-green-claims_en

https://environment.ec.europa.eu/topics/circular-economy/green-claims_en and https://ec.europa.eu/commission/presscorner/detail/en/ip_22_2098

This future legislation should empower the general population, and thus also procurement officer, to make sustainable choices when purchasing a product or a service.

The draft sets out rules on:

- The claim need to be relied on widely recognised scientific evidence.
- The impact must be significant
- The claim should differ from the legal requirements.
- It sets up requirements for environmental labels

As long as this legislation is not in force one must assure themselves that the proof is trustworthy.

2.3.3 Eco Design for textiles

Legislation: In development

https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/sustainable-products/ecodesign-sustainable-products-regulation_en

The EU commission wants the extend the Ecodesign directive now applicable for electronics towards other products groups included textiles. This also involves a digital product passport.

2.3.4 Due diligence

Legislation: proposal https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0071

https://commission.europa.eu/business-economy-euro/doing-business-eu/corporate-sustainability-due-diligence_en

This legislation set out rule regarding lays down rules for companies to respect human rights and environment in global value chains. Important to know is this in first instance will target lager corporations and not the SME's. If you want to implement these aspects one needs to set out own requirements on this topic.

3 Standards

3.1 Definition

The European commission defines standards as follows:

"Standards are technical specifications defining requirements for products, production processes, services or test-methods. These specifications are voluntary. They are developed by industry and market actors following some basic principles such as consensus, openness, transparency and non-discrimination. Standards ensure interoperability and safety, reduce costs and facilitate companies' integration in the value chain and trade."

A standard is voluntary in use. This means that anyone may use a standard but is not obliged to do so. A standard only becomes mandatory when it is imposed by a government in legislation or there is a contractual commitment to comply with a standard. Standards are use in a specification or tender to set out clear requirements and to prove compliance.

3.2 Identification of a standard

Generally, each Standard will be identified by:

- A **letter combination** indicating who developed the standard and therefore also owns the ownership rights to the standard
- A **number** that is unique in combination with the letter combination so that the standard can be identified
- The **year** of publication so one can see which is the latest version
- The **title** of the standard that reflects what the standard is about. If it is a series of standards within a topic group (eg protective cloting), the title consists of 2 parts e.g. in the case of the series of standards on protective clothing:

    - ✓ "EN ISO 13688 - Protective clothing - General requirements" the standard that will set the general requirements
    - ✓ "EN 343 - Protective clothing - Protection against rain" is, within the same series of Protective clothing, the standard that describes rainwear.

- There are also sequels to certain standards. In each case, these are standards on their own within 1 particular topic or standards that are used together. For example, the standards below are successor standards. They test the same parameter of a tissue but in a different manner:

    - ✓ EN ISO 13934-1:2013 - Textiles - Tensile properties of fabrics - Part 1: Determination of maximum tensile force and elongation at maximum force using the stripping method

- ✓ EN-ISO 13934-2:2014 - Textiles - Tensile properties of fabrics - Part 2: Determination of maximum tensile strength using the grab method (2008) Tensile strength - grab

It may also be that the sequels are designated in a different way. For example, there is the range of colourfastness's that all start with ISO 105:

- ✓ ISO 105 C06 Colour fastness washing
- ✓ ISO 105 X12 Colour fastness rubbing
- ✓ ISO 105 B02 Colour fastness to natural light
- ✓ ...

Where the above standards are not necessarily all applied together, the standards below around sizing are a set that are considered to be used together.

- ✓ ISO 8559-1 - Size designation of clothes - Part 1: Anthropometric definitions for body measurement
- ✓ ISO 8559-2 - Size designation of clothes - Part 2: Primary and secondary dimension indicators
- ✓ ISO 8559-3 - Size designation of clothes - Part 3: Methodology for the creation of body measurement tables and intervals

Together with the scope of the standard, this is generally public information. The scope indicates what the standard can be used for. Know that the scope applies to what one wish to require and the product or service to which this requirement applies.

It is also important to use standards that are known and commonly used in the industry. If one choose lesser-used standards, the cost may increase, or one may not get offers.

3.3 Relations between standards and legislation

3.3.1 Standardization bodies

There are many organisations that develop standards. One can divide them into groups. Whoever develops a standard has an important influence on the values of the standard when one applies it and complies with it. The following is an overview of bodies that develop standards. Please note that there are property rights on each standard that prevent one from simply passing the standards on. One usually must pay for standards documents to receive and/or read them.

3.3.1.1 Companies

Companies develop their own standards to set out procedures, make checks, make claims... mostly because no international standard exists but also to ensure they have a competitive advantage over their competitors.

The value of these standards is rather low because they are often for internal use only, and it is difficult to verify them. Also, they are generally not checked by independent parties. If this does happen, reliability of the standard increases. It is not advisable to use them in

specifications or tenders unless there are very valid reasons for doing so and the standard is made available or is publicly available.

3.3.1.2 Independent institutes

There are independent institutes that develop standards. For instance, the various labels (see Certificates and labels) each have their own standard. In these, they lay down their requirements and procedures for being allowed to use a particular label. Well-known examples are Oekotex®, Global Recycled Standard (GRS), Bluesign®, Woolmark, etc. There are also institutes that aim to help a particular industry develop standards. For instance, in the united states, there are 2 institutes that focus on standards development for the textile industry namely ASTM (American Society for Testing and Materials) and AATCC (the American Association of Textile Chemists and Colourists). The suitability of using these standards depends on the label or institute that makes the standard available. The examples cited here are reliable sources, but when an ISO or CEN variant is available, there is a preference to use this standard as it is internationally accepted. You can purchase ASTM and AATCC standards.

3.3.1.3 National institutes

Many countries have national standardisation institutes, certainly all EU member states, e.g. the NEN (Netherlands), BS (United Kingdom), AFNOR (France), DIN (Germany), ANSI (United States of America), etc. For Belgium, this is the NBN (Normalisation Belge/Belgische Normalisatie). They follow up on standardisation at the international level and also develop their own standards at the request of in individual, companies or sectors. National standards are owned by the national standards institute and can also be purchased there. For example, there are standards developed by several national institutes that have the same theme (see Testing standards). In many cases they are copy/paste of the similar standard, but details are changed because they have a different opinion or want to improve the standard. This causes problem (e.g. within certification) because testing needs to be redone due to the reason a different national standard is required to be applied. This complicates international trade. Hence, nowadays people prefer to leave standards development in the hands of CEN or ISO and certainly in Europe only nationally standards are developed in the case that CEN and/or ISO are not interested in this development. Sometimes a standard is first developed nationally and then later transferred to CEN and/or ISO. For example, NEN developed a standard to define circular textiles that is currently being reworked in CEN (see CEN and ISO).

These standards can be purchased from the national institute.

3.3.1.4 CEN

CEN is the European Committee for Standardisation. All EU national institutes are compulsory members of this organisation. There are also associated members who implement European standards but do not have voting rights.

This is important because Europe wants to eliminate differences between national standards to promote trade. This is achieved due to the rule that a national standard must be withdrawn when a similar EN standard is published. Also in the EU the national standardisation institute must accept it as a national standard. As a result, an EN 471 (high visibility clothing standard) will also appear as an NBN EN 471, NEN EN 471, DIN EN 471... This is always the same standard only published in other countries. There is no point in mentioning the national code in your requirements bundle. This is different in the case of ISO (See Vienna agreement ISO). When a certain national institute is developing a standard and CEN decides, after a vote among its members, to develop this standard as well, the national institute should discontinue the standard development, to ensure that no national differences can arise within the EU.
EN standards are available from all national institutes. For Belgium, this is the NBN https://www.nbn.be/nl

3.3.1.5 ISO

ISO is the international standardisation institute, based in Geneva. Most of the world's national institutes are affiliated to ISO.

Unlike EN standards, national institutes **are not obliged to nationalise these standards** and they can coexist with national standards. Since the Vienna agreement in 1991, CEN and ISO have agreed to align standards development.

Standards developed under the Vienna agreement are developed by CEN **or** ISO. For both institutes, the members must then approve the standard. This is done by a weighted vote for CEN and normal votes for ISO. Once approved, it is then referred to as an "EN ISO" standard. The moment an ISO standard becomes an EN-ISO, all CEN members must implement this standard nationally and withdraw all conflicting national standards. This is of importance related to the harmonisation of EN standards (See Harmonised standard).

Normally, the national institutes sell these standards. Sometimes this is not the case, e.g. if the national institute has not published the standard. In that case, try another institute.

3.3.1.6 Governments

Governments also create standards.
E.g.:

- California has the "16 CFR Part 1610 - STANDARD FOR THE FLAMMABILITY OF CLOTHING TEXTILES".
  This is a combination of standard and legislation that guarantees the fire safety of plain clothes.
- the European label Ecolabel is related to legislation, namely "Regulation (EC) No 66/2010 of the European Parliament and of the Council of 25 November 2009 on the EU Ecolabel" just like the EU Organic label "Regulation (EU) 2018/848 of the European Parliament

and of the Council of 30 May 2018 on organic production and labelling of organic products".

Obviously, these are very strong standards because it is legislation, and one cannot make claims without complying with this legislation. E.g. one cannot claim that the cotton used is organically grown without complying with this legislation.

3.3.1.7 Harmonised standard

A special standard is the harmonised standard. 30% of European standards are developed under specific legislation, and this figure is only likely to rise. When the European Commission asks CEN to develop a standard, it is usually because this standard will be used to check conformity with a certain piece of legislation. If CEN accepts this request to develop a standard, develops the standard and publishes it, the EU Commission will evaluate it once it is published. If this standard is then considered good enough to guarantee conformity, the standard will be harmonised and published in the Official Journal of the European Union.

The EN standard then becomes a hEN and an annex AZ is also added to the standard at that time, explaining how the standard relates to legislation. The moment one complies with a harmonised standard, there is a presumption of conformity to the legislation listed in the Annex AZ.

A list of harmonised standards can be found via the link below https://ec.europa.eu/growth/single-market/european-standards/harmonised-standards_en

3.3.2 Different types of standards

There are different types of standards, we describe 4 categories. These are not official categories.

3.3.2.1 Management standards

Management standards serve to define and regulate a particular system of operations in a company. Well-known standards are the ISO 9001 quality management, the ISO 14001 environmental management, ISO 13485 medical devices, ISO 22000 food safety. There are a lot of management standards that can help support the UN's "Sustainable Development Goals". More information can be obtained from the standardization institutes websites e.g., via the following link https://www.nbn.be/nl/sdg. There are companies that follow the principles of ISO 9001 but are not certified. If one wants to be sure that a company has implemented a certain management system, one should ask for their valid certificate. Certificates are only valid for a certain period of time. So one has to go back through the certification procedure when the validity expires or is in danger of expiring. Therefor if one has a purchasing contract over a longer period there is the need to ask for the renewed certificate when it expires.

Here are some standards one can use:

ISO 9001- Quality management

ISO 9001 is the international standard for quality management systems and by far the best-known standard in the field of management systems. This standard was first published in 1987 and the most recent version is from 2015.

The standard sets requirements for a quality system implemented in a company. It focuses on backtracking and control points. Other points include risk-oriented thinking, risk management and dealing with opportunities, measuring and adjusting objectives, communication and awareness, leadership and commitment to top management ... Being ISO 9001 certified does not mean delivering a quality product. It means that one is able to monitor quality and meet your requirements if one agrees with your requirements. One still need to formulate your own quality requirements if you ask for this standard (see Quality level)

Attention - Accredited laboratories within Europe follow European accreditation legislation " Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9 July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation".

They are accredited to a different quality standard: i.e. EN ISO/IEC 17025.
Always use accredited laboratories when you need one.

The NBN defines the standard for laboratories as follows:
ISO/IEC 17025 provides a framework for quality management of tests and calibrations in laboratories. The standard, first published in 1999 and last revised in 2005, is now receiving an update. The Draft International Standard or DIS version of the updated standard was published in late December 2016. The final version will be published in autumn 2019. To comply with the ISO/IEC 17025 standard, a laboratory must have a functional quality management system and meet the necessary requirements to produce legally valid measurement results.

Include this standard when asking for evidence to be verified by an external laboratory. The certification is normally done by national certification bodies.

Side note: certain companies have their own accredited lab to this standard.

Important: companies who are certified according to ISO 9001 do not necessarily deliver high quality products or services. The certification demands no minimum quality requirements. It demands only that the company has a well worked out quality system included a protocol on how to deal with complaints and quality issues. It is thus important to set own minimum requirements (see Quality level).

ISO14001 - Environmental management systems - Requirements with guidelines for use

This standard specifies the requirements of an environmental management system that an organisation can use to improve its environmental performance.

This international standard helps to integrate a management system to manage the environmental aspects of an organization activities, products and services. The organisation must be able to control the impact and be able to influence it. It is determining this based on a life-cycle perspective.

In line with the organisation's environmental policy, the intended results of an environmental management system include:

1. improving environmental performance
2. fulfilment of obligations
3. achieving environmental objectives

This international standard does not set specific criteria for environmental performance and can be used in whole or in part to systematically improve environmental management. Claims of compliance with this international standard can only be made if all its requirements are included in an organisation's environmental management system and all these requirements, without exception, are met.

Important: being compliant to this standard does not mean that a company has a sustainable production process or delivers a sustainable service. It means that the company is aware of its environmental impact. Mostly there is an action plan linked to this certification to lower the environmental impact of the organisation. This can be of value within a purchasing process.

ISO 26000 - Guideline for corporate social responsibility of organisations

The standard helps organisations define their social responsibilities and provides advice on how to implement these CSR activities within their organisation.

One of the aims of ISO 26000 is to provide organisations with a tool to translate intentions of social responsibility into actions, and to do so in a systematic and coherent manner. It should assist organisations in contributing to sustainable development, including by taking initiatives beyond what is strictly necessary according to laws and regulations. It is not intended to replace existing initiatives but rather to assist them and spread the understanding and views around social responsibility generally.

There are seven core themes (organisational governance, human rights, labour practices, environment, fair business practices, consumer issues and community involvement and development) each divided into different topics.

Unlike other ISO standards, ISO 26000 is neither suitable nor intended for certification purposes.

SA 8000 - Corporate Social Responsibility

The standard focusing on working conditions within companies and/or the production chain. SA 8000 covers topics such as forced and child labour, health and safety at work, freedom of association and collective bargaining, discrimination, disciplinary practices, working hours, remuneration and management systems. Both for its own employees, partners and suppliers.

SA 8000 not only sets standards for workplaces but also subscribes to international agreements, such as the conventions of the International Labor Organisation, the Universal Declaration of Human Rights and the UN Convention on the Rights of the Child.

The standard is available for free download on the Social Accountability International (SAI) website.

ISO 20400 - Socially responsible procurement - Guideline

The standard gives guidance on how to implement ISO 26000. In other words it helps one to implement sustainable aspects into their demands for an offer. The last revised version of this document dates from 2017.

3.3.2.2 Testing standards

These standards describe a procedure to test a certain parameter of a product. For example, the standards below are all standards that determine a tensile strength on textiles:

- EN ISO 13934-1:2013 - Textiles - Tensile properties of fabrics - Part 1: Determination of maximum tensile force and elongation at maximum force using the stripping method
- EN ISO 1421-1:2016 - Rubber- or plastic-coated fabrics - Determination of tensile strength and elongation at break - strip method (method 1)
- EN ISO 1421-1:2016 - Rubber- or plastic-coated fabrics - Determination of tensile strength - the Grab method (no elongation measured - method 2)
- ASTM D5035 - 11:2019 - Standard Test Method for Breaking Force and Elongation of Textile Fabrics (Strip Method)
- EN-ISO 13934-2:2014 - Textiles - Tensile properties of fabrics - Part 2: Determination of maximum tensile strength using the grab method (2008) Tensile strength - grab
- NF G07 120 (1973) Tensile strength - grab (no longer valid 20/06/1999 replaced by EN ISO 13934-2 April 2014)

The choice of standard depends on why one performs tensile testing. Is it to solve a particular problem or for control within the framework of a product standard can make you decide or force you to choose on of the possibilities.

Generally, one should not compare the results of 2 different standards as the parameters may be different. There are some exceptions to this.
Within the same testing standard, there are sometimes several options. It is important to reflect these options when setting a limit in requirements bundles. For example, when testing colour resistance to washing according to ISO 105 C06, one will need to specify which

washing instructions one wishes to check, whether this is domestic washing or industrial and in combination with which fibres one wishes the test to be carried out in order to check bleeding of the dye onto other textiles (mono or multifibre). Always check these parameters to make sure you are not comparing apples and oranges. Otherwise, you could draw the wrong conclusion.

For example, it is a big difference when you test the abrasion of a fabric according to "EN ISO 12947-1 - Textiles - Determination of the abrasion resistance of fabrics by the Martindale method - Part 1: Martindale test equipment for abrasion resistance" with a weight of 9kPa or 12 kPa. The heavier weight will damage the fabric faster, giving you a lower result for the same fabric.

You can get this information from testing labs, consultants or suppliers. They generally know the testing standards well enough to advise you. There is no need to purchase the test standard for this purpose.

NOTE - These test standards generally do not contain requirements. You must specify your own limits if, for example, you want to demand a certain quality level (see Technical requirements and Quality level)

3.3.2.3 Product standards

They define the requirements that a product must meet. Among these standards, we find a lot of safety standards and standards for personal protective equipment (PPE) that are also harmonised (see also pg. 20). Well-known standards in the clothing industry are:

- EN 471:2003+A1:2008 - High-visibility warning clothing for professional use - Test methods and requirements
- EN 343:2019 - Protective clothing - Protection against rain and the
- STANDARD 100 by OEKO-TEX®

These standards contain a bundle of requirements around design, quality limits, labelling requirements and communication requirements, as well as test methods and references to test methods. Some requirements are mandatory, while others are optional. One must therefore know the standard to use it properly. It is therefore advisable to purchase the standard when one wants to make requirements of it. Standards linked to a label such as the STANDARD 100 by OEKO-TEX® will make their requirements bundle transparent. In this case, the standard is publicly accessible which is one of the requirements of a good label (see Certificates and labels)
Product standards sometimes change parameters of performing a test standard. It is important to keep this in mind when setting requirements (See Quality level).

3.3.2.4 Fundamental standards (convention)

Provides an overview of terminology or defines agreements around and particular topic. These standards include what a certain term or symbol means. Often used in a series of standards around a theme (e.g. size designation of garments) as first standard to create clarity around terminology so that no discussion can arise about it. Most standards contain a chapter that integrates this into the standard itself (the definitions chapter). "EN 13402-1 Size

designation of clothing - Part 1: Terms, definitions and method for determining body measurements" and "EN ISO 7010:2012 Standard for safety pictograms" are 2 examples of such a standard.

4 Requirements

There are several requirements one can place on products and services to define the product of service one wants to purchase. The better this is defined the more chance there is of being satisfied on the purchase and problems are avoided. In order to define good requirements, involve both the internal and external stakeholders.

4.1 Technical requirements

4.1.1 General technical requirements

This is a list of requirements a product (or service) must meet. It includes technical specifications such as construction, fibre composition, colour...

Many have the habit of copying the technical data sheet of their supplier or of the product already purchased in a previous tender. They thus copy all specifications of 1 type of product and define e.g., fabric weight, exact composition, yarn types, fabric names, construction, ...

In terms of circularity and end-of-life applications, it is not a good idea to already determine the material (type of fibre) and construction of the textiles. It is too restrictive and hinders innovation. It is better to leave the choice free so that one can engage in product innovation:

- improve quality
- deploying more sustainable fibres
- apply design for recycling
- opting for a certain % of recycled material
- ...

Parameters that can be specified are the colours and house style. However, one may have to use dyes that are not environmentally friendly and may cause problems (in the future) when recycling the materials. For instance, certain dyes might prevent the chemical recycling of cotton or could cause reach compliance in the future. Think about this and discuss it with the organisation that will process your items at end-of-life.

Special mention! **-** Pantone colours are often included. It is not always possible to achieve exactly the same colour because the textile has a different light reflection than e.g. paper. Colour differences may also occur between different textile structures and components in an article. Keep this in mind and ask for prior approval to avoid discussions. Incorrect productions can lead to material and economic losses.

It is better to set a quality level through standards in consultation with various suppliers and consultants. There are product standards that one may or may not be required to include. Make use of these standards but analyse the textiles that is end of life to determine is the minimum requirement is suitable or should be altered (see Quality level).

4.1.2 Personal protection equipment

Safety first, like Reach compliancy one needs to be compliant with the Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment even if you implement sustainable or circular aspects. There are a series of standards that can be used to set the protective level of a garment or glove. They are mainly used show compliance with the PPE legislation in order to also CE-mark the garment or glove (see Personal protective equipment).

The PPE standards below apply to clothing:

- EN ISO 13688 – "Protective clothing -General requirements"
  Sets general requirements on ergonomics, sizing, labelling, etc. Many other PPE standards related to clothing will refer to this standard.

- EN 343 – "Protective clothing - Protection against rain" sets requirements for rainwear for different classes. This standard can also be used as inspiration for normal rainwear.

- EN ISO 20471 – "High visibility clothing - Test methods and requirements" it set the requirements for garments to have a higher visibility aspect then normal work garments of fashion. There are requirements on the fluo and reflective aspects of the garment. There are strict design requirements. In the standard EN 17353 – "Protective clothing - Enhanced visibility equipment for medium risk situations - Test methods and requirements" is a similar standard but gives more design freedoms.

- EN 13034 – "Protective clothing against liquid chemicals - Performance requirements for chemical protective clothing offering limited protective performance against liquid chemicals (Type 6 and Type PB equipment)".
  This standard is used when the risks of contact with harmful chemicals are limited but still present. The limited risks are e.g. light sprays, low-pressure aerosols, small splashes, ... When the risk of contact is higher, this standard should not be used.

- EN 342 – "Protective clothing - Ensembles and garments for protection against cold". Clothing complying with this standard should offer protection at temperatures from -5°C onwards, the label informs one of the values of the different parameters that affect the level of protection. There is an informative table in the standard that indicates when to achieve which result depending on the conditions in which the clothing is used. This are special garments to work in

- EN 14058 – "Protective clothing - Garments for protection against cool environments". This standard works with different class. Depending on the use, one can demand one of the class. Clothing, which meets this standard, provides protection

above -5°C. This standard can be used as an inspiration for normal jackets and sportwear (e.g. skiwear)

- EN ISO 11612 – "Protective clothing - Clothing to protect against heat and flame - Minimum performance requirements". This is a general standard for heat and flame protection with limited risks. The standard works with different classes for different parameters. Take in mind that heat and flames might damage the fabric and garment so that it should not be used any more. (see Quality level) If there is a great risk that this happens one might choose to use fireproof (aramids) fibres on the outer layer.

- EN ISO 11611 - Protective clothing for use in welding and allied processes
  This standard works with different classes depending on the level of danger of exposure to welding spatter. Take in mind that welding droplets or sparks from welding or welding sludge removal might damage the fabric and garment so that it should not be used any more (see Quality level).

The PPE standards below apply to gloves:

- EN 450 - Protective gloves - General requirements and test methods
  This is the counterpart to EN ISO 13688 general requirements for protective clothing. It sets general requirements on ergonomics, sizing, labelling, etc. Many other PPE standards related to clothing will refer to this standard.

- EN 407 - Protective gloves against thermal hazards (heat and/or fire). This is a general standard for heat and flame protection with limited risks. The standard works with different classes for different parameters. Take in mind that heat and flames might damage the fabric and garment so that it should not be used any more. (see Quality level) If there is a great risk that this happens one might choose to use fireproof (aramids) fibres on the outer layer.

- EN 12477 – "Protective gloves for welders". This standard works with different classes depending on the level of danger of exposure to welding spatter. Take in mind that welding droplets or sparks from welding or welding sludge removal might damage the fabric and glove so that it should not be used any more. (see Quality level) Especially the sleeves of a vest are damaged a lot due to sparks flying away at high speed when welding sludges are removed leading to the complete destruction of the garment. If there is a great risk that this happens one might choose to use fireproof (aramid) fibres or leather on the outer layer. If one doesn't want to use fireproof fibres a leather of fireproof temporary sleeve or short could be used to protect the garment.

- EN 511 – "Protective gloves against cold". This standard specifies the requirements for gloves which protect against cold down to -50 °C. This cold can be linked to the climatic conditions or an industrial activity. The specific values of the different performance levels are decided by the special requirements for each class of risk or the special areas of application. Product tests may only give performance levels and

not levels of protection. This standard can also be used as inspiration for normal winter gloves that are not used in very sever conditions.

Important! - Check with the prevention officer in the organisation which standard one should require. If one does not have a prevention officer, consult an independent expert or the external occupational health and safety service. If one wants to work with these standards yourself, take a close look at the scope of these standards. The scope is publicly accessible, so there is no need to buy the standard. If the standard applies to what one wants, buy the standard in order to apply it correctly in your specifications. When in doubt, it is best to ask an expert.

4.2 Quality level

In order to determine the quality level of the products one defines the most important parameters that are of influence on the end-of-life discission. For ever on of those parameters a testing standard is chosen, and a minimum result formulated. This is called a minimum quality requirement. It is important to follow up on these minimum requirements and adapt them to improve the quality if needed (see Quality).

4.3 Need of information

Requirements that one is not going to verify but want have to know for compliance purposes should be included in the specifications. This goes beyond quality levels. For instance, one may want to know what components have been used in a product, who is responsible for the production of a particular item, how to disassemble a textile item, what are the possible end-of-life applications, what chemicals have been used, what is the optimal maintenance method with a view to longevity, whether there are repair options… Do not leave it to legislation to receive information as it is sometimes too limited. E.g. the regulation on the marking of textile composition 1007/2011 requires the composition to be communicated to the consumer, but leaves many things out or prohibits the listing of these components.

List up what information should be given and if applicable what standard should be used to support the claim. Think about all aspects of the product of service during the complete lifecycle.

All consumers, thus also companies and other organisations purchasing goods, are entitled to fair information by the Unfair Commercial Practices Act (see Unfair commercial practices). A reference to this legislation should be made in the specifications or tender as a reminder. In addition, the future green claims legislation will cover how to make declarations. As long as the legislation is not in act one should determine themselves how certain claims are to be tackled.

4.4 Preconditions

There are many preconditions that one probably wants to set requirements for in a tender or specifications. Some of the preconditions might be the packaging of the items, materials used, method of transport, instructions for use that must be included, sizes tables and standard dimensions that must be applied, stock levels that a supplier must keep available, end-of-life application…

As legislation, sustainability and circularity become more prevalent, these parameters will become more important. Also bear in mind that these parameters may affect what you purchase. Think about which preconditions are important to include in the specifications or tender.

5 Implementing sustainability & circularity in specifications and tenders

One can set requirements for things that are clearly verifiable. For other things, it might be better to work with an improvement trajectory or see what is available on the market (or what is offered) and make one's own judgement.

It is important to know where once priorities lie when shopping sustainable and circular products or services. Circular textiles, despite the momentum in recent years, are still in their infancy. There is no such thing as a sustainable or circular products or service. As a buyer, one has an important function in steering "making the textile chain more circular". By building circularity into once specifications or tender, one motivates and force the textile chain to become more sustainable and circular. It is important to note that you will encounter contradictions. If you want more natural materials, you will have to compromise on the CO_2 impact of maintenance because you will consume more water by banning synthetic fibres and perhaps reduce the life span of the textiles. These are choices you will have to make. Therefore, decide what you want to focus on.

There are tools and standard to help you with this. Some standard and tools that cover sustainability aspects can be found below:

- ISO 20400 - Socially responsible procurement – Guideline, and other standards on other topics (ISO list and CEN-CENELEC list)
- UNDP Procurement for Sustainable Development Strategy 2022-2025
- Green Public procurement
- EU POLICY FOR SUSTAINABLE AND CIRCULAR PROCUREMENT

Via the link one can find standard and tools.

To implement circularity the circular procurement tool developed within the framework of the Green Deal Circular Procurement to determine your strategy and ask potential suppliers and consultants to support you when needed.

The chain must be involved when one formulates requirements. For instance, the laundry and waste processor are as important as the textile products themselves. If one wants to buy circularly, one will have to involve the entire chain in the purchasing process. One needs to keep in mind that this will be burdensome for the own organisation. So one will also have to make demands on the internal stakeholders. Without doing this, one cannot buy sustainable and circular.

For example, one can move away from personalised clothing. Non-personalised clothing automatically reduces stock levels and avoids misuse (e.g. private purchases when a points system is used to assign clothing to the employees) and early discarding. Make sure one has enough textiles available but be critical about how much you really are need per person. Also monitor end-of-life textiles to avoid that products are discarding too early. An industrial laundering company can take care of this task, e.g. in a leasing contract that includes maintenance. Implement this aspect in the specifications or tender if it is consider to be useful.

5.1 Quality

5.1.1 General

A study by the European Commission "Support Report Mapping Sustainable Fashion Opportunities for SME's" suggests that quality improvement and longevity extension are the best methods to make the textile industry sustainable. The report reports the following:

"*Extending clothing lifetimes: Longer active life is now considered the most effective way of improving the sustainability of clothing (WRAP, 2017) when also accompanied by a reduction in purchase of new items.*"

This further substantiates that the TCO (total cost of ownership) is more important than the purchase price of the textile item or service when it comes to circular procurement. It is difficult to say that an item should be in use for up to more than 2 years instead of 1 year. There are many different parameters that affect the end-of-life of a textile article. Next to washing mainly the use is important. In what conditions is the product used and how is the user handling the product are important question one needs to assess.

One can, however, use testing standards (see Testing standards), combined with minimum requirements. This combination guarantees one of a certain quality level.

Monitoring the use of a textile product until it's end-of-life enables someone to adjust the minimum specifications, if necessary, in consultation with the supplier or expert (see Build in improvement pathway). It is therefore important to know when and why the user discards a piece of textile. Only then can you improve the parameters setting for future purchases.

Which minimum specifications to set is not always straightforward. The correlation with reality is sometimes ambiguous. For example, one does not know which result of the test according to EN ISO 105 B02 guarantees colour resistance to light for 6 months in the sun

without discolouration. However, experience with the levels allows us to recommend a starting level. Check with consultants and your potential suppliers.

When one wants to have a quality, level checked to work out a points system, for example, choose a laboratory with an accredited lab or do inhouse tests.

There are some standards that could be used as inspiration to define the desired quality level. In the report Ecodesign criteria for consumer textiles there are standards and documents listed and also requirements for different products made out textiles.

The CEN TC 248 WG 39 Textiles - Circular Economy for textile products and the textile chain is developing 3 standard that focus on defining minimum requierments:

- Textiles – Clothing - Minimum requirements for circularity
- Textiles – Workwear - Minimum requirements for circularity
- Textiles – Bed, bath, kitchen textiles - Minimum requirements for circularity

Also the UPV in France has lead to quality requierments for cloting. Refashion has an ecomodulation system based on the end of life point of a garment. For each garment it was determined what parameters a consumer takes into mind to discard a garment. Minimum requirements were set for these parameters. Please find them on https://refashion.fr/pro/en/eco-modulation Eco-modulation 1 - Durability - specifications.

Caution! The choice of fibre is one of the parameters that determine the quality of a product and therefore its lifespan. But also, with weaker fibres (example cotton is weaker than polyester) a good quality level can be obtained. Example twining yarns and increasing the average fibre length could increase the quality level of cotton. This will lead to a more expensive products but the total cost of ownership (TCO) and cost to society must be taken into account. TCO + societal cost is the true cost. Watch out with calculating this, LCA analysis are often used to do this but it is very difficult to compare to alienated fibres e.g. polyester and cotton. It even gets more difficult when one uses newly developed fibres and recycled content. There is no international data available yet.

5.1.2 PPE products & quality

PPE standards (see Personal protective equipment) are not a quality standard. To certify PPE products according to the CE-marking system standards are used to prove compliancy. There are sometimes certain quality aspects taken into mind, but they are related to safety and not a high quality level. A product shall not fail to perform. However, these implemented quality aspects it does not mean that the textile will last a long time. Once the textile has fulfilled its protective function, the textile may be damaged and no longer be usable because it has lost its protective function or is destroyed.

Example: A hole has appeared in a PPE trousers due to welding spatter.
One can prevent this by better quality parameters or requirements. In the case of welding spatters, an inherently flame-retardant fibre will cause fewer problems than cotton with a flame-retardant finish. Especially the sleeves of a vest are damaged a lot due to sparks flying away at high speed when welding sludges are removed leading to the complete destruction

of the garment. If there is a great risk that this happens one might choose to use fireproof (aramid) fibres on the outer layer. If one doesn't want to use fireproof fibres a fireproof temporary sleeve (e.g., leather sleeve) or short could be used to protect the garment. The choice of the solution will depend on how often the activity that causes the problem occurs. Talk with a supplier or consultant about this. (see Personal protection equipment).

When implementing quality requirements for a PPE product use the same test standards and testing conditions for the quality parameters that have requirements in the PPE product standard. If this is neglected there is a risk that for a same parameter 2 test need to be performed. This is inefficient.
E.g., for PPE standards it is not uncommon the test after 5 washing cycles while for a normal garment it is common to test on the original item. Also, the settings of a test standard might differ due to the requirements of the product standard. E.g. the endpoint of the water pressure resistance according to the test standard is 3 drop while in case the test is performed with the overruling set out in the product standard the end point is 1 drop, thus more sever. Make sure no inconsistencies are created due to demanding several product standards and/or setting out own requirements.

5.2 Certificates and labels

Beyond the legal CE marking and legislation that textiles must comply with (see Personal protective equipment and Fibre composition), there are numerous certification and labels possible that products made out of textile can comply with. A certificate is an authorisation to carry a certain claim and/or label. They are closely related. However, not every certificate implies a label. A label is a recognisable symbol that communicates in an easy and clear fashion the properties of a product or organisation or to which it is conform.

5.2.1 Purpose of a label or certificate

They help consumers decide whether to purchase a product or a service. They are a simple communication tool to build trust in the service or product. They are also used to differentiate companies, services and products from the competition. Labels aim to influence the market in a certain direction and can therefore be influential. Very often, they are used in public procurement to bundle some of the requirements and being able to deliver the certificate or label assures that the requirement is met.

5.2.2 Types of labels and certificates

The topics that can be certified range from environmental claims, responsibly produced to animal-friendly fibre production. Labels can be very general, or also very specific. Another subdivision is to certify a company or an item. Based on once strategy, one can decide which label has the best match with once objectives.

One can divide labels into the following categories:

According to administrator

- company itself
- NGOs
- government
- partnerships

According to theme

- environment,
- social,
- security,
- sustainable development

According to scope

- one or more aspects of the theme
- the product itself
- the entire production chain
- the complete life cycle

According to the standards

- ISO 14020 environmental product labels
- ISO 9001 quality management
- ...

According to compliance monitoring

- Audit by third independent party
- self-check
- stakeholder engagement in control
- no control

Categorising can give you more focus when you want to cover your strategy with labels.

The credibility of a label depends heavily on the level of independence and controls exercised. Below is an overview of the level of reliability ranging from highly reliable to less reliable:

Official labels

They are managed by the government and monitoring is done by the government or by external, independent and (usually) accredited organisations. The European Ecoflower and Organic labels are examples.

Private, collective labels

These labels managed by industrial sector, professional association or independent association (e.g. NGO). They are controlled by independent, (usually) accredited organisations. Examples include Standard 100 by Oekotex®, GOTS label, Bluesign, ...

Private, individual, controlled labels

These labels are created by a manufacturer or distributor. They are only used by this manufacturer or distributor but controlled by an external party that is an independent, (usually) accredited one.

Private, individual, non-controlled labels

These are created by a manufacturer or a distributor and remain the exclusive responsibility of this manufacturer or distributor and there is no external and independent control. Examples include We Love Bio cotton by C&A, ...

In the future the green claims legislation will set out clear rules on labels (see Green claims). This will increase the trustworthiness of label. Probably the non-controlled labels might disappear.

5.2.3 Requirements on a good label

There are a number of parameters that are best considered when choosing a particular label.

- Relevance: the issues the labels is address should be relevant to consumers and/or businesses
- Clarity: consumers need to understand what it is about. If consumers do not understand it, the property that a label quickly communicates about some aspect of a product or service is lost and the label misses it's purpose.
- Accessibility: the label must be accessible to both businesses and consumers. If it is not accessible to a stakeholder, it is difficult to create support.
- Financial feasibility: the label should be affordable for both businesses and consumers. If a product or service becomes unaffordable, the scope of the label will become very limited, so it will have no impact on the issues it affects.
- Influence and impact: does the label have a positive impact on issues? The positive influence is the great added value of a label. By this means the labels positively influence the market. It its lacs the positive impact it is of a low value.
- Reliability: All stakeholders (also the company using it) should have confidence in it. An unreliable label is of no use.
- Stricter than legislation: the set of criteria must be stricter than the legislation in force and it must be verifiable. If it is not stricter than the legislation in force, the label is of no use as one must always comply with the legislation. If the criteria are not verifiable, objectivity may be compromised making the label worthless as well.
- Relevance: the issues the labels deal with must be relevant to consumers/businesses. Without relevance, the label is worth nothing.
- Independent control body: which is recognised (accredited) to carry out those specific controls. The more independent the control organisation and the controls are done, the more reliable the label is. This means that national certification bodies check the organisations that own the label to perform controls.
- Transparent management: All information on criteria, among others, should be publicly available and should be retrievable in a convenient way. This contributes greatly to the reliability of the label. Labels with vague criteria and/or unpublished criteria will be considered dubious and unreliable.
- Objective criteria: The development should be done in consultation with all stakeholders (e.g., producers and/or sector organisations, consumer organisations, trade unions and NGOs). If not every stakeholder is involved in the process, there is a risk of losing objectivity and reduced support.

Some of these aspects are clearly incorporated into the draft green claims legislation.

5.2.4 Pros and cons of labels

Labels are easy to use because they provide a ready-made solution to formulate and control requirements. Good labels also ensure compliance with relevant legislation.

However, a label is not always conclusive. Production errors or unfair practices sometimes cannot be 100% excluded. It is therefore important to know how a label organisation certifies and carries out checks. In addition, there is a proliferation of labels and labels cost money due to the certification procedure and external checks on compliance with the conditions for using the label. According to the website ecolabelindex, there are 107 Ecolabels applicable to textiles. There is no point in demanding all of them. Therefore, one should be selective in once choice and allow alternative labels as long as they are equally reliable and have cover the same parameters. Make a choice based on the organisational strategy.

Be careful not to hinder startups with innovative initiatives from participating. Therefore, allow companies to the certificate or label only after being awarded the purchase contract or tender. After awarding it should be monitored whether this then actually happens and work with penalty clauses to prevent non-compliance (See also Wishes and requirements).

5.2.5 Frequently used labels in the textile sector

You will find the logo, parameters and description of the method of certification for each label. Be careful with the parameters. With some labels, certain parameters are subordinate, while the same parameters weigh very heavily with other labels. The parameters can be divided into environmental criteria and social criteria.

Environmental criteria (SDGs 7, 11, 12, 13, 14 and 15)

- Wastewater
- Air pollution
- Energy consumption
- Responsible use of materials
  - Quality - Fit for use
  - Recycling
  - Sustainable origin
  - Chemical use

Social criteria (SDGs 1, 2, 3, 4, 5, 8, 9, 10, 16, 17)

- Working conditions
- Consumer safety
- Animal-friendly

For every label that follows an assessment is done on its impacts. There is a trend to take more aspects in to account then the core aspects. For the assessment it was only taken into account when there are clear requirements are set out in the standard.

5.2.5.1 Oekotex Standard 100

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	NO	Working conditions	NO
Air pollution	NO	Consumer safety	YES
Energy consumption	NO	Animal-friendly	NO
Quality	NO		
Recycling	NO		
Sustainable origin	NO		
Chemicals use	YES/NO		

The Standard 100 by Oekotex® is a label that guarantees that textile products do not contain chemicals that can be harmful to human health. Not only chemicals that can cause temporary or permanent health problems are considered, but also chemicals that can cause allergic reactions. So it is mainly about chemicals that are released from the textile or can have a harmful effect on humans. When an article meets the requirements of Standard 100 by Oekotex, it also complies with the REACH regulations of the European Union. The label anticipates evolutions in this legislation and will already ban harmful chemicals when they are most likely banned in the future. This increases the chance that discarded textiles can be reused as textiles in the future. Organic origin and recycled content are also taken into account by the label. In the case of organic origin Oekotex requires that the company also has a GOTS certificate as additional requirement. The label is applicable to all textiles and the procedure includes self-declaration, audit, testing procedure and market checks.

The label has no social conditions (cf. ILO) or other circular themes such as eco-friendly production, recycled content or quality.

One can look up who has such a certificate for a particular product via a Buying Guide on the website. In addition, one can also find the requirements bundle one has to meet to carry the label on the website.

During the audit social criteria are checked but there are no requirements set.

5.2.5.2 Detox by Oekotex

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	NO
Air pollution	NO	Consumer safety	YES
Energy consumption	NO	Animal-friendly	NO
Quality	NO		
Recycling	NO		
Sustainable origin	NO		
Chemicals use	YES		

When textiles meet Detox by Oekotex®, in addition to the aspects of the standard 100 by Oekotex, the environmental aspect regarding chemical use is included. The chemicals that Greenpeace wants to ban from textile production and the textiles themselves are included in this standard and cannot be used nor be present in the textiles certified according to this standard. There are also requirements for wastewater. Requiring this label will reduce the environmental impact of the textiles one purchases. In addition, you are much more likely to be able to reuse, refurbish, remanufacture, recycle… the textile in the longer term without being prevented from doing so by the REACH regulations. The label is applicable to all textile articles and the procedure includes self-declaration, audit, testing procedure and market controls.

As for the standard 100 by Oekotex, one can use a buyer tool on the website to look up who has such a certificate for a particular product. In addition, one can also find the bundle of requirements that must be met to carry the label on the website.

5.2.5.3 StEP

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	YES
Air pollution	YES	Consumer safety	YES
Energy consumption	YES	Animal-friendly	NO
Quality	NO*		

Recycling	YES		
Sustainable origin	YES		
Chemicals use	YES		

*For quality, people only demand a solid quality system such as ISO 9001. No limits are set that must be met. It is therefore up to the customer to demand a decent quality level to have an impact.

It is a standard and certificate that certifies a textile production process. Textiles produced in a production process that meets this standard and certification are more sustainable than textiles produced in a non-certified production process. All aspects of sustainability, the UN's Global Sustainable Development Goals (SDGs), are included in the standard including some circularity aspects. The standard has 5 main pillars under which these sustainability goals are included. There are minimum requirements that must be met before a certificate can be obtained. From this minimum level onwards, there are 3 categories in which one can be categorized for each of the 5 pillars. In this way, someone can see where addition actions can be taken to lower the impact one has. There is the expectation to improve systematically. This is checked at the renewal of the certificate. Requiring this certificate will thus not only ensure sustainable requirements are met but also create a positive improvement effect on all aspects of the UN GSDs.

As for Standard 100 by Oekotex and Detox by Oekotex, one can look up who has such a certificate for a particular product via a buyerstool on the website. In addition, one can also find the set of requirements that must be met to carry the label on the website.

5.2.5.4 Blue Sign

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	YES/NO*
Air pollution	YES	Consumer safety	YES
Energy consumption	YES	Animal-friendly	NO
Quality	NO		
Recycling	NO		
Sustainable origin	NO		
Chemicals use	YES		

Like Oekotex, this label mainly aims to cover health risks at product level. However, other criteria are also taken into account. It is applicable to all textile articles. The label limits the use of chemicals and only approved chemicals may be used. It is checked whether chemicals can cause adverse effects. Rather, Oekotex works with tests showing that textiles do not contain harmful chemicals.
The label works with a self-declaration and an audit in which one provides advice. One also requires an improvement trajectory. There are 2 levels:

Blue: All materials and chemicals meet the Bluesign criteria.
Grey: The materials and chemicals partially meet the criteria. For parts that do not comply, the "Best Available Technology" principle applies. One must therefore follow best practice.

The label sets clear criteria that are publicly available on its website.

5.2.5.5 Blue angel

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	NO
Air pollution	YES	Consumer safety	YES
Energy consumption	YES	Animal-friendly	NO
Quality	YES		
Recycling	YES		
Sustainable origin	YES		
Chemicals use	YES		

The label covers that the product is eco-friendly, circular and contains no harmful products. It only applies to Interior fabrics (e.g. mattress fabrics, seat fabrics, carpets) and works with a self-declaration that is evaluated.
Since the label covers many aspects of sustainability, it seems interesting to make use of it. However, the lack of audit or other checks is a minus point and weighs on reliability.

5.2.5.6 EU eco-label

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	YES
Air pollution	YES	Consumer safety	YES
Energy consumption	YES	Animal-friendly	NO
Quality	YES		
Recycling	YES		
Sustainable origin	YES		
Chemicals use	YES		

It is linked to EU legislation and it considers the sustainability aspects of a product, including its circularity. Criteria have been developed for each type of product, eg textiles and shoes. It is one of the few labels that also has a quality level built in. The criteria are laid down in European legislation. Certification is done by an independently accredited body. They assess the self-declaration and will carry out an audit.

Many of the requirements are based on industrial best practice. The quality levels are rather low. One should consider if this is sufficient for the intended use one foresees.

5.2.5.7 Organic EU

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	NO	Working conditions	YES
Air pollution	NO	Consumer safety	NO
Energy consumption	NO	Animal-friendly	YES

Quality	NO		
Recycling	NO		
Sustainable origin	YES		
Chemicals use	YES/NO		

Organic (bio) origin is covered by this label. One can only certify the fibre. Once the fibre is processed, no criteria are imposed. Therefor the label speaks only of the cotton or wool production itself. The use of chemicals is no longer checked once they arrive at the spinning mill. It is therefore better to use the GOTS label if one incorporated the organic cultivation of the fibres in once buying strategy.

After self-declaration, one is checked by a government agency or an independent institute during an audit.

5.2.5.8 GOTS

Milieuriteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	YES*
Air pollution	NO	Consumer safety	YES
Energy consumption	YES	Animal-friendly	YES**
Quality	YES		
Recycling	NO		
Sustainable origin	YES		
Chemicals use	YES		

Besides covering the organic origin of fibre production, there are also requirements on other sustainability aspects. The label has 2 levels where the first level guarantees 70% organic cotton and the 2de higher level guarantees 95%.

The certification procedure includes a self-declaration, testing on the product when not working with the approved chemicals and an audit.

* Working conditions are not considered at fibre production level as no audit is performed at the fibre producers. However, certain legislation will take this into account, so it is sometimes taken into account anyway.

** The animal-friendly aspect is covered for wool fibre by the EU Organic regulation. If the fibres are certified to another standard, this may not be included.

5.2.5.9 Better coton initiative

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	YES	Working conditions	YES
Air pollution	NO	Consumer safety	NO
Energy consumption	NO	Animal-friendly	NO
Quality	YES		
Recycling	NO		
Sustainable origin	YES		
Chemicals use	YES		

The label claims that cotton is produced in a better way.It is based upon an audit and improvement system. A big difference with the EU organic regulation is that this label does allow genetically modified crops.

The problem with this label is that the criteria are not clear and difficult to obtain. It seems that guidance is given to the cotton producer but that it is rather non-committal. It also works with a mass balance system that does noet guarantee that products that bare the label effectively contain BCI cotton. Both issues raises questions about the value of this label.

Only cotton production is considered.

5.2.5.10 Fair Wear Foundation

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	NO	Working conditions	YES
Air pollution	NO	Consumer safety	NO
Energy consumption	NO	Animal-friendly	NO
Quality	NO		
Recycling	NO		
Sustainable origin	NO		
Chemicals use	NO		

The Fairwear label is based on the ILO social standard. It works through an audit and requests improvements in human resources management. Audits are only carried out in Bangladesh, Bulgaria, China, India, Indonesia, North Macedonia, Myanmar, Romania, Tunisia, Turkey and Vietnam, which immediately excludes producers in all other countries. Thus, one does not meet the criteria of accessibility to the label. In addition, the available information is limited and the criteria are vaguely defined. One does refer to ILO parts making it somewhat more tangible if one includes these criteria. It is not advisable to demand this label in public tenders or specifications. A good alternative is BSCI, which can be certified worldwide.

5.2.5.11 BSCI

Environmental criteria	Requirements	Social criteria	Requirements
Wastewater	NO	Working conditions	YES
Air pollution	NO	Consumer safety	NO
Energy consumption	NO	Animal-friendly	NO
Quality	NO		
Recycling	NO		
Sustainable origin	YES		

Chemicals use	NO		

The Business Social Compliance Initative (BSCI) is a standard drawn up by the industry based on the ILO criteria of the UN department ILO (International Labour organisation). The certification procedure includes a self-declaration where the file is evaluated and an audit by an independent accredited institute happens. Unlike Fairwear, the criteria are clear and available online.

5.3 Recycled materials

Requiring recycled content seems very logical in a circular procurement. However, monitoring this is difficult, no legislation or standardisation exists, nor is it always possible to use recycled materials at all. For instance, certain standards will prohibit the reuse of recycled materials for user safety reasons or impractically unfeasible requirements are imposed.

The recycled nature of fibres can hardly be verified by testing methods. What one can do is self-audit or request evidence proving recycled content. This is time-consuming and verification of the documents provided is difficult. There are institutes such as BQA in Belgium that have set up a certification system to certify the origin of recycled content. QA-CER by BQA is one of the 5 audit schemes to certify recycled content that is accepted by the EU and the only one that also certifies textiles. There is also the global recycling standard that is a tracing system used by the bigger fashion retailers in the EU. There is some criticism on the system form the textile producing industry due to its chain of custody system. It is mainly focused on PET bottle recycling into polyester.

It is difficult to determine the quantity of the proportion of fibre that should be recycled in a textile product. When working with synthetic fibres, one can go for 100% recycled fibre, if desired. These are polyester fibres made from discarded PET bottles or polyamide fibres by chemically recycled polyamide. Both recycled polyamide (derived from textile fibres) and polyester are sufficiently available on the market for now. In the policy of the EU commission on sustainable and circular textiles it is mentioned that there is a preference on textile to textile recycling and that PET bottles should be preferably recycled into new PET bottles what makes sense from a risk perspective since the textile industry adds in the food industry unwanted chemicals to the polyester fibre, e.g. dyestuff.

When one wants to go to other fibres, this is no longer feasible. A 100% cotton article will probably never be able to consist of 100% recycled fibre. Although technologies improve constantly, what perhaps makes it possible in the future when its pre-consumer cotton.

At the moment recycled textile materials are scarce. Therefore, when drawing up a specifications or tender, one should make sure that their own materials are recycled at the end of their life cycle. For these reasons, if one want recycled materials to be used for the products or service they purchase, it is better to leave the choice open and work out an assessment and points system. This can be based on the recycled content, the method of recycling (more or less CO2 emissions) and the origin. Make sure this is very clearly defined

and greenwashing is avoided, and clear proof is demanded. Without this one perhaps has a premium price without that there is recycled content in the product.

Pay attention to the origin of recycled fibres. Check whether they are post-consumer or post-production materials. Ask for clarity on this. Within the circular economy, there exist the preference to keep materials within the own cycle as much as possible. Being able to reuse it's own end-of-life materials has the advantage of knowing what happened with the material and what chemicals were used. This is important in terms of REACH compliance. This is also closely related to product safety and the PPE legislation. Even if the textile materials in the product are recycled materials the product still needs to be compliant the the relevant legislation.

Keep in mind that even for fibre that have been chemically recycled (polymer recycling and probably not for monomer recycling) one has probably added a virgin material to the fibre to obtain a decent quality level. This means that in 1 fibre or filament consist out of a blend of virgin and recycled materials This could be virgin raw material or chemicals to recover the raw material.

Often a yarn is claimed to be recycled while it only partially consists out of recycled materials. This is because to obtain a good quality it is often is needed to add virgin materials. How much % recycled content is possible to be added to a yarn and still have an acceptable quality level depends strongly on the type of material, origin of the waist and recycling technology that is used. There are studies that give more insights in this:

- https://op.europa.eu/en/publication-detail/-/publication/739a1cca-6145-11ec-9c6c-01aa75ed71a1
- https://www.centexbel.be/en/news/tex2ce-white-paper-textile-fibre-recycling-technologies (updates partially the DG GROW study)
- https://publications.jrc.ec.europa.eu/repository/handle/JRC125110

Therefore, ask questions about the recycling process to assess this. It is advisable to choose the recycling system with the lowest environmental impact and the highest proportion of materials from post-consumer waste.

The NTA 8195 - Circular textile - Requirements and categories sets out rules for reused and recycled textile materials. The standard is redeveloped by the CEN/TC 248/WG 39 Textiles - Circular Economy for textile products and the textile chain into 3 part of witch Part 2: "Categorization of and requirements on non-virgin input materials" is dealing specifically with this topic.

5.4 Traceability

It is very important to know where the materials come from for 2 reasons.

1. How was the textile article produced. At the end of the life cycle, the processor of the recycled material will want to know what the textile article consists of to determine

what can be done with it. More specifically, they will want to know what materials and chemicals were used. For certain applications, this is very important and there will be more standards in the future that will demand to determine whether the material can be reused or recycled. A comprehensive "bill of materials" is therefore important. It needs to be discuss this whom will process the textile article at the end of its life cycle.

2. To check whether the claims being made are true one will want to verify things at some point. Also, when quality issues pop up, one might want to know whether this is batch-related or covers the entire product. This is only possible if one can trace materials by batch number. Otherwise, there is the risk discarding textiles for being unusable when they are perfectly compliant. This is not always possible with companies that are not ISO 9001 certified or have a similar quality system in place. It is also advisabel to be able to backtrace where recycled materials came from so one know the added value of the recycled materials is (post production or post consumer goods).

Traceability will probably be incorporated into the future digital product passport for textile products as it is also linked to the due diligence legislation.

One might choose a certain chain of custody model to be use from the standard ISO 22095 - Chain of custody - General terminology and models.

5.5 Chemical use

Take into account what chemicals are used. Changing legislation may prevent you from re-using the materials in the future and require them to be destroyed due to the presence of chemicals. Greenpeace launched the Detox campaign to ban harmful chemicals. The demand that ZDHS (Zero Discharge of Hazardous Chemicals) shall no longer be used in the production chain of the products purchased. This will reduce the chances of encountering problems with eg reusing, remanufacturing, refurbishing, recycling … later on due to the presence of harmful chemicals. Detox by Oekotex takes these chemicals into account.

In addition, certain recycling options may no longer be possible due to the presence of certain chemicals. For example, due to the use of dyes, among other things, Lenzing can no longer use the cotton in their production process to make lyocell. The technologies are improving constantly but it might take a long time before solutions are found.

Set requirements on water use and wastewater during the production of the textiles and maintenance when the textiles are maintained during their life cycle. Also consider what chemicals may be released from on the textiles during washing. Avoid this from happening or at least make them harmless by using the right chemicals. If chemicals disappear, you will have to add them back to obtain the same functionality. In the worst case, the textile article is prematurely labelled as end-of-life because it no longer meets certain standards. E.g. in the case of fire-retardant finishing or loss of colour intensity of high-vis articles.

Always demand that the best available chemicals are used.

Probably the future EU Eco-design regulation for textile products will take this into account next to the changing Reach regulation.

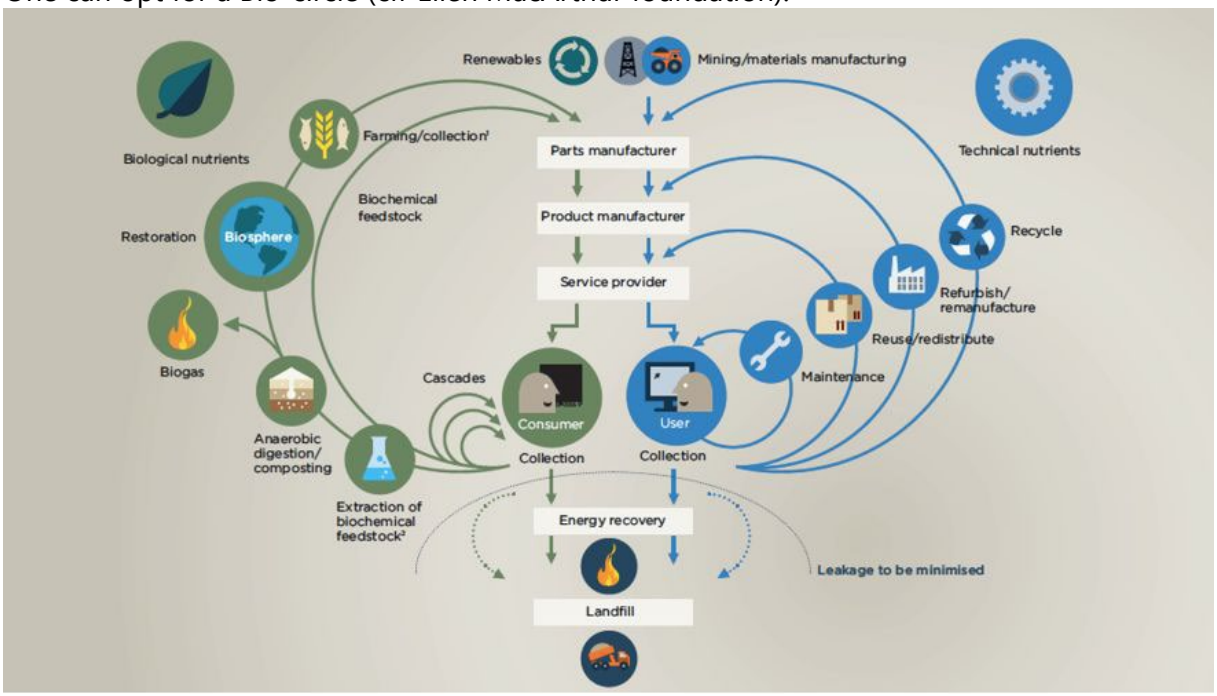
5.6 Reduce production waste

Require the own production waste is put back into the own production system as much as possible. This is both economical and ecological the best option. If this is not possible for all by-products one needs to find a useful application. This applies not only to raw materials but also to the chemicals. We need to work in closed loop cycles as much as possible. If a closed loop system is not possible the chemicals need to be treated properly and possibly refined for reuse by an external party. For example, the solvent recovery in the lyocell production of lenzing or the ammonia treatment of Veramtex to make a textile crease-resistant are closed loop systems. The solvents are recovered after the production and reused. In addition, one can do heat recovery and purify and reuse water. Also, the energy source for the production is of importance.

By the way, useful applications are not recovering energy through incineration and landfill.

5.7 Organic

One can opt for a Bio-circle (cfr Ellen MacArthur foundation).



Then make sure that one has gone through the tech-circle (right part of the image) as much as possible before moving over to the biocycle. Ultimately, it is best to recover all reusable materials from the textile article, before proceeding to biodegradation. Also note that this will most likely not fertilise cotton plants as some claim.

Additionally, by applying chemicals to textiles, the textile article may form harmful residues that might end up in nature. It is also not always the case that the textile will compost despite

being theoretically biodegradable. Excample certain dyestuff may prevent a degradation and/or composting process. One need both to have biodegradation. Therefore, be careful with these claims and ask for hard evidence. In some countries the claim is forbidden. Often there are also components that are left out because of small quantities. For example, polyester stitching yarn that will not decompose when composted. Do not fall into this trap as this will cause problems. Demand a compostable solution and that these parts can be easily removed. Make sure that this is the case. If necessary, ask for proof. There are textile institutes that certify this aspect.

Note! - people are looking for methods to recycle degradable fibres as well. In the long run, the Ellen Mc Athur foundation's biocycle might become un-circular for textiles.

There are also bio-based plastics and chemicals. In the case of raw materials, the raw materials might biobased and thus from renewable origin but it might be none biodegradable. In view of microplastics, one may not want this. In applications where this is not an issue, one can then recycle the plastic like other plastics and be in the tech circle despite the bio-based origin. Check if the material is bio-based and/or compostable as both aspects might be important.

Organic is not always better. For instance, there are chemicals of organic origin that are toxic/harmful and should be handled with care. There are also materials that are bio (organic) produced such as organic cotton. This may not be the best solution for you. A lot of water and farmland is still needed to grow cotton and this often in regions with water scarcity and food shortages. Look at alternatives such as organically produced hemp and flax, lyocell and the lyocell with a proportion of recycled content (eg refibra). Lately there are many startups that are active in the domain of recycling cellulose fibres (cotton) into regenerate cellulosic fibres.

5.8 End-of-life applications

Demand that a useful end-of-life application is possible from the supplier but take the necessary actions especially internally to actually make it happen. Not only check is the solution is freely available in the market but set up collection systems to be able to create a decent return logistics. Look at the preconditions needed for this such as transport, storage location, who will process... Certainly don't forget the internal stakeholder as they are of key importance to the success.

Use the R-strategies in the correct order to engage in life cycle extension first and reuse, repair, refurbish as much as possible and only then recycle. Find below in the figure the order of R strategies, the lower the number the lower the expected impact of the applied strategy. It is not always possible to use the desired strategy, if not try to implement the next one in line. Potting J, Hekkert MP, Worrell E. Circular economy: measuring innovation in the product chain. The Hague: PBL Publishers; 2017.

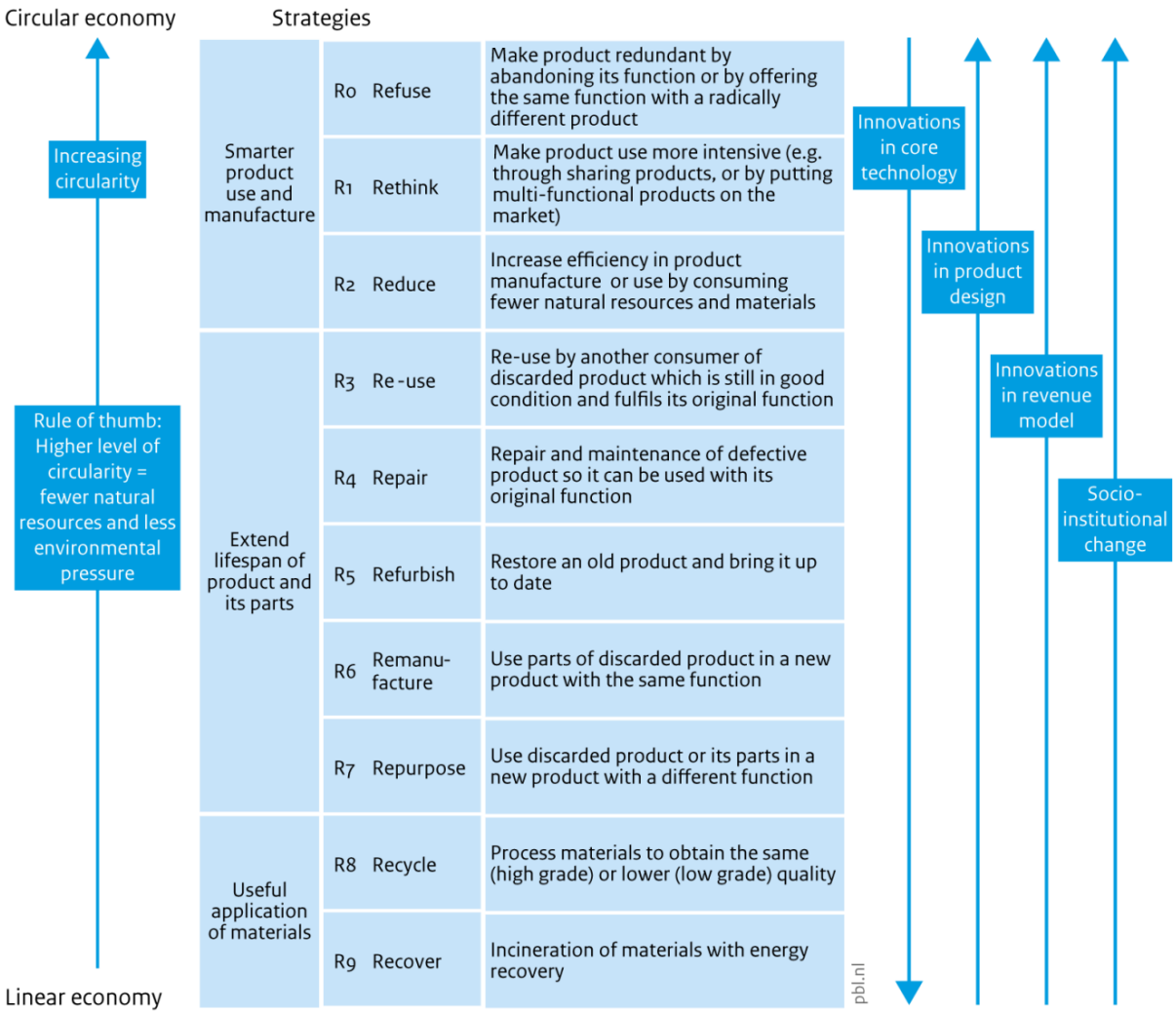


Figure 2: Circularity strategies within the production chain, in order of priority (Potting J, 2017)

When opting for composting, extract as much still usable material as possible from your textile item by going to fibre. Also see what quantities are involved and over what period of time. This will determine the options.

Design for recycling should be applied so that one does not encounter problems in recycling. In addition, it is important to secure this end-of-life solution with the stakeholders that can make this possible. One cannot do this alone and need the supply chain to get involved. The product may need to be cleaned before it can be reprocessed. Therefore, demand guarantees from the needed stakeholders.

CEN TC 248 WG 39 Textiles - Circular Economy for textile products and the textile chain is developing a standard with the topic "Design for circularity". In the future this standard can be used to implement the correct End-of-life application.

As discussed within the chapter Fibre composition, legally one is not required to state the full composition of the textile article let alone the non-textile components. In the chapter

Traceability reference has already been made to the importance of knowing the bill of material and that one should request it.

Product safety can mean that a textile is not yet end-of-life but can no longer be used because it has lost its protective properties. Think about this with end-of-life application and design-for-recycling. One may still be able to use the item longer through refurbishment. Repainting or replacing reflective bands might allow one to use High-vis garments longer. Make a maintenance contract with the supplier to extend the lifespan. There may not be immediate solutions but asking questions will help people to innovate and come up with solutions. Consider the innovative procurement opportunity that exists in some countries e.g. Belgium (http://innovatieveoverheidsopdrachten.be/).

Very importantly, monitor your end-of-life point and also set the parameters when you consider an item to be end-of-life. This will allow you to better set requirements to improve the quality of future textile products to be purchased and/or guide improvement processes. Involve the actual user of the textile in this process as well. If they are not involved, many initiatives will be a measure of nothing.

Of course, to monitor this, one must also define an end-of-life point and determine what actions must be taken first before the textile can be discarded. Clear end-of-life criteria will prevent premature end-of-life declarations by the actual user. These can then also be adjusted according to the monitoring findings.

Implement repair services to extend the lifespan of the products. Some industrial laundering companies have a repair service inhouse that can carry out. Make use of this and/or require in the specifications that textiles must be repaired before making the choice to discard them. Apply design for life extension to the maximum extent and make sure the design is such that certain pieces can be easily replaced. There exist yarns that are able to break easily if a certain influence is applied to them (microwaves or heat). In this way items that have a possibility to fail during use can easily be removed and replaces.

5.9 Materials

Often the technical sheets of a supplier or previous tender are copied in a specification or tender. This prevents suppliers from offering new innovations and circular products. Therefore, do not blindly adopt what has been applied for years. Allow sufficient freedom in material choice in the tender. Do not require the composition to be 60% polyester and 40% cotton but replace it with the requirements at least 40% moisture absorbing fibres such as cotton, flax, lyocell, wool... should be present to preserve a certain comfort level of the garment. In this way, one communicate the desire for a certain comfort level without being too restrictive. Giving this freedom will allow suppliers to offer innovative products. Do note that if one prefers natural fibres such as cotton, wool, silk... or regenerated fibres such as viscose, lyocell, ... one may not be able to meet the same quality requirements. Synthetic fibres normally make items stronger and allow more washes although at the end of the life cycle, therefore, mainly the synthetic fibres remain. The comfort for which one adds the natural or regenerated fibre will therefore have largely disappeared. This is a choice one has

to make although there are construction possibilities (e.g. twining several yarns and increasing the average fibre length) to improve this.

Consider the lifespan of materials and the impact of maintenance and use on them. Demand design for longevity. For example, one can work with replaceable knee and elbow pads if there is a lot of wear and tear in those areas during work activities. In addition, non-water-absorbent fibres (polymer fibres such as polyester, polyamide, polypropylene... require less water and energy during maintenance. These synthetic fibres are also stronger, which means that if used correctly, they will usually have a longer lifespan than weaker fibres. However, you are likely to release microplastics into the environment when using synthetic fibres. This is likely to happen faster with shorter staple fibres than with filament fibres. Take this into account before making a requirement in a specification or tender. It is not only washing that produces microplastics, abrasion over e.g. the ground during working activities will also create microplastics. There are currently only test methods published that check the release of microplastics during washing. E.g. the drying is not included in these methods.

When you need to meet a PPE fire safety standard consider whether you need inherently fire-retardant fibres (e.g. aramid). If, for example, welding spatters get on these clothes and the fibres are not inherently fire-retardant, there is a good chance that a hole will appear during washing as the damaged fibres are washed away. The protective function of the PPE is then lost with the consequence that the garment has to be repaired or in most cases declared end-of-life. This is ecologically unjustifiable and will also a high cost as the products need to be replace quicker. Therefore, consider an inherent fire-resistant outer layer or other option like temporarily leather sleeves or short. In the case of an inherent fire-resistant fibre one can then still demand a comfort layer (by adding extra fabric or by construction) with moisture-absorbing fibres on the inside.

Support innovation and try out small-scale initiatives before purchasing the solution on a large scale. This avoids buying inappropriate textiles and wasting material and money.

Ideally, the product should incorporate the by the buyer own discarded material. Here are 2 practical objections to this requirement. When a product is discard, one needs need new a new product immediately. It will take some time before one has implemented the own material back in a new textile product. In addition, one usually does not have enough material to make textiles again and a lot of additional material will be needed to make the same textile product of sufficient quality. However, this method of full circularity has great advantages. One can better monitor the status of the material, what contamination may be present and how to improve the quality of the recycled material. Therefore, discuss what is possible with suppliers and consultants to determine what is possible before setting a requirement on this as in most cases it will be utopic.

5.10 Logistics

One may require items to be returned at end-of-life. However, organising these return flows of end-of-life articles is often not an easy task. Therefore, think about how this can be organised internally and then externally before setting requirements in a specification or tender. All too often, there is good will but not the volumes to make it cost-efficient because

there is no internal collection. Also avoid unnecessary transport and try to organise this through existing logistics channels. For instance, delivery will often drive away empty handed after their deposit of goods. Make use of this.

Reducing plastic packaging is a good thing. However, these packaging materials prevent textile products from being damaged during transport and storage. They protect against moisture, dust, air and sometimes light. Therefore, implement reusable packaging material and set up a return logistics system or recycle the packaging material sustainably. First examine which packaging you are using and consider alternatives. Only when on is convinced that the goods will not be damaged during transport and storage on should include this precondition in the specifications or tender.

Maintaining certain stock levels are an a requirement. However, this can cause a lot of end-of-life textiles that never was used in case of an corporate image switch or design switch. Therefore, consider a 2-level delivery. A main delivery in bulk and after sales that are produced just-in-time, perhaps at a slightly higher cost as discarding un-used products also has is cost. It avoid overstocks that is a waste of material and money. Materials in an unassembled state (fabric, yarn, buttons, zips...) can be used elsewhere more easily than finished products and stock is sleeping capital laying in a warehouse.

Group your transport to minimise environmental impact and think about the means of transport. Set requirements for the entire chain and not just the last stage. Think about possible return flows. Also check this out with other buyers in the area. Perhaps they have similar logistics routes that can be combined.

If one has several delivery points on a regular basis look at “last mile initiatives”. Perhaps a bicycle couriers can run the last mile if one has several points within 1 city. Perhaps you can provide automated stock at different points that also organise return flows. This is especially important in logistics during the usage period. This way one also keep control over the material quantity.

Non-personalised clothing usually results in lower stock levels. Try to convince the user of this benefit.

Locally produced and recycled products are generally assumed to have a lower environmental impact than those produced far away. Set requirements on this in the specifications or tender without violate European rules. If necessary, work with a point system that includes the entire chain from fibre production to fibre recycling. Work with objective criteria that are fair.

When a product is discarded an item it becomes waist. To transport waist, it might be needed to have the appropriate clearance to do so. Take this in mind when asking for end of life options in the specification or tender (see Waste).

5.11 Lifetime

It is difficult to set a specific lifespan for textiles. What period of time it should be in use is difficult to determine because there are very many parameters of influence on products. Quality tests can be carried out but unforeseen circumstances and sometimes usage are disregarded so few will want to guarantee a specific period. Therefore, demand a quality level based on current tests rather than, say, a certain number of washing cycles (see Quality).

Monitoring the reason of discarding the product can help adjust parameters to keep the product in use longer before discarding and recycling because there is no other option. This is an important method to improve quality.

If, for example, the knees of a pair of trousers of a particular user keep breaking repeatedly, investigate why and take measures so that this does not happen again. Personalised clothing will allow monitor this, but it will affect the numbers and stock level (see Logistics).

5.12 Reducing the amount of products

Non-personalised clothing automatically reduces stock levels and also avoids abuses (private purchases through a points system) and early discarding. Make sure one has enough products available but be critical about the quantity per person. Also monitor end-of-life items to avoid discarding textiles too early. A industrial laundering can take care of this task. Implement this in the specifications or tender if it is considered useful.

For certain users with different body sizes on will probably have con other choice to purchase made to measure clothing. Include this the specifications. This will incur a higher cost but will ensure that these individuals can use their garments for longer because they will be less damaged, overstretching when too small or be dragging on the floor or getting snagged behind items resulting in damage when garments are too large. If necessary, limit the size chart and allow more special sizes to reduce the need to stock less garments.

Make sure users must submit a product to get a new or washed item in return. This assures the return flow, monitors the reason for the end-of-life declaration and counteracts overconsumption. If an acquired right applies, discuss with the social partners and users the impact on the environment. Sensibilisation is important in reducing overconsumption.

5.13 Claims

Request evidence of conformity the requirements in the specification or tender. Assess the origin of the evidence. Whether this is a test carried out by an independent institute or a test carried out in-house or merely a declaration of conformity, they each have their own reliability level.

Make sure that your proof is delivered by an independent source and preferably, if applicable, by an accredited laboratories within Europe follow European accreditation legislation " Regulation (EC) No 765/2008 of the European Parliament and of the Council of 9

July 2008 setting out the requirements for accreditation and market surveillance relating to the marketing of products and repealing Regulation". Include this in your assessment. (See Standards).

5.14 Greenwashing

Greenwashing or presenting the textiles one purchases as more environmentally friendly is unfortunately all too common. Many claims are made that are often unclear or just a plain lie. For many, greenwashing is the first step towards a circular economy. Therefore, help companies think about their claims. Ask questions and keep asking questions until one gets a satisfactory answer. This will compel companies to take actions and make their products more sustainable and circular. Providers with bad intentions will drop out.

Engage an independent expert or institute to help drawing up requirements and verify claims. They have a better feel and discover greenwashing faster. Ask what certificates or labels can be presented on products. Reliable labels (see Frequently used labels in the textile sector) and certification systems are an easy tool to check off claims against requirements.

There is a standard that can be use to set out requirements on environmental claims. This is the ISO 14021 – "Environmental labels and declarations — Self-declared environmental claims (Type II environmental labelling)". It sets out requirement on various environmental claims e.g. recyclable, recycled content, reduce resource use, waste reduction… As long as the Green claim legislation is not in place.

In the future the green claims legislation will cover the aspects of claims to a lareger extend as the unfair consumer practice legislation does at the current time (2023 - see Green claims)

5.15 Responsible manufacturing

A minimum requirement that should always be taken into account are humane working conditions. The ILO standard is widely known and accepted. Require that one must comply with it and also have them provide the necessary proof. In addition, social laws vary a lot between different countries. As a result, some countries will have legislation that is much stricter than ILO requirements. Belgium, for example, has strong social legislation that protects employees, which means that the working conditions for this employee are much better than those of an employee working on ILO minimum conditions. Take this also into account. These companies score better when it comes to UN social criteria. Be aware that countries with high living standards are not always socially well-off. Check what efforts a company is making in this area down to Tier 3 (e.g. subcontractors and suppliers of the suppliers of a company you want to work with).

Also consider the social economy that could possibly be brought in. This is a sector that can certainly be of use when processing end-of-life items in preparation for recycling.

The due diligence legislation will tackle this aspect in the future (see Due diligence).

5.16 Circular business models

An important aspect of the circular economy are circular business models, e.g., product as a service model. For workwear garments this practice is very common as industrial laundering companies lease garments, maintain them, and repair them if needed to keep them in the flow as long as possible. There might also emerge new business models like repair or refurbishment services. Explore these circular business models and if suitable implement them in the specification or tender.

5.17 Improvement pathway

If you want the "World" and this turns out not to be possible, or more simply the sustainable or circular product one has in mind is not possible or available in the market, one can choose to build in an improvement pathway in the specification or tender.

It is important to set clear milestones while also taking into account the duration of the contract. If one has a four-year contract for clothing, little effort will be made because the largest quantity is produced at the start of the contract. The impact of an improvement programme will probably be nil and might be lost because one chooses another supplier. In this case, it may be better to enter into a longer-term contact. For textile articles with a short lifespan, it will be possible to demand an improvement trajectory in a 4-year contract.

Work in different stages. Divide a deadline into different periods during which certain things are monitored and feedback is given, after which product improvements or innovations are made. A lot depends on what is wanted to be improve and the minimum quantities need to set a production process into motion. If one buy's 10 pairs of trousers a year, it will be difficult to demand much improvement if it does not benefit anyone else. For an 8-year contract of t-shirts in an acceptable quantity, one could break the down the periode into 1 year of monitoring early end-of-life reasons after which one gives the producer the necessary time to offer an alternative. Require that he involves innovations and that it is tested in practice this might take 1 to 2 years. After another year the innovation is evaluated and decide whether or not to extend the contract for another 2 years. This way, you can engage in continuous product improvement that benefits both the buyer and your supplier. Think about subsidy pathways that may be possible. For example, there is the innovative tendering possible in Belgium that is specifically made to encourage innovation.

Formulate the expectations clearly and make very clear agreements on this. Implement protection systems against empty promises by including penalty clauses and prefer to buy a proven product rather than buying an existing textile on promises with the risk of buying an ordinary piece of textile at a higher price for the next 4 years and then being left out in the cold. The purchaser bears a big responsibility to follow up on this and keep track on the supplier.

5.18 Price and rating

All the above is of no use if your price is the deciding factor in the decision to buy or award. You must continue to include price in your procurement process but subordinate it to circularity factors otherwise you will never buy circular. Work out a point system where the sustainability and circularity aspects of a product are considered to a large extent and price does not account for more than 40% of the weight. For example, one would divide the weights between 40% price, 20% circularity aspects, 20% sustainability aspects and 10% on appearance and 10% ease of use (e.g. comfort). This can be done by scoring different parameters depending on the requirements set within each category. For instance, one can include quality requirements based on objective tests, recycled content and method of recycling, end-of-life provision, efforts to extend the lifespan, sustainable delivery and return, sustainable maintenance, ecological parameters... within this 40%. Do not include non-circular parameters such as wearing comfort or look and feel for a high %, which does not deny that such parameters are important.

Giving too much weight to price will discourage startups and companies with justifiably circular and sustainable indications from participating in public tenders or even eliminate them from the market altogether. Make sure these initiatives are given a chance. Only then will circular textiles eventually reach the same price level as linear textiles.

6 Experts

There are experts in several domains that can assist in drafting a specification or tender. If one lacks the expertise or doesn't find the expertise get an expert involved. Specifically, when first drafting a specification or tender, altogether or for a specific topic, one might lack the expertise. There are institutes and independent experts that can help in drafting the specifications or tender.

7 Bibliography

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