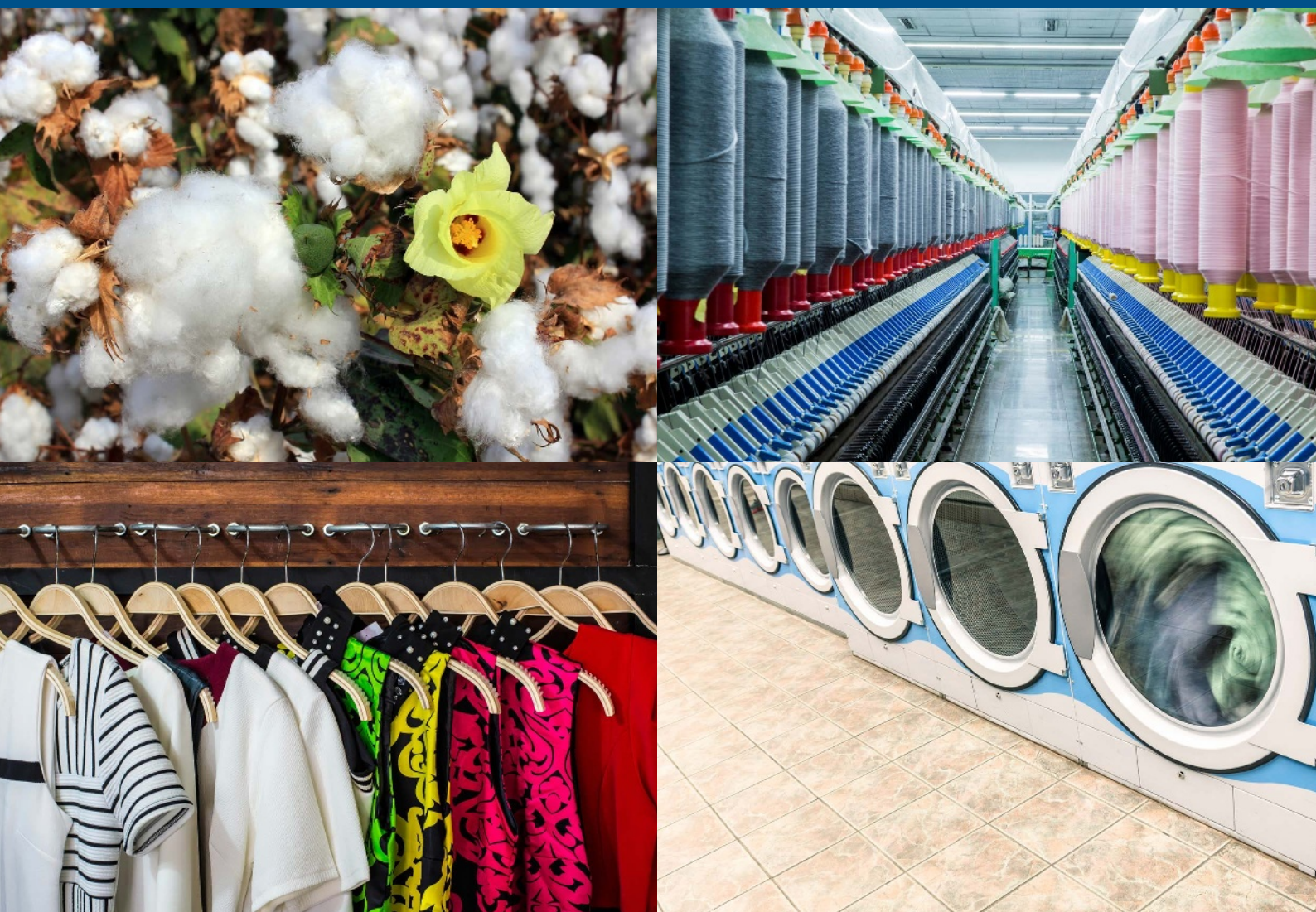


PAS 2395:2014

Specification for the assessment of greenhouse gas (GHG) emissions from the whole life cycle of textile products



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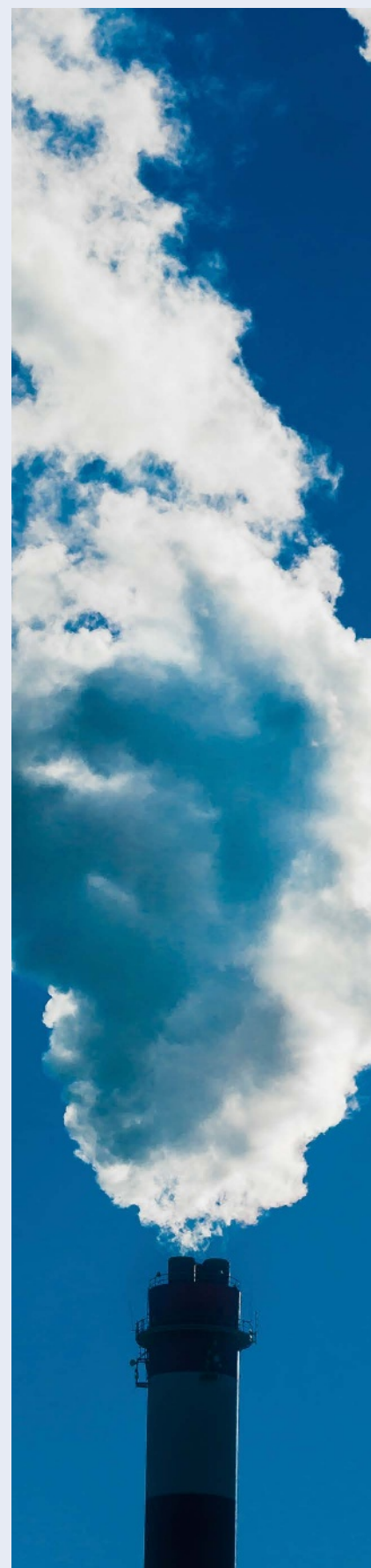
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Foreword

This PAS was co-sponsored by Korea National Cleaner Production Center (KNCPC), Korea Institute of Industrial Technology (KITECH) and Ministry of Trade, Industry and Energy, Republic of Korea (MOTIE). Its development was facilitated by BSI Standards Limited and it was published under license from The British Standards Institution. It came into effect on 30 June 2014.

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The PAS process enables a specification to be rapidly developed in order to fulfil an immediate need in industry. A PAS can be considered for further development as a British Standard, or constitute part of the UK input into the development of a European or International Standard.

Use of this document

It has been assumed in the preparation of this PAS that the execution of its provisions will be entrusted to appropriately qualified and experienced people, for whose use it has been produced.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is “shall”.

Commentary, explanation and general informative material is presented in italic type, and does not constitute a normative element. The word “should” is used to express recommendations, the word “may” is used to express permissibility and the word “can” is used to express possibility, e.g. a consequence of an action or an event.

Spelling conforms to The Shorter Oxford English Dictionary. If a word has more than one spelling, the first spelling in the dictionary is used.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a PAS cannot confer immunity from legal obligations.

Introduction

This PAS sets out requirements supplementary to PAS 2050:2011 and two other methodologies for the assessment of greenhouse gas (GHG) emissions from the life cycle of any products manufactured substantially from textiles.

The purpose of these supplementary requirements is to aid consistent application of generic methodologies for GHG emissions assessment to the textile products sector, by providing:

- textile product focus for aspects of the assessment where supplementary requirements are permitted and could prove beneficial to assessment outcomes;
- rules or assessment requirements that are directly relevant to the main sources of emissions from textile products;
- clarity on how to uniformly apply specific elements of assessment methodologies within the textile products industrial sector; and
- enhanced synergy between the assessment outcomes provided by different methodologies.

Used in conjunction with one of the specified methodologies, PAS 2395 will provide a robust, repeatable assessment of GHG emissions from the whole life cycle of textile products.

PAS 2395 adopts the same content sequence and structure as that of PAS 2050:2011 and, within that sequence, some clauses do no more than defer to the equivalent clause in the base methodology. In other clauses, PAS 2395 provides supplementary requirements and additional guidance on those elements that have been found to present particular difficulties when undertaking GHG emissions assessments on textile products, such as during the use stage and at recycling.

Because of the global nature of trade in textile products it is preferable that the supplementary requirements provided in PAS 2395 are applicable wherever assessment of emissions from textile products is to be made. The development of PAS 2395 has therefore been undertaken with participation by experts from different regions of the world, with the intention of providing a set of supplementary requirements that can be beneficially applied wherever textile products are manufactured and used.



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1 Scope

This PAS specifies supplementary requirements for the assessment of greenhouse gas (GHG) emissions from the whole life cycle of any products manufactured substantially from textiles. The supplementary requirements provided are compatible with, and precisely formatted on, the PAS 2050:2011 methodology, but do not actually require the use of PAS 2050:2011 as a base methodology.

PAS 2395 requires the user, as a first step, to identify, from a predetermined list of internationally applicable methods, a preferred GHG assessment methodology, and to apply the selected method uniformly throughout the subsequent assessment process, applying supplementary requirements provided by this PAS accordingly.

Throughout PAS 2395, the clauses setting out the supplementary requirements for the assessment of GHG emissions from textile products are formatted to align with the relevant PAS 2050:2011 clause, but also provide cross references to the appropriate equivalent clause(s)/section(s) in the alternative methodologies, to facilitate their use in those contexts.

PAS 2395 provides supplementary requirements that, used together with the PAS 2050:2011 methodology, provide a robust specification for the assessment of GHG emissions from textile products. When used with the other specified methodologies, it can also deliver credible GHG emissions assessments that are optimized for textiles and textile-based products.

PAS 2395 follows the precedent set by PAS 2050:2011 in not specifying requirements for communication of the results of a quantification of the GHG emissions from the life cycle of textile products. It does, however, point to the communication approaches provided by the other comparable methodologies as being appropriate for use when communication of the assessment outcome is intended or expected.

The list of base methodologies from which selection may be made are:

- ISO/TS 14067:2013;
- WRI/WBCSD's GHG Protocol *Product Standard*;
- PAS 2050:2011.

PAS 2395 addresses the single impact category of global warming potential (GWP). It does not assess other potential social, economic and environmental impacts arising from the provision of textile products, such as non-GHG emissions, acidification, eutrophication, toxicity, biodiversity or labour standards, or other social, economic and environmental impacts that may be associated with the life cycle of such products. An assessment of the GHG emissions of textile products using PAS 2395 in conjunction with PAS 2050:2011, ISO/TS 14067:2013 or WRI/WBCSD's GHG Protocol *Product Standard* does not, therefore, provide an indicator of the overall environmental impact of these products, such as may result from other types of life cycle assessment.

2 Normative references

At least one of the following referenced documents is indispensable for the application of this specification with the relevant document being determined under the provisions of 4.1:

- PAS 2050:2011, *Specification for the assessment of the life cycle greenhouse gas emissions of goods and services*;
- ISO/TS 14067:2013, *Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification and communication*;
- WRI/WBCSD, GHG Protocol, *Product Life Cycle Accounting and Reporting Standard (the Product Standard)*.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.



3 Terms and definitions

For the purposes of PAS 2395, the terms and definitions provided in whichever of PAS 2050:2011, ISO/TS 14067:2013 or the GHG Protocol *Product Standard* is selected under the provisions of 4.1 of this specification, together with the following, apply.

NOTE *The definitions provided in this PAS have been developed with assistance from the Textile Terms and Definitions Database with the generous cooperation of The Textile Institute.*

3.1 backing

secondary layer of material attached to the reverse of a textile as a carrier or substrate or to impart particular properties, e.g. heat retention

3.2 coating

application of a film to the surface of a textile to impart colour or particular properties, e.g. water repelling

3.3 extruding

forcing a malleable material (e.g. polymer) through an opening in a die to create a filament or fibre

3.4 fabric

material produced from fibres or continuous filament directly or in the form of yarn, by knitting, weaving or other interlocking process, by fusing using temperature elevation or by bonding with a cementing medium

3.5 fibre

textile raw material (natural or man-made) generally characterized by flexibility, fineness and a high ratio of length to thickness

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE *It can be staple (of finite length) or continuous.*

3.6 ginning

process whereby cotton fibres (lint) are removed from the seed

3.7 greige fabric

textile in its natural, untreated condition, i.e. before washing, bleaching or dyeing

NOTE *Also known as "grey fabric" and, for woven textile products, as "loomstate".*

3.8 heat setting

process of conferring stability of form upon fibres, yarns or textiles by means of single or multiple cycles of heating and cooling in dry or moist conditions

3.9 knitting

process of forming a fabric by the intermeshing of loops of yarn

3.10 non-woven (fabric)

fabric made directly from a web of fibres or continuous filament, without the yarn preparation necessary for weaving or knitting

NOTE *In a non-woven fabric, the assembly of textile fibres is held together by:*

- a) *a mechanical interlocking in a random web or mat;*
- b) *the fusing of fibres, i.e. as with thermoplastic fibres; or*
- c) *bonding with a cementing medium such as starch, casein, rubber latex, cellulose derivatives, or synthetic resin.*

3.11 retting

subjection of flax or hemp to chemical or biological treatment to render the fibre bundles more easily separable from the woody part of the stem

3.12 scouring

treating textiles in aqueous or other media in order to remove natural fats, waxes, proteins and other constituents, as well as dirt, oil and other impurities

3.13 shearing

3.13.1 cutting

process of cutting loose fibre from the surface of a woven fabric

3.13.2 napping

creation of pile or nap (e.g. of a carpet) by cutting the tuft or loops that form the surface

NOTE *Shearing is also referred to as tufting.*

3.13.3 removal

process of removing the fleece from a sheep or other animal

3.14 spinning

drawing out, twisting and further treating of fibres (e.g. of cotton, wool or man-made polymer) to produce yarn

NOTE *This further treatment includes carding, combing, gilling and top making, drawing, roving and sliver formation.*

3.15 textile product

article made from processed, natural or man-made fibres

NOTE *These articles include threads, cords, ropes and braids; lace, nets and embroidery; hosiery, knitwear and made-up apparel; and household linens, soft furnishings, upholstery, carpets, rugs and mats. They also encompass technical, industrial and engineering textiles, including medical textiles and geotextiles.*

3.16 texturing

processing of yarn to introduce durable crimps, coils, loops or other distortions to create different textile surface finishes

3.17 weaving

formation of textiles by the interlacing of threads passing in one direction (weft) with others at right angles to them (warp)

3.18 yarn

assemblage of staple fibres or continuous filaments forming a continuous strand that can be used to create knitted, woven, braided, non-woven or other textiles



4 Principles and implementation

4.1 Overview

This PAS sets out how the assessment of GHG emissions from the cradle-to-grave stages (Figure 1) of textile products (Table 1) can be undertaken, on the basis of the assessment methodology provided by PAS 2050:2011. In addition, through the provision of cross references to the equivalent clauses in ISO/TS 14067:2013 or sections in the GHG Protocol *Product Standard*, it should be possible to use the provisions of this PAS with the methodology provided by one or other of those specifications, to deliver credible GHG emissions assessments that are optimized for textiles and textile-based products.

The primary objective of this PAS is to provide greater clarity as to how the GHG emissions from the various processes, such as land use, raw material sourcing, energy use and end of life recovery or disposal can best be attributed consistently to the textile products under assessment.

The following concepts are important for the proper use and understanding of this PAS.

Determination of product identity: the appropriate identification and definition of products under assessment can be of particular importance for textiles that are frequently used to provide covering for products substantially made of other materials. It is necessary that the reporting of any emissions assessment be unambiguous as to whether the assessment is in respect of the textile component alone or includes all parts of the finished product. It is recommended that the decision as to whether or not to include the emissions and removals from non-textile components be determined by the identification and functionality of the product as marketed. For example, the assessment outcome for a carpet with a non-textile backing should include the emissions arising from the backing material, whereas for a car seat with a textile covering, the assessment outcome could be for the car seat cover, which would include only the emissions and removals from the textile cover. For a car seat alone, the emissions and removals from all components would need to be included.

Unit of analysis: the determination and uniform use of an appropriate functional unit. It is necessary that the specific quantity and quality of products under assessment be determined as part of the scope of the particular assessment, and the functional unit, as such, can only be determined within the scope of such an assessment, in relation to the use and intended purpose of the textile products being assessed. Therefore, this PAS does not specify a standard functional unit but only provides a definition and some guidance on its determination in relation to specific situations.

Completeness of assessment: it is essential that the process to be assessed includes all activities related to the manufacture, use and disposal of the textile products under assessment, including raw material sourcing, energy use, transport, and recovery or reuse.

The potential GHG emissions likely to arise from textile products during their whole life cycle can be assessed in accordance with the requirements of PAS 2050:2011 alone. However, the additional use of PAS 2395 will enable the GHG emissions assessment to be undertaken with greater relevance to the particular life cycle traits of textile-based products.

As already mentioned, this PAS takes account of the whole life cycle of textile-based products. However, in a situation where a partial assessment is being undertaken to provide information to support assessments undertaken at subsequent stages of the supply chain, particular care will be required to ensure that the functional unit used in the earlier stages of the assessment is made known as part of the information provided, so as to facilitate the use of a common functional unit throughout.

4.2 Selection of base assessment methodology (BAM)

4.2.1 Default BAM

Unless selection of an alternative BAM as provided for in 4.1.2 of this PAS is made, an assessment of the GHG emissions and removals from textile products, in conformance with PAS 2395, shall be undertaken on the basis of the general requirements and principles specified in PAS 2050:2011, 4.1 and 4.2, and the methodology set out in Clauses 5 to 9 of this PAS.

Figure 1 – Representative textile life cycle model

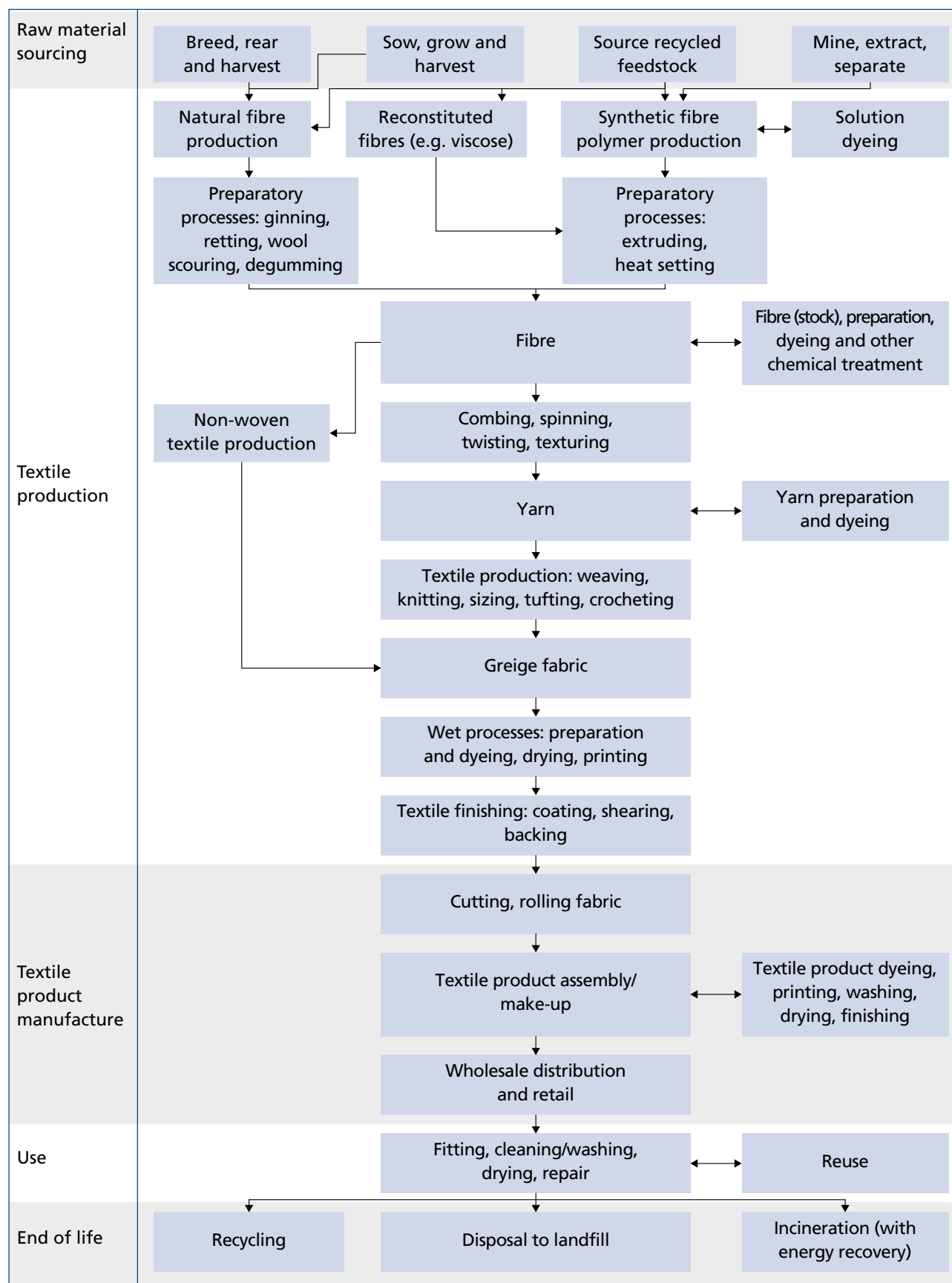


Table 1 – Indicative product categories under the heading of textile products

Clothing	Household	Industrial textiles and geotextiles
• Suits, dresses and ensembles • Shirts, t-shirts, blouses, sweaters, etc. • Trousers, skirts • Underwear, nightwear, hosiery • Sportswear and swimwear • Gloves, scarves, shawls, ties	• Carpet and floor coverings • Bed linen • Table linen • Curtains, blinds and furnishing fabrics • Blankets, rugs, etc. • Dishcloths, dusters, dust sheets, cleaning cloths • Kitchen and bathroom towels	• Anti-static • Electricity-conducting • Humidity-sensing • Insulating • Moisture-managing • Radiation-filtering • Thermal-regulating

NOTE 1 The products listed under the three categories in the table are examples only and users of this PAS are likely to find the PAS equally applicable to other products under the same general headings.

NOTE 2 The examples provided under the industrial textiles and geotextiles category are referenced by their functionality for applications other than clothing and household products. It is acknowledged, however, that some of this functionality could be incorporated in clothing or household products, in which condition the PAS should be equally applicable.

4.2.2 Alternative BAM

Where PAS 2050:2011 is not used as the BAM, the methodology provided in either ISO/TS 14067:2013 or the GHG Protocol *Product Standard* shall be used as the BAM, provided only that the selected alternative is applied:

- in accordance with the requirements of the respective specification;
- at all stages of the life cycle of the textile product under assessment; and
- uniformly throughout any given assessment.

For GHG emissions assessments using one of the alternative BAMs specified in 4.1.2, each clause of this PAS provides cross references to the relevant clauses in ISO/TS 14067:2013 and sections in the GHG Protocol *Product Standard* respectively, which shall be substituted for the designated PAS 2050:2011 clause, on a clause-by-clause or section-by-clause basis, throughout the assessment.

Assessments claimed to be in conformance with PAS 2395 shall not refer to more than one BAM in any given assessment.

4.3 The use of supplementary requirements – implementing PAS 2395 in conjunction with the selected BAM

This PAS sets out supplementary requirements that enable the assessment methodology provided in PAS 2050:2011 to be applied in an assessment of the GHG emissions from textile products with greater certainty of application than might be the case if PAS 2050:2011 were to be applied alone.

These supplementary requirements are presented sequentially in relation to the clause(s) of PAS 2050:2011 to which they apply and shall be implemented accordingly, where the selected BAM is PAS 2050:2011.

4.4 Record-keeping

Records developed and maintained in support of an assessment undertaken in accordance with PAS 2395 shall meet the requirements of PAS 2050:2011, 4.4.

4.5 Openness of declarations

All communication of assessment outcomes and declarations of conformance with this PAS (see Clause 10) shall include unambiguous identification of the product under assessment [see 4.0a)] and a reference to the BAM used for the assessment, and be presented in a manner that precludes any misunderstanding as to its scope (see PAS 2050:2011, 4.5).