European Commission

EU Ecolabel criteria for Footwear

Final Technical Report

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CONTENTS

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Acronyms

ABS	Acrylonitrile Butadiene Styrene
ADEME	French Environment and Energy Management Agency
AFIRM	Apparel & Footwear International RSL Management Group
AFNOR	French Association of Normalisation
BAT	Best Available Techniques
BCI	Better Cotton Initiative
BIIR/CIIR	Halogenated Isobutylene Isoprene Rubber/Chlorinated
BR	Butadiene Rubber
BREF	Best Avalable Techniques Reference Document
CB	Competent Body
CEN	European Committee for Standardization
CLP	Regulation No 1272/2008 on Classification, Labelling and Packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
COD	Chemical Oxygen Demand
COTANCE	Confederation of National Associations of Tanners and Dressers of the European Community
CSR	Corporate Social Responsibility
DEFRA	Department for Environment, Food and Rural Affairs
EC	European Commission
ECAT	EU Ecolabel Catalogue
ECHA	European Chemicals Agency
EEC	European Economic Community
EIA	Environmental Impact Assessment
ELCD	European reference Life Cycle Database
EPD	Environmental Product Declaration
EPDM	Ethylene Propylene Rubber
EU	European Union
EU27	27 Member States of the European Union, up to 2013
EU28	28 Member States of the European Union, from 2013
EUEB	European Union Ecolabelling Board
Eurostat	Statistical Office of the European Union Database
EVA	Ethylene Vinyl Acetate
GHS	Globally Harmonised System
GOTS	Global Organic Textile Standard
IED	Industrial Emissions Directive
ILCD	International Reference Life Cycle Data System

DRAFT

IPP	Integrated Product Policy
IPPC	European Integrated Pollution Prevention and Control
IPCC	Intergovernmental Panel on Climate Change
IPTS	Institute for Prospective Technological Studies
IR	Isoprene Rubber
ISO	International Organization for Standardization
ISWM	Integrated Solid Waste Management
IULTCS	International Union of Leather Technologists and Chemists Societies
JRC	Joint Research Centre
LCA	Life Cycle Analysis
LCI	Life Cycle Inventory
LCIA	Life Cycle Impact Assessment
LWG	Leather Working Group
PCR	Product Category Rules
PE	Polyethylene
PEF	Product Environmental Footprint
PEFCR	Product Environmental Footprint Category Rules
PFAS	Perfluorinated Alkylated Substances
PP	Polypropylene
PPE	Personal Protective Equipment
PTFE	Polytetrafluoroethylene
PU	Polyurethane
PVC	Polyvinyl chloride
REACH	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
RSL	Restricted Substance List
SBR	Styrene Butadiene Rubber
SBS	Styrene Butadiene Styrene
SCP	Sustainable Consumption and Production
SIP	Sustainable Industrial Policy
SVHC	Substances of Very High Concern
TC	Technical Committee
TPU	Thermoplastic Polyurethane
TR	Thermoplastic Rubber
VOCs	Volatile Organic Compounds

DRAFT

INTRODUCTION

The EU Ecolabel[1] is an element of the European Commission's action plan on Sustainable Consumption and Production and Sustainable Industrial Policy[2] adopted on 16 July 2008. This is a voluntary scheme established to encourage manufacturers to produce goods and services that are environmentally friendlier. The EU Ecolabel flower logo facilitates consumers and organisations (i.e. public and private purchasers) to recognise the best environmentally performing products and making environmentally conscious choices more easily. A product (good or service) awarded with this label must meet high environmental and performance standards. The EU Ecolabel covers a wide range of products, and its scope is constantly being widened. The consultation of experts and all interested parties is a key point in the process of establishing the criteria.

The main objective of this project was to revise the EU Ecolabel criteria for Footwear with respect to the current definition set by the Commission Decision 2009/563/EC. The revision was supported by the revised Regulation on the EU Ecolabel 66/2010/EC and the Commission Statement of 19 March 2009 (ENV G2). The related study has been carried out by the Joint Research Centre's Institute for Prospective Technological Studies (JRC-IPTS) with technical support from RDC Environment.

The following Final Technical Report presents the final proposal for the EU Ecolabel criteria on Footwear and explains the rationale behind each criterion. It incorporates the scientific arguments for the revised new criteria document. The document summarises the technical discussion that took place within the course of the criteria revision. In the framework of the project two open working group meetings took place:

- 1st open working group meeting held on 8th October 2013 in Seville, Spain,
- 2nd open working group meeting held on 14th May 2014 in Brussels, Belgium.

The purpose of these meetings was the presentation of the study results and an in-depth discussion with all interested parties. The discussion and stakeholders' feedback received during the meetings and additionally in a written form along the open consultation phase assisted with drafting the proposed EU Ecolabel criteria. In order to vet criteria proposals, 2 questionnaires were sent to stakeholders to gather information for the general criteria development and LCA analysis performed during the study

The documentation linked to criteria formulation, feedback provided and follow-up research conducted is available under: http://susproc.jrc.ec.europa.eu/footwear/

All respective reports prepared within the framework of EU Ecolabel revision for Footwear can be downloaded from the previously mentioned project's website.

[1]EU Ecolabel website: http://ec.europa.eu/environment/ecolabel/about_ecolabel/what_is_ecolabel_en.htm
[2]Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions – on the Sustainable Consumption and Production and Sustainable Industrial Policy Action Plan, COM (2008) 397, available at: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2008:0397:FIN:en:PDF

1 PROJECT BACKGROUND

1.1 Background report – general remarks

The technical report is based on conclusions and recommendations included in the Background Report[3], which sets the framework for the revision and consists of the following Tasks:

1. ***Task 1*** provides a background for the revision process by:

   - Summarising the legal framework relevant to the product group under revision;
   - Addressing Commission Statements arising from the 2009 revision;
   - Analysing product group definition and categorization;
   - Summarising information on other labels and initiatives from the perspective of potential scope extension to other leather products ;
   - Analysing the scope of the criteria revision with the special focus on checking the feasibility of the proposed product group extension;
   - Summarising initial stakeholder questionnaire input regarding the scope revision;

2. ***Task 2*** provides updated market analysis which includes:

   - Statistics describing the world and EU-27 market for footwear products;
   - Statistics describing the world and EU 27 market for leather and leather goods;
   - Product group market segmentation with analysis of the feasibility of product group extension;
   - Market status of the EU Ecolabel for footwear licenses;
   - Market status of other labels and initiatives;
   - Identification of key industry innovations categorized for each life cycle phase and brand;

3. ***Task 3*** is a technical analysis that establishes the framework for the criteria proposal; it comprises the following elements:

   - Review of the LCA and LCA-related literature relevant to the product group under revision;
   - Performance of a specific LCA for footwear;
   - Analysis of possible use of harmful substances during the production processes.
   - Analysis of possible presence of harmful substances in the final product;

4. ***Task 4*** analyses the improvement potential based on Task 2 and Task 3 findings; it includes the following:

   - Whenever feasible, qualitative analysis of the improvement potential for key environmental issues and industry best practices;
   - Discussion of how these issues could be addressed by the criteria revision, including information on the possible environmental savings and market diffusion;
   - Identification of possible barriers and opportunities related to the proposed criteria.

[3]Background Report is available under: http://susproc.jrc.ec.europa.eu/footwear/

DRAFT

1.2 Framework for criteria revision

Based on the findings presented in the Background Report seven areas of relevance were addressed by the revision process:

- Recommendations included in the Commission Statement of 19 March 2009 (ENV G2) arising from the last product group revision;
- Update of Best Available Techniques (BAT) consumption and emission levels: based on review of the corresponding BAT-average emission levels (BAT-AELs)s and technical evidence identified;
- Main environmental 'Hot spots" of the footwear supply chain: based on the review of relevant LCA literature and a specific LCA case study;
- Product best practices available on the market;
- Harmonisation with EU Ecolabel Regulation (EC) 66/2010;
- Harmonisation with other existing ecolabels, and initiatives, such as NGO and private labels;
- Possible harmonisation with other EU Ecolabel criteria of relevance to the product group "Footwear".

1.3 Commission Statement as to the next Revision

In conjunction with adoption of the current criteria document on March 2009 (Decision No 2009/563/EC[4]), several statements were submitted by Member States relating to issues that should be addressed/investigated further in the next revision. Thus, the revision of the EU Ecolabel for Footwear should respond to address the following concerns raised by the Commission Statement (19 March 2009/ ENV G2):

- the use and environmental impact of all fluorinated substances (e.g., including PFAS) which might be used for the footwear (e.g., for impregnation) must be assessed in the revision;
- stricter limits on emissions should be based on the best value in BAT/BREF;
- emissions related to synthetic materials, i.e., plastic/polymers, should be addressed;
- the waste phase of materials should be included in the evaluation;
- materials that are problematic in the waste phase should be regulated or excluded ;
- PFAs and the related environmental problems should be evaluated;
- PVC and the related environmental problems should be evaluated;
- formaldehyde in leather and the related environmental problems should be evaluated.

[4] OJ L 196, 28.7.2009, p. 27

1.4 Key environmental issues identified

The manufacture of footwear involves many different steps (as shown in Figure 1). For various types of shoes e.g. fashion, sneakers, sandals, protective or athletic shoes etc., different materials and processes may apply. The production process of most of the footwear companies working in the market segment of classic, casual, and fashion shoes is still handicraft.

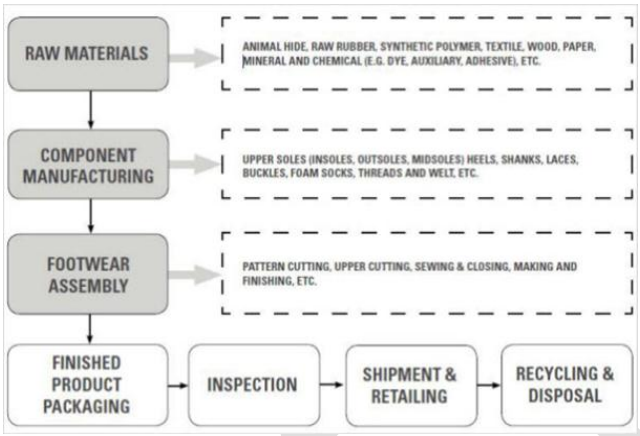

Figure 1. Basic Shoe Manufacturing Process[5]

Quantitative assessment of footwear environmental impact from the life cycle perspective has been addressed and evaluated through a specific LCA case study. A second questionnaire was developed in order to gather missing input data, and to expand information found in the analysed scientific literature[6]. Figure 2 shows the results for each analysed environmental impact category. Detailed results of the conducted LCA can be found in the Background Report.

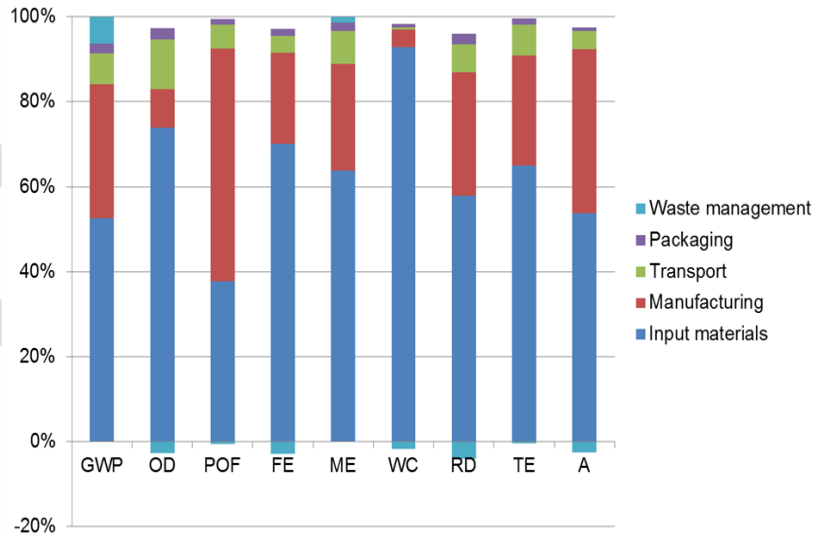

Figure 2. Relative results for each environmental impact category for average values[7]

The overall LCA findings indicate that the identified impacts are mostly due to the production of input materials. The manufacturing of footwear accounts for a significant share of overall impact

[5]Jiang, J. 2014. Hazardous Chemicals in Footwear Manufacturing. Available at: http://www.sgs.com
[6]For more information, please refer to Task 3 of the Background Report,: http://susproc.jrc.ec.europa.eu/footwear/
[7]GWP: *Global-Warming Potential*, OD: *Ozone depletion*, POF: *Photochemical ozone formation*, FE: *Eutrophication, aquatic, freshwater*, ME: *Eutrophication, aquatic, marine*, WC: *Resource depletion, water,* RD: *Resource depletion, fossil and renewable;* TE: *Eutrophication, terrestrial,* A: *Acidification*

and is generated mainly by the energy consumption during production process, and the emissions of VOCs related to the use of adhesives and solvents.

The impacts of agriculture, breeding and slaughtering may also be relevant for the life cycle of footwear, depending on the allocation rule chosen. Therefore, careful consideration should be given to whether leather is assumed to be considered as a co-product or by-product of meat and milk production.

In general manner, improvement of environmental performance of the product includes: setting environmental criteria for suppliers and producers of intermediate materials; dissemination of better management practices across the supply chain; application or subsidization of clean technologies; optimization of logistics. Management of the product supply chain, ranging from raw material acquisition to final delivery of the product, is one of the emerging strategies being used to control the product environmental performance along the life cycle.[8,9,10]

1.5 Rearrangement of criteria after the feedback from AHWG Meetings

The currently valid EU Ecolabel criteria for the product group "Footwear" (2009/563/EC[11]) are structured as follows:

1. Dangerous substances in the final product;
2. Reduction of water consumption;
3. Emission from the material's production (limitation of water pollution);
4. Exclusion of use hazardous substances (up until purchase);
5. Use of VOCs during final assembly of shoes;
6. Energy consumption;
7. Use of recycled material for packaging;
8. Information on the packaging;
9. Information appearing on the Ecolabel;
10. Parameters contributing to durability.

Table 1. compares the current and proposed set of criteria to be addressed.

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[8] Styles, D. Schoenberger H., Galvez-Martos, J.L. (2012) Environmental improvement of product supply chain: Proposed best practice techniques, quantitative indicators and benchmarks of excellence for retailers. Journal of Environmental Management 110, pp. 135-150

[9] Rydin, S. (2011) Risk Management of Chemicals in the Leather. Sector: A Case Study from Sweden. In: B. Bilitewski et al. (eds.), Global Risk-Based Management of Chemical Additives I:Production, Usage and Environmental Occurrence, Hdb Env Chem, Springer-Verlag Berlin Heidelberg 2011

[10] COTANCE (2012) Social and Environmental Report. The European Leather Industry

[11] O.J. 196, 28.7.2009, p.27

Table 1. Rearrangement of criteria

Addressed aspects	Current criteria (Commission Decision 2009/563/EC)	Proposed Criteria	Status
Input materials		1. Origin of hides and skins, cotton, wood and cork, and man-made cellulose fibers	New
Processes/Input materials	2. Reduction of water consumption	2. Reduction of water consumption and restrictions in tanning of hides and skins	Revised
	3. Emission from the material production (limitation of water pollution)	3. Emissions to water from the production of leather, textile, and rubber	Revised
	5. Use of VOCs during final assembly of shoes	4. Volatile Organic Compounds (VOCs)	Revised
	6. Energy consumption	x	Withdrawn
Use of chemical substances in production and presence of chemical substances in the final product	1. Dangerous substances in the final product	5. Hazardous substances in the product and shoe components	Revised
	4. Exclusion of hazardous substances	6. Restricted Substances List	
Durability	10. Parameters contributing to durability	7. Parameters contributing to durability	Revised
Social Requirements	-	8. Corporate Social Responsibility	New
Packaging	7. Use of recycled material for packaging	9. Packaging	Revised
Use phase	8. Information on the packaging	10. Information on the packaging	Revised
	9. Information appearing on the Ecolabel		

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2 DEFINITION AND SCOPE

The scope and definitions of the product group 'footwear' is primarily based on the Footwear Labelling Directive 94/11/EC[12].

Products classified as personal protective equipment (PPE)[13] are proposed to be included in the scope. PPE shoes are usually produced in long term series, representing well established product on the market which is not subjected to fashion trends changes.

The proposed definitions and scope further rely on stakeholders' feedback given through the questionnaire, the discussions conducted at the 1st and 2nd AHWG Meetings and written comments received.

Proposed Scope and Definitions

Product scope

(1) The product group 'footwear' shall comprise all articles of clothing designed to protect or cover the foot, with applied sole which comes into contact with the ground. Protective footwear as defined under Directive 89/686/EEC[14] is included in the scope.

(2) Footwear might be composed of various natural and/or synthetic materials in line with Directive 94/11/EC.[15]

(3) The following products are not covered by these criteria:

(a) Footwear that contains any electric or electronic components;

(b) Products that are disposed of after a single use;

(c) Socks with applied sole;

(d) Toy footwear.

For the purpose of this Decision, the following definitions shall apply:

(1) "shoe upper" means the upper structural element, composed of one or more materials, which is attached to the outer sole. Shoe upper includes lining and socks;

(2) "lining and socks" mean the lining of the shoe upper, constituting the inside of the footwear article;

(3) "shoe sole" means the bottom part of the footwear article which is attached to the shoe upper;

(4) "footwear assembly" means a series of operations that aim at joining together shoe upper and sole elements to form final product. Final product packaging is included;

(5) "footwear assembly site" means the site where the final stages of the production (from material cutting or forming (for injection moulding production) to product packaging) that pertain to the licensed product and remain under management control of the applicant take place;

(6) Volatile Organic Compounds as defined in EN 14602[16];

[12] DO L 100 de 19.4.1994
[13] In accordance with Directive on Personal Protective Equipment (PPE) 89/686/EEC
[14] OJ L 399, 30.12.1989, p. 18
[15] OJ L 100 of 19.04.1994

DRAFT

(7) "eliminable substance" means a substance that shows 80 % degradation of dissolved organic carbon within 28 days using one of the following test methods: OECD 303A/B, ISO 11733;

(8) "inherently biodegradable substance" means a substance that shows 70 % degradation of dissolved organic carbon within 28 days or 60 % of theoretical maximum oxygen depletion or carbon dioxide generation within 28 days using one of the following test methods: ISO 14593, OECD 302 A, ISO 9887, OECD 302 B, ISO 9888, OECD 302 C;

(9) "readily biodegradable substance" means a substance that shows 70 % degradation of dissolved organic carbon within 28 days or 60 % of theoretical maximum oxygen depletion or carbon dioxide generation within 28 days using one of the following test methods: OECD 301 A, ISO 7827, OECD 301 B, ISO 9439, OECD 301 C, OECD 301 D, ISO 10708, OECD 301 E, OECD 301 F, ISO 9408.

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[16] EN 14602: Footwear - Test methods for the assessment of ecological criteria

Rationales:

The rationales are grouped in sections, as follows:

(A) *Scope extension analysis,*
(B) *Proposed testing method for biodegradation,*
(C) *Personal Protective Equipment,*
(D) *Product structure,*
(E) *Input materials.*

(A) Scope extension analysis

The preliminary proposal of the European Commission's Directorate-General for the Environment to analyse the possibility to extend the scope to other leather goods was thoroughly checked by the project team[17]. The general outcome of the technical analysis indicated that the product group extension was not recommendable, bearing in mind that:

1. The EU Ecolabel Regulation No 66/2010 specifies product group as "*a set of products that serve similar purposes and are similar in terms of use, or have similar functional properties, and are similar in terms of consumer perception*". Leather-made products cover a broad range of different functions (from car upholstery, to fashion jackets or wallets), hindering the introduction of the comprehensive product group definition; The ISO 14040:2006 and ISO 14044:2006 standard referred as LCA framework clearly state that environmental comparisons between systems shall be made on the basis of the same function(s), quantified by the same functional unit(s); therefore, it is not possible to compare articles of unrelated utility (e.g., a wallet versus a piece of furniture);
2. The majority of stakeholders that answer the questionnaire were not in favour of the scope extension. In general terms, stakeholders who supported the scope extension expressed their interest to expand the number of products in order to promote a greener market. Specific sets of criteria for leather has been recommended instead of inclusion in one unique product group 'Footwear and leather products;
3. Many of the so-called leather products are in fact composed of several materials, among which leather may be a minor component. There is a potential risk that if the wide range of articles apparently relevant to leather were covered by the scope, it would then include products that are not predominantly composed of leather (or only contain a minor quantity of it). Thus, it would be necessary to introduce a restriction that imposes a minimum leather content requirement. In this case some products, including footwear, could be considered out of the scope. This could mislead the consumer who looks for the most environmentally friendly choice within the same product group category;
4. When referring to the leather market share, preliminary assessment indicates that extending the scope to other leather goods would not necessarily mean considerable environmental savings, as footwear is the main leather-made product group;
5. The type of leather produced will depend on the requirements of the ultimate user as well as the type of raw material utilized.[18] Even if environmental requirements that refer to the tanning process are quite similar amongst leather products, the technical and performance requirements are product specific. Ensuring the product functional durability within the use

[17] Further information can be found in the Background Report Task 1.
[18] Salazar de Buckle, T. (2001) The Leather Global Value Chain - A Review - Report presented to UNIDO. Vienna

phase is quite different from one product to another, hindering the possible introduction of a common set of criteria. If the scope were extended, all criteria that are product-specific would then have to be identified for each category of goods covered by the analysis;

6. Other existing European and non-European ecolabels did not manage to develop a single common set of criteria pertaining to the product category that includes leather and non-leather footwear and leather products.

It is proposed to harmonize product group definition with the Directive 94/11/EC[19], also called EU Footwear Labelling Directive, accordingly: *'footwear' shall mean all articles with applied soles designed to protect or cover the foot.*

Injection moulding is one of the many processes used for footwear manufacturing, in which the bottom part is applied/ moulded onto the shoe upper part. In general, the sole material is injected in a mould and forms a strong bond with the shoe upper while it cools off. It is therefore possible to distinguish shoe upper and sole in line with the proposed definitions. Annex II point (vi) of the referred Directive clearly specifies inclusion of injection moulded footwear under provided definition of the product group "footwear". Products covered by Chapter 64 of the combined nomenclature may, as a general rule, be regarded as falling within the scope of this Directive.

(B) Proposed testing method for biodegradation:

The proposed definitions make reference to the standard testing methods for measuring biodegradation described in Organisation for Economic Co-operation and Development (OECD) guidelines[20] and ISO standards.

The most widely used testing methods for evaluating biodegradation of chemicals in aerobic aqueous medium are OECD 301 and OECD 310 for ready, and OECD 302 for inherent biodegradability, respectively. Similarly, the International standards ISO 7827, ISO 9408, ISO 9439, ISO 10707, ISO 10708, and ISO 14593 determine the biodegradability of organic compounds in an aerobic aqueous environment and are equivalent to OECD 301 and OECD 310. Test methods comparable to OECD 302 (inherent biodegradability) were also developed at ISO level (ISO 9887, ISO 9888)[21].

(C) Personal Protective Equipment:

Of particular interest are the following footwear categories that, in line with stakeholders feedback, are proposed to be included in the scope:

- Occupational footwear, according to EN ISO 20347:2004, must comply with basic safety requirements (anti-static or slip resistant properties). This standard does not require a protective toe cap;

- Safety footwear according to the EN ISO 20345:2004: "*a safety footwear is a footwear, incorporating protective features to protect the wearer from injuries which could arise through accidents, fitted with toecaps, designed to give protection against impact when tested at an energy level of at least 200 J and against compression when tested at a compression load of at least 15 kN*";

[19] OJ L 100 of 19.04.1994
[20] www.oecd.org

- Protective footwear according to EN ISO 20346:2004 (+ A1:2007) – Protective footwear must have a 100J toecap while the other properties are compliant with the markings as for EN 345-1;

- Forestry footwear according to EN ISO 17249:2004 (+ A1:2007) – Forestry footwear must have heat and fuel oil resistant outsole. This type of footwear is also design according to a protection level referred to the chain speed up (m/s);

- Footwear against chemicals according to EN 13832:2006 Parts 1-3 - This footwear resists degradation by certain stated chemicals. In addition the toecap strength (200J or 100J) should be compliant with protective or safety footwear;

- Firefighters' footwear according to EN 15090:2012 - F1 – Firefighters' footwear can be designed according to 3 different models: F1-Outdoor interventions without need for penetration, toe or chemical protection; F2 – Fire suppression and rescue with penetration and toe protection, without chemical protection; F3 – Fire suppression and rescue with penetration, toe and chemical protection.

Personal Protective Equipment (PPE) Directive 89/686/EEC[22] divides personal protective equipment into three categories, based on the risk, consequences and severity of possible injury. To support the Directive, various product safety standards have been developed via the European Standards Agency CEN (Comité Européen de Normalisation). European standards describe in detail how a particular type of product should be tested and what performance is required to achieve a satisfactory pass. The tests developed for the various standards are designed to assess the products against the requirements of the PPE Directive for the risks of the particular activity for which the product is intended to be used. The manufacturer must inform the user about the type of hazards against which the product protects and the product must have the CE mark of conformity. The examination and tests required for CE marking of PPE products are carried out by the Notified Bodies which are Europe-based organisations appointed by member state governments and notified to the European Commission. The verification system established is designed to ensure that all PPE products available in the European Union represent an uniform level of safety and does not carry a risk for user health or hygiene. The procedures for demonstrating compliance, and the involvement of a Notified Body, differ for each category as shown on Figure 3[23].

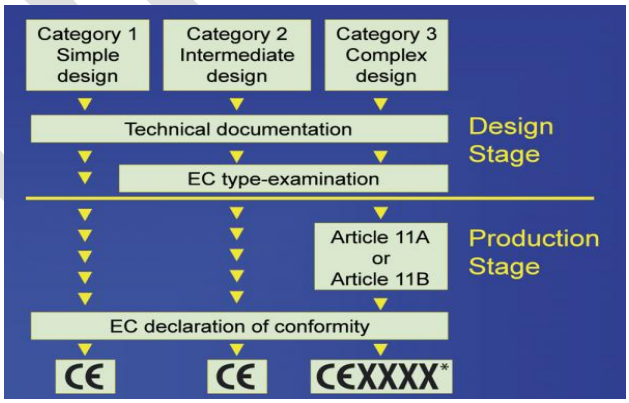

Figure 3. *CE-marking procedure before PPE can be placed on the European market*[28]

[22] OJ L 399, 30.12.1989, p. 18–38
[23] http://www.satra.co.uk/bulletin/article_view.php?id=396

The revised EU Ecolabel criteria proposal does not refer to the fitness for use criteria for PPE footwear because this issue is already addressed for these products under the requirements of the PPE Directive. Additionally, the measures taken to meet the protective requirements impose product biomechanical and hygienic properties.

(D) Product structure

Despite the existence of different shoe segmentation (style, destination, material, among others) it is possible to specify basic footwear anatomy that could be representative for the product group under analysis.

Conventional articles of footwear generally include two main elements: an upper and a sole structure.

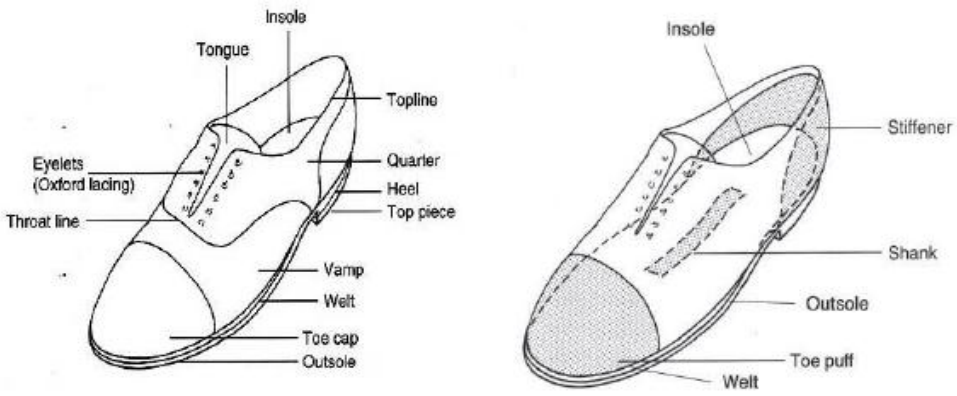

Figure 4. *General structure of footwear*[24]

Upper: refers to the part or parts of footwear that cover the toes, top of the foot, sides of the foot, and back of the heel. Depending on the footwear design, the upper can be made of a single piece, or composed of several parts assembled together (by stitching or gluing). The shoe upper can include the vamp, the heel counter, and the tongue, among other components, as show on Figure . The tongue is designed to open and close the shoes. In the most simple cases (sandals or flip flops), the upper consists of a simple strap going through the toes. In some types of footwear (boots), the upper goes up the leg as a protective or supporting function, or for design. In general terms, the uppers is the part of footwear that is most influenced by the design and fashion.

Lining: refers to the inside material that touches the sides of the foot, the top of the foot, and/or the back of the heel. Again, it can be made of several parts assembled together. Materials for the lining are chosen mainly for their flexibility, softness, breathability, and waterproof character.

Sole: refers to the bottom part of the footwear in direct contact with the ground. It can be made of several layers and of various materials, aiming at a specific characteristic, such as: flexibility, shock absorption, friction resistance, waterproofness, etc. Leather and natural rubber have historically been used as the main material for sole production; nowadays, synthetic materials are more common. The sole may consist of one or several pieces. The multi-piece sole will generally consist of an outer-sole, mid-sole and insole. The insole is the part of the shoes that comes in direct contact with the foot; therefore, it must be comfortable and avoid moisture accumulation and bad

[24] Rossi, W.A. (2000) The Complete Footwear Dictionary. Malabar: Kreiger Publishing Co. Picture taken from Staikos and Rahimifard (2007)

odour generation. It can be made of paperboard or textiles (synthetic or natural) and can generally be replaced after being worn for a long time. The mid-sole is generally designed as a shock absorber, particularly in athletic footwear. Some soles may include heels or be designed for high traction and slip resistance properties for specific purposes (e.g., football shoes, walking shoe, etc.).

Accessories: refer to small adornments or functional pieces such as laces, eyelets, zips, buttons, Velcro, decorations, etc.

(E) Input materials

The complexity of the footwear structure and variability of materials used is product-specific. Basic footwear components can be made from leather, textile, plastics, metal, rubber and other synthetic compounds. All footwear available on the European market must be labelled in line with the Footwear Labelling Directive 94/11/EC[25] that distinguishes 4 main groups of materials: leather, coated leather, natural and synthetic or non-woven textile materials, and all other materials. The Directive applies to the labelling of the materials used in the main components of footwear for sale to the consumer. The labelling shall convey information regarding the upper, the lining and sock; and the sole.

The conventional shoe upper has a layered configuration, in which the individual layers impart different properties to various areas of the footwear. As an example, the upper structure of athletic shoe may be formed from multiple material layers that include an exterior layer, an intermediate layer, and an interior layer. The materials forming the exterior layer of the upper might be selected based upon the specific properties such as e.g. stretch- resistance, wear-resistance, flexibility, and air-permeability. The toe area and the heel area might be formed of leather, synthetic leather, or a rubber material to impart a relatively high degree of wear-resistance, whereas the other areas of the exterior layer might be formed from a synthetic textile. Similarly, the interior layer of the upper may be formed of textile[26].

The number and nature of materials used to produce one pair of shoes depend on technology used, current fashion trends and specific shoe intended use (athletic, casual, slippers, medical, etc.). Therefore, the simplest possible shoe may consist of two components (e.g., flip-flops and rainboots); in contrast , some shoes can involve a complex construction, which in the case of an athletic shoe can comprise 65 (or more) discrete parts, often material blends, requiring more than 360 processing steps to finalize its assembly[27] [28].

According to the Directorate General for Trade of the European Commission, examples of materials commonly used in footwear include: rubber, plastics, leather, composition leather and fur skin, textiles - including felt and non-wovens, plaiting materials, wood, cork. Rubber and plastics include woven fabrics, and other textiles with a visible external layer of one of these materials[29].

The following materials of possible use in footwear product are determined under the scope of ISO/TR Standard 16178[30] :

[25] OJ L 100 of 19.04.1994
[26] Patent US 8745896 B2Article of footwear having an upper incorporating a knitted component
[27] Lee, J.L. and Rahimifard, S. 2012. An air based automated material recycling system for postconsumer footwear products. Resource, Conservation and recycling 69, pp 90-99
[28] Cheah, L., Ciceri, N.D., Olivetti, E., Matsumara, S., Forterre, D., Roth, R., Kirchain, R. 2013. Manufacturing-focused emissions reductions in footwear production. Journal of Cleaner Production 44, pp 18-29
[29] http://trade.ec.europa.eu/doclib/docs/2013/may/tradoc_151161.pdf
[30] ISO/TR 16178:2012 - Footwear – critical substances potentially present in footwear and footwear components.

- Coated leather;
- Leather;
- Leather fibre board,
- PVC;
- EVA foam:
- Rubber, synthetic rubber, rubber foam;
- Thermoplastic polyurethane (TPU);
- Thermoplastic elastomers of thermoplastic rubbers (TPE-TPR);
- Latex;
- Blown material, foam
- Composite materials;
- Polyurethane (PU);
- Textile;
- Polyester;
- Polyester fibre;
- Polyamides;
- Polyacrylic;
- Natural textile;
- Print for textile;
- Wood;
- Cork;
- Adhesives;
- Metallic hardware
- Cellulosic material

Considering the broad range of different materials of potential use (depending on product design, current fashion trends, and product functionality) for the clarity of the legal text, it is proposed not to introduce the definitions of materials under the legal text. Instead, the main groups of materials of possible use in footwear are proposed to be introduced into User Manual. The definitions available in the national and sectorial standards are given below in Table 2.

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Table 2. Materials definition as given in the national and sectorial standards

Material	Definition	Source
Leather	Hide or skin with its original fibrous structure more or less intact, tanned to be imputrescible, where the hair or wool may or may not have been removed, whether or not the hide or skin has been split into layers or segmented either before or after tanning and where any surface coating or surface layer, however applied, is not thicker than 0,15 mm.	ISO EN 15987
Coated leather	Leather where the surface coating applied to the leather does not exceed one third of the total thickness of the product, but is in excess of 0.15 mm.	ISO EN 15987
Leather fibre board	Term for material where tanned hides or skins are disintegrated mechanically and/or chemically into fibrous particles, small pieces or powders and then, with or without the combination of chemical binding agent, are made into sheets. The minimum amount of 50 % in weight of dry leather is needed to use the term leather fibre board.	ISO EN 15987
Vegetable-tanned leather	Hide or skin converted to leather by vegetable tanning agents, where the total content of tanning metals (Cr, Al, Ti, Zr, Fe) is less than or equal to 0,3 % (mass of all metals/total dry weight of leather).	ISO EN 15987
Chrome-free leather	The leather must contain less than 0.1% Cr on dry weight of leather.	ISO EN 15987:
Textile	Any raw, semi-worked, worked, semi-manufactured, manufactured, semi-made-up or made-up products which are exclusively composed of textile fibres, regardless of the mixing or assembly process employed, as covered by the Directive 71/307/EEC.. The list of textile fibres can be consulted in Annex I of Directive 71/307/EEC.	Directive 71/307/EEC
Plastic	Polymer to which additives or other substances may have been added, which is capable of functioning as a main structural component of final materials and articles.	Regulation (EU) No 10/2011
Polymer	Any macromolecular substance obtained by: (a) a polymerisation process such as polyaddition or polycondensation, or by any other similar process of monomers and other starting substances; or (b) chemical modification of natural or synthetic macromolecules; or (c) microbial fermentation.	Regulation (EU) No 10/2011
Rubber / Latex	Polymers based on either synthetic or natural materials that are cross-linked to give required physical performance properties and chemical resistance.	ISO 1382
Thermoplastics	Type of plastic made from polymer resins that become a homogenized liquid when heated and hard when cooled. When frozen, however, a thermoplastic becomes glass-like and subject to fracture. These characteristics, which lend the material its name, are reversible. That is, it can be reheated, reshaped, and frozen repeatedly.	PlasticsEurope[31]
Elastomers	Materials which undergoes substantial, elastic ((fully) reversible) deformation when put under stress and consisting of three-	EN 71-12:2013

[31] http://www.plasticseurope.org/what-is-plastic/types-of-plastics-11148/thermoplastics.aspx

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Material	Definition	Source
	dimensional networks of cross-linked flexible polymers.	

2.1 Assessment and verification

Proposed assessment and verification

The detailed assessment and verification requirements are indicated for each criterion.
Where the applicant is required to provide declarations, documentation, analyses, test reports, or other evidence to show compliance with the criteria, these may originate from the applicant or his supplier(s) and/or third party certification and testing bodies, as appropriate. Where possible, the testing shall be performed by laboratories that meet the general requirements of European Standard EN ISO 17025 or equivalent.

Where appropriate tests method other than those indicated for each criterion may be used if their equivalence is accepted by the Competent Body assessing application. Competent Bodies shall preferentially recognise tests which are accredited according to ISO 17025[32] and verification performed by bodies which are accredited under the EN 45011 standard or an equivalent international standard.

Where appropriate, Competent Bodies may require supporting documentation and may carry out independent verifications or site visits.

The validity of the license is based on verification upon application. Where specified under criterion 6 product testing shall be periodically submitted to Competent Bodies for on-going verification.

Changes in suppliers and production sites pertaining to licensed products shall be notified to Competent Bodies, together with supporting information to enable verification of continued compliance with the criteria.

The final product is one pair of shoes. Requirements are based on shoe size: 42 Paris point for men, 38 Paris point for women, 40 Paris point for unisex models and 32 Paris point for children (or the largest size in the case of sizes smaller than 32 Paris point).

Unless separately specified, the criteria apply to the final product that is composed of shoe uppers and soles that are made of homogenous materials and articles that form the final product.

The applicant shall provide the bill of materials of the product, listing all homogenous materials and articles used. The weight of each constituent material shall be expressed as grams and as a percentage of the shoe uppers and the shoe soles. The total final product unit weight shall be stated.

Criterion 6 refers to a Restricted Substances List which is provided in Appendix I. The list sets out the scope of restrictions and respective verification methods.

[32] ISO/IEC 17025:2005 General requirements for the competence of testing and calibration laboratories

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Rationales:

The EU Ecolabel utilitarian unit serves as the verification reference in order to fairly compare products of the same category, size being the most logical reference unit. Proposed sizes are harmonised with the ADEME-AFNOR PCR for Footwear[33]. They also served as the reference for the life cycle case study conducted within the on-going revision[34]. Mixed model (unisex) was added following stakeholders' suggestions.

- size 42 for the men's models;
- size 38 for the women's models;
- size 40 for the mixed models (unisex);
- size 32 for the children's models;

The material threshold (% weight per weight) defines which materials in a given product are required to comply with the proposed set of criteria. Setting the threshold aims at reducing the verification burden and focusing on these materials that constitute a relevant part % w/w of the final product. It is meant to simplify the application process excluding footwear elements/parts of low to negligible weight in the final product.

The different schemes were cross-checked to analyse the best possible approach to be adapted by the revised criteria set for the EU Ecolabel for footwear:

- The Blue Angel scheme for footwear introduced 10% weight threshold for criteria referring to production or manufacturing of specified raw materials, and 3% by weight for cotton and all specific substances requirements (chemicals, auxiliary and dyes);

- The Good Environmental Choice Australia Standard introduced 5% w/w threshold for materials requirements;

- In the Japanese Eco Mark for footwear the threshold for material criteria and certification procedure is specified as follows: "*surface area in the relevant portion shall be totalled in descending order and the material that composes not less than 70% of the surface area of the relevant portion shall be subject to the criteria. This shall not apply to small accessories such as buttons, strings, sewings thread, trimmings, etc.*";

- According to the Nordic Swan for Textile, hides/skins and leather fibres types, the introduced threshold value for fibre type/hide/leather is 5% of the total weight of the final product.

The feasibility to introduce a fixed weight threshold (g/unit) was also analysed. It was however assessed as not appropriate, considering differences in weight of different product units. Data gathered from questionnaire and literature review proved a high variability of product weigh (between 400 and 1300 g/pair[35]). Thereupon, introduction of an absolute weight thresholds could create the situation in which requirements for some types of footwear are more restrictive (e.g. for protective shoe) when compared with other (e.g. flip-flops). The threshold limit that refers to share of the material in the final product seems more appropriate for the product group like footwear.

[33] PCR for footwear developed by the ADEME-AFNOR, BPX 30-323-1
[34] Further information can be found in Background Report under Section 3.
[35] Aggregated values on the base of information collected, the weight of specific footwear models might differ.

The current EU Ecolabel criteria for "Footwear"[36] specify the threshold as 3 % w/w separately for uppers and soles. Most stakeholders were in favour of maintaining this limit, considering that verification of components with weight lower than 3% w/w was assumed as not having much relevance but rather creating additional burden for the applicant. Some stakeholders proposed to increase the threshold to 10% w/w as footwear could consist of many different materials and applying for the EU Ecolabel may become very complex and time consuming.

The differentiation between upper and sole is justified by the usual differences in the weight between these two parts. Applicant should specify the weight of the final product, uppers and soles parts, as well as composing materials.

In order to establish the right balance between expected environmental benefits and existent administrative burdens of the criterion verification, minimum content of individual materials that should meet the requirements are proposed to be introduced. The threshold refers to the total individual weight of materials that compose shoe uppers and/or soles:

- 10% w/w for Criterion 1 that encompasses the traceability of the origin of natural materials;
- 10% w/w from Criterion 2 and 3(a) to provide an applicant with more flexible approach and address production process requirements for the main materials used in the final product;
- 3% w/w for Criterion 4 that addresses the verification of the materials contained in the final product;
- Criterion 5(a) –the primary proposal to introduce material content threshold of 3 % w/w under criterion 5(a) was dropped out. This is due to the need to plainly meet the requirement of Art. 6(6) of EU Ecolabel Regulation 66/2010[37];
- 3% w/w for Criterion 5(b) with the exemption of lining and socks. Lining and socks are considered a structural element of the first contact with the consumers' feet.
- 3% w/w for Criterion 6 (Restricted Substances List) in order to balance economic burden that might arise when product and/or material testing is required;
- Criterion 7, 8, 9, and 10 refers to the final product or product packaging being assessed as of no relevance for the verification of an individual material content;

All in all, the specific threshold is proposed to be integrated under each criterion, if applicable. Consistently, the general threshold was removed from preamble of the proposed criteria revision for the EU Ecolabel for Footwear[38].

[36] O.J. 196 196, 28.7.2009, p.27
[37] OJ L 27, 30.1.2010, p. 1–19
[38] In reference to EU Ecolabel DRAFT criteria proposal presented in November 2014: http://susproc.jrc.ec.europa.eu/footwear/docs/Annex_proposal_Footwear_October%202014_v2.pdf

3 PROPOSED ECOLABEL CRITERIA

This section presents the EU Ecolabel revised criteria proposal for the product group Footwear. The proposal is based on JRC-IPTS work conducted in the frame of the project, stakeholders feedback and the discussions conducted for the criteria development. Furthermore, EU Ecolabel criteria for relevant product groups, other type I Ecolabels, and existing national, standardisation and industrial schemes were considered.

3.1 CRITERION 1: Origin of hides and skins, cotton, wood and cork, and man-made cellulose fibers

The intention of the criterion is to address the origin of natural materials, improve its environmental performance, and establish principle for the supply chain control. This approach was supported by stakeholders but also considered as relatively costly and time-consuming. Synthetic materials are mainly addressed in respect to their chemical composition under Criterion 5 and 6.

Full traceability of materials origin in the footwear industry was assessed as very complex to be achieved. Therefore, the introduction of the specific cut-off limit of 10% aims at finding the right balance between possible environmental benefits and additional administrative burdens. It is meant to simplify the application excluding footwear elements of low to negligible content % w/w and thus limited environmental benefits. The proposed threshold is aligned with Blue Angel criteria for Footwear. It also reflects the feedback received from footwear manufacturers.

Criterion 1 (b) and 1 (d) are harmonised with the EU Ecolabel criteria for 'Textile' in accordance with the Commission Decision 2014/350/EU[39].

3.1.1 Criterion 1(a) Requirements on hides and skins

Proposed Criterion:

Raw hides and skins destined to be used in a final product shall be subject to the restriction specified in criterion 1(a)i and 1(a)ii.

1(a)i Hides and skins

Criterion 1(a)i shall apply when leather content in shoe uppers and/or shoe soles is greater than 10.0% weight by weight of either component.

Only raw hides and skins from animals raised for milk and/or meat production are allowed to be used for the production of leather that is destined to compose the final product.

Assessment and verification: *the applicant shall submit a declaration of compliance from the leather manufacturer or leather supplier. The declaration shall state that the leather-manufacturing company conducts compliance verification checks on the raw materials used, and that raw hides and skins destined to be used in the final product originate from animals raised for milk and/or meat production.*

[39] OJ L 174, 13.6.2014, p. 45

1(a)ii Exempted hides and skins

Raw hides and skins originated from extinct, extinct in the wild, critically endangered, endangered, vulnerable, and near-threatened species, according to the categories established by International Union for Conservation of Nature (IUCN) Red List of Threatened Species[40], shall not be used for the production of leather used in the final product.

Assessment and verification: *the applicant shall submit a declaration of compliance from the leather manufacturer or leather supplier. The declaration should state that raw hides and skins destined to be used in a final product do not originate from extinct, extinct in the wild, critically endangered, endangered, vulnerable, and near-threatened according to the IUCN classification.*

Rationales:

Introduction of the criterion that involves the requirement on the origin of hides and skins is meant to ensure that the animals have been farmed primarily for meat and milk, whereas hides and skins used by the footwear industry are considered a by-product. As analysed through a specific LCA case study, depending on the impact category, the agricultural phase, i.e., farming and slaughtering, can account for as much as 18 to 80% of the impact of the product's life cycle. It should be noted that footwear is one of the most globalized goods; thus, cattle raising, tanning, and final product manufacturing could be subjected to inter-continental trading. Following ADEME-AFNOR and EPD System PCRs for footwear, the agriculture phase is considered as being out of scope for the analysis.[41,42]

The IUCN Red List of Threatened Species (also known as the IUCN Red List or Red Data List), founded in 1963, is the world's most comprehensive inventory of the global conservation status of biological species. The International Union for Conservation of Nature (IUCN) is the world's main authority on the conservation status of species. A series of Regional Red Lists are produced by countries or organizations to assess the risk of extinction for species within a political management unit. The wording of the criterion is adapted to the classification hierarchy set by The Red List:

- ***Extinct, EX****:* A taxon is *Extinct* when there is no reasonable doubt that the last individual has died. A taxon is presumed *Extinct* when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.

- ***Extinct in the Wild***: A taxon is *Extinct in the Wild* when it is known only to survive in cultivation, in captivity or as a naturalized population (or populations) well outside the past range. A taxon is presumed *Extinct in the Wild* when exhaustive surveys in known and/or expected habitat, at appropriate times (diurnal, seasonal, annual), throughout its historic range have failed to record an individual.

- ***Critically Endangered, CR*****:** A taxon is *Critically Endangered* when the best available evidence indicates that it meets any of the criteria for Critically Endangered (see and it is therefore considered to be facing an extremely high risk of extinction in the wild.

[40] http://www.iucnredlist.org/
[41] Detailed analysis can be found in the Background Report: Chapter 3.3.
[42] UNIDO, Life Cycle Assessment/Carbon Footprint in the Leather Processing (Review of methodologies and recommendations for harmonization), October 2012

- ***Endangered, EN***: A taxon is *Endangered* when the best available evidence indicates that it meets criteria to be considered as facing a very high risk of extinction in the wild.

- ***Vulnerable, VU***: A taxon is *Vulnerable* when the best available evidence meets any of the criteria to be considered as facing a high risk of extinction in the wild.

- ***Near Threatened, NT***: A taxon has been evaluated against the criteria but does not qualify for Critically Endangered, Endangered or Vulnerable now, but is close to qualifying for or is likely to qualify for a threatened category in the near future.

- ***Least Concern, LC***: it has been evaluated against the criteria and does not qualify for Critically Endangered, Endangered, Vulnerable or Near Threatened. Widespread and abundant taxa are included in this category.

- ***Data Deficient, DD***: Listing of taxa in this category indicates that more information is required and acknowledges the possibility that future research will show that threatened classification is appropriate.

- ***Not Evaluated, NE*:** A taxon is Not Evaluated when it has not yet been evaluated against the criteria.

Species that are categorized by the Red List to be at any type of risk shall not be used in the EU Eco-labelled footwear.

It was proposed to, on the base of precautionary principle, exclude the possible use in a product of the leather that originates from species classified by Red List as *Not-evaluated.* According to the evidence found the precautionary principle could be applied only if there is any existent scientific evidence on the existence of a possible risk. In case of lack of any scientific assessment the precautionary principle should not apply[43,44]. Accordingly, the Commission Communication in respect to precautionary principle stresses that this measure may only be invoked in the event of a potential risk and that it can never justify arbitrary decisions[45]:

The precautionary principle may only be invoked when the three preliminary conditions are met:

- *identification of potentially adverse effects;*
- *evaluation of the scientific data available;*
- *the extent of scientific uncertainty.*

The 10% w/w threshold does not apply to sub-criterion 1(b). For the legal text clarity, the requirement has been proposed to be introduced as separated sub-criterion.

It should be stated that according to the information set up in the Background Report[46], 71% of total world hides/skin production originates from bovine hides, followed by sheepskins (14%), goat

[43] Galan Munoz, A. 2015. La problemática utilización del principio de precaución como referente de la política criminal del moderno derecho penal. ¿Hacia un derecho penal del miedo a lo desconocido o hacia uno realmente preventivo? (RI §415810), Revista General de Derecho Penal 23, p.1-55, available at: http://www.iustel.com

[44] Huelin Martinez de Velasco, J. 2004. El control judicial del principio de precaucion. Control jurisdiccional de la incertidumbre? P.363. In: Manuales de Formacion Continuada 26. CGPJ.

[45] Communication from the Commission of 2 February 2000 on the precautionary principle [COM(2000) 1 final

[46] http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf

skins (8%) and calfskins (6%)[47]. The remaining animal typology covers a small part of the industry (less than 1%) and could be considered as a niche market[48].

3.1.2 Criterion 1(b) Cotton and other natural cellulosic seed fibres

Proposed Criterion:

1(b) Cotton and other natural cellulosic seed fibres

Criterion 1(b) shall apply when cotton content in shoe uppers and/or shoe soles is greater than 10.0% weight by weight of either component.

Cotton and other natural cellulosic seed fibres (hereinafter referred to as cotton) shall contain a minimum content of either organic cotton (see criterion 1(b)(i)) or integrated pest management (IPM) cotton (see criterion 1(b)(ii)).

Cotton that contains equal or greater than 70% weight by weight of recycled content is exempted from the requirement of criterion 1(b).

Textile products that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU[49] are considered being compliant with criterion 1(b).

Assessment and verification: *the applicant or material supplier, as appropriate, shall provide a declaration of compliance.*

Where EU Ecolabel textile products are used, the applicant shall provide a copy of the EU Ecolabel certificate showing that it was awarded in accordance with the Commission Decision 2014/350/EU.

Where applicable, recycled content shall be traceable back to the reprocessing of the feedstock. This shall be verified by independent third party certification of the chain of custody or by documentation provided by feedstock suppliers and reprocessors.

1 b(i) Organic production standard

With the exception of footwear intended for children less than 3 years old a minimum of 10 % weight by weight of the cotton used in footwear shall be grown according to the requirements laid down in Council Regulation (EC) No 834/2007[50], the US National Organic Programme (NOP) or equivalent legal obligations set by trade partners of the EU. The organic cotton content may include organically grown cotton and transitional organic cotton.

At least 95% weight by weight of cotton used in footwear intended for children less than 3 years old shall be organic.

For the production standard Organic, any conventional cotton or IPM cotton blended with organic cotton shall be from non-genetically modified organisms.

[47] FAO. (2011). World statistical compendium for raw hides and skins, leather and leather footwear.
[48] COTANCE. (2012). Social and Environmental Report - the European leather industry.
[49] Commission Decision 2014/350/EU: of 5 June 2014 establishing the ecological criteria for the award of the EU Ecolabel for textile products (notified under document C(2014) 3677) (OJ L 174, 13.6.2014, p. 45)
[50] Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1).

Assessment and verification: *the applicant or material supplier, as appropriate, shall provide evidence confirming that at least 10% of the cotton contained in the product, or 95% in the case of footwear intended for children less than 3 years old, is organic certified by an independent control body to have been produced in conformity with the production and inspection requirements laid down in Regulation (EC) No 834/2007 the US National Organic Programme (NOP) or those set by other trade partners. Verification shall be provided on an annual basis for each country of origin.*

Non-genetically modified varieties of cotton shall be verified in conformity with Regulation (EC) No 1830/2003 of the European Parliament and of the Council.[51] *IPM schemes that exclude genetically modified cotton shall be accepted as proof of compliance for IPM content.*

1 b(ii) Cotton production according to IPM principles and restriction on pesticides

With the exception of footwear intended for children less than 3 years old a minimum of 20% weight by weight of the cotton used in the product shall be grown according to IPM principles as defined by the UN Food and Agricultural Organisation (FAO) IPM programme or Integrated Crop Management (ICM) systems incorporating IPM principles.

At least 60% of the cotton used in footwear intended for children less than 3 years old shall be grown according to IPM principles.

IPM cotton destined to compose the final product shall be grown without the use of any of the following substances: alachlor, aldicarb, aldrin, campheclor (toxaphene), captafol, chlordane, 2,4,5-T, chlordimeform, chlorobenzilate, cypermethrin, DDT, dieldrin, dinoseb and its salts, endosulfan, endrin, glyphosulfate, heptachlor, hexachlorobenzene, hexachlorocyclohexane (total isomers), methamidophos, methyl-o-dematon, methylparathion, monocrotophos, neonicotinoids (clothianidine, imidacloprid, thiametoxam), parathion, phosphamidon, pentachlorophenol, thiofanex, triafanex, triazophos.

Assessment and verification: *the applicant or material supplier, as appropriate, shall provide evidence that at least 20% weight by weight of the cotton contained in the product, or 60% weight by weight in the case of footwear intended for children less than 3 years old, has been grown by farmers that have participated in formal training programmes of the UN FAO or Government IPM and ICM programmes and/or that have been audited as part of third party certified IPM schemes. Verification shall either be provided on an annual basis for each country of origin or on the basis of certifications for all IPM cotton bales purchased to manufacture the product.*

IPM certification schemes that exclude the use of listed substances shall be accepted as a proof of compliance.

Rationales:

Footwear with textile uppers accounts to 7% by volume of the European textile production, and 19 % of apparent consumption[52]. Cotton has been identified as one of the main textiles used by footwear sector[53]. Organic cotton cultivation has increased in the past years, nevertheless its uptake has been relatively modest in comparison with global cotton production[54].

[51] Regulation (EC) No 1830/2003 of the European Parliament and of the Council of 22 September 2003 concerning the traceability and labelling of genetically modified organisms and the traceability of food and feed products produced from genetically modified organisms and amending Directive 2001/18/EC (OJ L 268, 18.10.2003, p. 24)

[52] EUROSTAT, 2011

[53] For more information refer to Background Report available under http://susproc.jrc.ec.europa.eu/footwear/stakeholders.html

[54] Baffes, J. (2004) Cotton. Market Setting, Trade Policies, and Issues. Washington: The World Bank.

Revision of the European Ecolabel and Green Public Procurement (GPP) Criteria for Textile Products indicated that ecotoxicity associated with production and use of fertilisers and pesticides is one of the main environmental impacts related to cotton life cycle. Also energy consumption is of importance in these stages. Further, the impact of water use for irrigation was also highlighted as being significant. A shift to organic cotton should significantly reduce the toxicity profile of products made of cotton, although this would not address water use[55].

In general terms, the costs of production, processing and seed purchase still remain a major problem to the organic cotton industry. Nonetheless use of organic cotton appears to gain more importance in certain product groups. In footwear industry several companies have announced the use of organic cotton, including Adidas, H&M, Nike, Ethletic, Veja, and Mark and Spenser, among others.

According to the Organic Exchange Farm and Fiber Report 2009, organic cotton was grown in 22 countries with the top ten producer countries being led by India, and including (in order of rank) Turkey, Syria, Tanzania, China, United States, Uganda, Peru, Egypt and Burkina Faso. Approximately 220,000 farmers grew the fiber. World organic cotton production amounted to 175,113 metric tons in 2008/09, 20% higher than in 2007/08, and was grown on 253,000 hectares[56]. Nevertheless, organic cotton represents less than 1% of global cotton production[57].

IPM cotton is an approach to pest management based on ecologically sustainable control measures which are cost effective and safe for the farmer and consumer. Most success is achieved with IPM which works with farmers in a participatory way, using group discussions and farmer experimentation throughout a growing season. The emphasis is on reduction, and where possible elimination, of pesticide use.

The proposed Criterion is harmonised with the EU Ecolabel criteria for Textile[58]. In order to establish the right balance between expected environmental benefits and existent administrative burdens of the criterion verification, the threshold for criteria verification of 10% w/w of cotton content has been proposed to be introduced.

The further rationales that support the criterion proposal are grouped in sections, as follows:

(A) *Recycling of textiles*
(B) *Traceability of the genetically modified varieties of cotton*
(C) *Pesticides verification*

(A) Recycling of textiles

Fibres and their feedstock may be obtained from a range of different sources including recycling. When discussing the recycling of textiles one has to distinguish between post-industrial waste and post-consumer waste. Pre-consumer waste comes from fibre processing and/or product manufacturing, e.g. weaving, cutting, or excess production.

[55] Detailed information available under:
http://susproc.jrc.ec.europa.eu/textiles/docs/130206%20Ecolabel%20textiles_Technical%20report_EUEB%20final.pdf
[56] https://www.icac.org/wp-content/uploads/2011/05/504-Att-3-Organic_Africa.pdf
[57] http://organicexchange.org/oecms/images/stories/OE_2009_Farm_and_Fiber_Press_Release_0210_Final.pdf
[58] For detailed information on rationales that support criterion proposal please refer to Technical Report that Supports EU Ecolabel criteria for Textile:
http://susproc.jrc.ec.europa.eu/textiles/docs/130206%20Ecolabel%20textiles_Technical%20report_EUEB%20final.pdf

The standard practice in most spinning mills is to transferred residual material from one process into the feed stock of another e.g. for example ring spinning waste will either be fed into the open end spinning line which can handle shorter staple length or be sent back to the beginning of the chain and reincorporated in the bale opening process. The post –industrial material form therefore the close loop and could be considered rather as a by-product.

Post-consumer waste forms a part of household waste stream, e.g. used apparel or home textile products. The recycling of consumer waste is more complex since it commonly consists of unknown fibre mixtures.

Commonly most textiles are blended fabrics[59]. The recovered fibres from cotton waste can be used to produce blended yarns (cotton waste/virgin fibres) in different portions. They are used in the carded non-woven industry[60]. Post-consumer cotton waste coming from household resources tends to be recycled into lower quality and non-visible products such nonwovens and felts for applications in car insulation, roofing felt, loudspeaker cones, fillings, etc. Blended materials are more difficult to recycle, whereas plain cotton can be made into new cotton yarn and used to make new fabric[61].

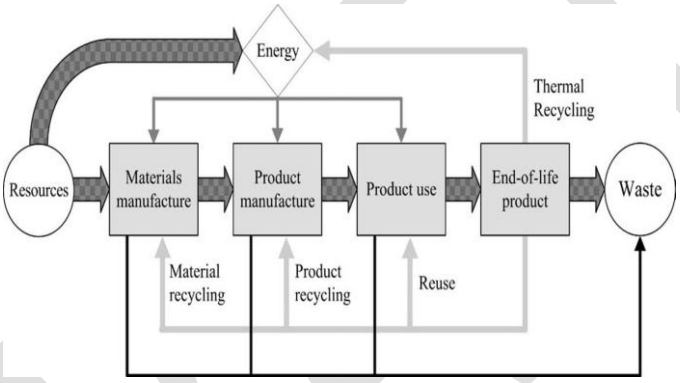

Figure 5. Schematic flow diagram of 'cradle to grave' process showing the different routes for cycle processes (recycling)[62]

When recycled, the waste are segregated by type and colour then placed into stripping machines that breaks the fabric into pieces. Fibres are then pulled apart and the mixture is carded several times to clean and mix the fibres before being respun into new yarns.[63] The colour and composition separation at the beginning of the process is a labour-intensive operation that is not financially viable in all economies[64]. The material knowledge is key issue for the recycling process, if considered, the blended fibres are separated.

The high content of short fibres which is typical for recycled material decreases mechanical properties of the yarn. To improve fiber quality it may get blended with longer staple virgin fibers or synthetic feedstock to improve yarn strength and spinability. The requirements of quality imposed on the finished products allow only the addition of tiny quantities of recovered fibres. The

[59]Lv, F., Wang, C., Zhu, P., and Zhang, C.,Isolation (2015) Isolation and recovery of cellulose from waste nylon /cotton blended fabrics by 1-allyl-3-methylimidazolium chloride. Carbohydrate Polymers. In press

[60]Taher Halimi, M., Hassen, M.B., Faouzi Sakli, F. (2008) Cotton waste recycling: Quantitative and qualitative assessment. Resources, Conservation and Recycling 52 , pp. 785–791

[61]http://www.bir.org/industry/textiles/

[62]Bartil, A., Hackl, A., Mihalyi, B., , Wistuba, M., Marini, I. (2005) Recycling of Fibre Materials. Process Safety and Environmental Protection, 83(B4), pp. 351–358

[63]http://www.bir.org/industry/textiles/

[64]http://textileexchange.org/node/958

quantity of recycled content in fabrics is a subject of technical specification (durability) of material meant to be used in footwear therefore the exact % w/w of recyclates content should be a subject of case by case analysis[65].

The use of recycled cotton is proposed as an alternative source of fibre that would reduce the need for cotton cultivation and landfilling. For the proportion of cotton that corresponds to recycled material it is proposed not to require the compliance check of cotton origin. Furthermore, in line with the EU Ecolabel criteria for textile specific exemption for recycled cotton used in blends has been proposed: The criterion does not have to be met if the product contains fibres that are of recycled origin constituting at least 70% w/w of the blend. The chain of custody for recycled content can now be certified by a number of emerging schemes. The Global Recycling Standard is the most significant globally and was developed by Control Union Certifications. Since 2011 the standard is owned by Textile Exchange (formally Organic Exchange).

(B) Traceability of the genetically modified varieties of cotton

Within the consultation process stakeholders expressed their concern in reference to traceability of GMO cotton. Genetically Modified Organisms (GMOs) are defined in the EU Legislation as "*organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally by mating and/or natural recombination*"[66]. According to Directive 2001/18/EC placing GMO on the market implies free movement of the authorised products throughout the territory of the European Union, the authorisation procedure for placing a GMO on the market occurs at all Members States level.

Products which consist of GMOs or which contain GMOs and food products from GMOs which have been authorised under Directive 2001/18/EC are subject to traceability requirements in application of Regulation No 1830/2003. In line with Art. 3. of this Regulation traceability is defined as "the ability to trace GMOs and products produced from GMOs at all stages of their placing on the market". This Regulation covers: all products which consist of GMOs or which contain them (this includes products destined for industrial processing for uses other than consumption);

Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products contains the basic objectives and general principles for organic farming. The objectives focus on sustainable agriculture and production quality including vegetative propagating material and seed used for crops.

In fact, for the purpose of the EU Ecolabel criteria Regulation No 1830/2003 and No 834/2007 should be used in parallel providing a general framework to be communicated to suppliers.

Additionally, The EU Organic Regulation (EC) 834/2007[67] states that: *'Genetically modified organisms (GMOs) and products produced from or by GMOs are incompatible with the concept of organic production and consumers' perception of organic products. They should therefore not be used in organic farming or in the processing of organic products.'*

The requirement for verification of cotton origin is harmonised with the EU Ecolabel criteria for textile as laid down in the Commission Decision 2014/350/EU.

[65]Wulfhorst, B. (1984) The technological and economic aspects of the recycling of wastes in modern cotton mills. Foreign-edition with english supplement, vol. 8 Textile Praxis International (1984) p. 741–3

[66]Directive 2001/18/EC, OJ L 106 14.04.2001

[67]Council Regulation (EC) No 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91 (OJ L 189, 20.7.2007, p. 1)

(C) Pesticides verification

The Stockholm Convention on Persistent Organic Pollutants (POPs)[68] seeks to eliminate the use and production of chemicals that share a number of characteristics: highly toxic, persistent, can travel long distances and bioaccumulate in the food chain.

The World Health Organisation (WHO) recommends classification of Pesticides by hazard[69]. WHO Class I refers to those pesticides classified by the World Health Organisation as either Extremely (I a) or Highly (I b) Hazardous, based on their acute risk, that is the hazard referred to is "*the risk of single or multiple exposures over a relatively short period of time that might be encountered accidentally by any person handling the product in accordance with the directions for handling by the manufacturer or in accordance with the rules laid down for storage and transportation by competent international bodies*".

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade assists parties to reduce risks from certain hazardous pesticides in international trade. The Convention, together with the Stockholm and Basel conventions and FAO's voluntary Code of Conduct, promotes a life cycle approach and provides the necessary tools for managing pesticides[70].

The emerging certification systems such as the Better Cotton Initiative, Cotton Made in Africa and Fair Trade ban the use of pesticides that are listed on the Stockholm Convention, PIC list as well as WHO Class 1 (1a - Extremely hazardous, and 1b - Highly hazardous) pesticide classification lists[71].

The results of annual pesticides testing of raw cotton commissioned by the Bremen Cotton Exchange between 1994 and 2013 shows limited detection of pesticide residues[72]. Evidence gathered during the technical work developed in the support of the EU Ecolabel revision for textile criteria suggests that the testing of raw cotton may not always act as an effective safeguard, and that pesticide testing of the cotton boll is not an effective/accurate method for determining specific pesticide use/non-use. Pesticide restrictions can only have scientific value if they are supported by stronger verification e.g. farmer/producer group declarations. However, it currently appears that this may only be possible to obtain in conjunction with an IPM scheme. The stronger criteria focus was therefore suggested on production systems such as IPM and organic, which are intended to educate farmers and control pesticide use at source. IPM production has the potential to achieve substantial reductions in pesticide and fertiliser use whilst achieving the highest recorded yields for cotton. This production option would ensure that the Ecolabel can achieve an acceptable market share and pricing, particularly for commercial products, whilst achieving a significant environmental improvement in cotton production.

The EU Ecolabel criteria under revision refer to Footwear as the final product. The proposed Criterion 1 addresses suppliers of the basic raw material. Having this in mind it is proposed to simplify the requirement on pesticides content and requires verification supported by the application of IPM schemes that explicitly prohibit the use of listed substances. The pesticide list is considered a safeguard to ensure that banned or hazardous substances are not used.

[68] www.pops.int/
[69] http://www.who.int/ipcs/publications/pesticides_hazard_rev_3.pdf
[70] http://www.pic.int
[71] Better Cotton Production principles & criteria explained, October 2013, http://bettercotton.org/wp-content/uploads/2014/01/Better-Cotton-Production-Principles-and-Criteria-Explained_Final-2013_eng_ext.pdf
[72] Bremen Baumwollbörse (2013) Analysis of chemical residues – pesticides as per Oeko-Tex Standard 100

The proposed pesticide list is harmonised with the EU Ecolabel for textile in accordance with the Commission Decision 2014/350/EU.

3.1.3 Criterion 1(c) Origin of wood and cork

Proposed Criterion:

1(c) Origin of wood and cork

Criterion 1(c) shall apply when wood or cork content used in shoe uppers and/or shoe soles is greater than 10.0% weight by weight of either component.

All wood and cork shall be covered by chain of custody certificates issued by an independent third party certification scheme such as FSC, PEFC or equivalent.

Virgin wood and cork shall be covered by valid sustainable forest management and chain of custody certificates issued by an independent third party certification scheme such as FSC, PEFC or equivalent.

Where certification scheme allows mixing of uncertified material with certified and/or recycled materials in a product or product line, a minimum of 70% of the wood or cork material, as appropriate, shall be sustainable certified virgin material and/or recycled material.

Uncertified material shall be covered by a verification system which ensures that it is legally sourced and meets any other requirement of the certification scheme with respect to uncertified material.

The certification bodies issuing forest and/or chain of custody certificates shall be accredited or recognised by that certification scheme.

Assessment and verification: *the applicant or material supplier, as appropriate, shall provide a declaration of compliance supported by a valid, independently certified chain of custody certificates and demonstrate that at least 70% of the wood or cork material originates from virgin material from forests managed according to Sustainable Forestry Management principles and/or from recycled sources that meet the requirements set out by the relevant independent chain of custody certification scheme. FSC, PEFC or equivalent schemes shall be accepted as independent third party certification.*

If the product or product line includes uncertified virgin material, proof shall be provided that the content of uncertified virgin material does not exceed 30 % and is covered by a verification system which ensures that it is legally sourced and meets any other requirement of the certification scheme with respect to uncertified material.

Rationales:

Footwear with wood soles account for 4% of European production, and 1% of apparent consumption by volume[73]. The specific data on footwear that contain cork could not be extracted from the available statistical information.

[73] EUROSTAT, 2011

The introduction of sustainable sourcing of wood and cork in the criteria has been added to ensure that illegal and unsustainable sourcing of timber products is not allowed in the EU Eco-labelled products. Even if criterion requirement is not expected to bring significant benefits at the product group level compared to other product groups, it will help to protect the credibility of the EU Ecolabel and meet market expectations. Introduction of the criterion is also supported by Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 which specifies the obligations for operators who place timber and timber products on the market – also known as the Timber Regulation. This regulation prohibits introduction of illegally harvested timber and products derived from such timber into the EU market, requiring EU traders who place timber products on the EU market to exercise 'due diligence,' as specified by Commission Implementing Regulation (EU) No 607/2012 of 6 of July 2012.

Sustainable forest management (SFM) uses very broad social, economic and environmental goals. A range of forestry institutions now practice various forms of sustainable forest management and a broad range of methods and tools are available that have been tested over time and space. SFM does not in itself establish the link between the forestry and the final product. Chain of Custody (CoC) certification is a mechanism that allows establishing the verification system of the material flow along the supply chain. It tracks back the certified products from forest to shelf, providing the link between production and consumption. The Chain-of-Custody (COC) certification attests that all of the wood or cork used in the product originates from responsibly-managed forests[74].

There are two mechanisms for tracing the origins of forest-based products, tailored to the situation and needs of certified companies[75].

- The percentage based method – this mechanism allows mixing certified and non-certified raw material during the production or trading process. However the percentage of the certified raw material must be known and communicated to the company's customers (average percentage).

- Alternatively, the company can sell as certified the proportion of its production which equals the percentage of certified raw material used (volume credit).

FSC and PEFC are by far the two dominant international forest certification schemes that set requirements for the sustainable management of forestry and require third party verification of the chain of custody for timber products.. Other notable schemes include the SFI (Sustainable Forestry Initiative), the AFTS **(**American Tree Farm System) and CSA (CAN/CSA-Z809-02 Sustainable Forest Management standard). Since around 2005, these North American based schemes became incorporated under the PEFC certification scheme and are largely responsible for making PEFC the largest international forest certification scheme (accounting for approximately 60% of all area covered worldwide by PEFC).

Comparison of different schemes conducted by the Central Point of Expertise on Timber (CPET) suggests that the FSC and PEFC certification schemes provide a high level of assurance in their verification of the chain of custody.[76] By May 2013, the global area of certified forest, endorsed by FSC and PEFC amounted to 417 million hectares, up 8.5% (32.8 million hectares) since May 2012 (Figure 6). The overlap between the refereed certification schemes can be roughly estimated as of

[74] http://www.finchpaper.com/our-environment/fsc-and-sfi-certifications/
[75] http://www.pefc.org/standards/chain-of-custody
[76]CPET, UK Government timber procurement policy – definition of legal and sustainable for timber procurement. April 2010

7.2 million ha (half of which is in Europe) due to double certification[77]. Almost all the recent growth in certified area is in the CIS sub-region, primarily in the Russian Federation[78].

Following UNECE/FAO Statistical Report 2012-2013[79], there is an observable grow in the quantity of SMF certified forest area, and the number of CoC certification issued. The proportion of global round wood supply from certified forests was estimated at 28.3% (as to May 2013).

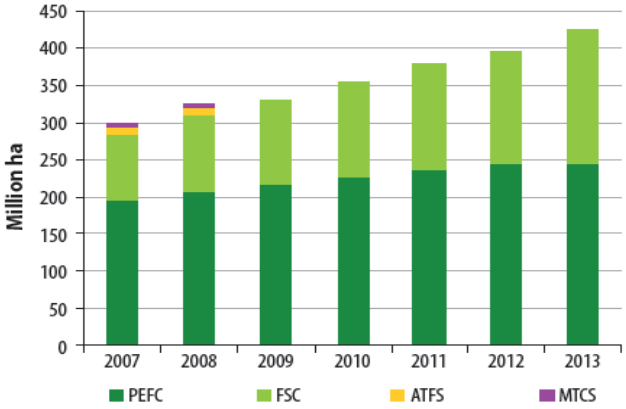

Figure 6. Forest area certified by major certification schemes (2007-2013)[80]

The production of cork worldwide is about 201.428 tonnes[81]. Portugal is the world leader in cork production, with 49.6% and 100.000 tonnes, followed by Spain with 30.5% and 61.504 tonnes of world production[82]. The detailed information on the % of forest certified area and the annual cork production is collated in Table 3. In 2013 in Portugal and Spain there were around 58 cork-based industries covered Chain of custody certification (both PEFC and FSC)[83]. In order to cover missing data, under the assumption that the certified and no-certified forest are characterized by the same productivity, it could be roughly estimated that the quantity of certified cork on the market is approximately 13.8%.

Table 3. Forest certified area and annual cork production by country[84,8586]

Overall cork forest area					**Annual production of cork**		
Country	Total cork forest area (ha)*	(%)	Cork forest SFM certified area (ha)	(%)	Country	Annual production (tons)*	(%)
Portugal	715.992	34	110.000	15,3%	Portugal	100.000	49,6
Spain	574.248	27	116.000	20,2%	Spain	61.504	30,5
Morocco	383.120	18	n.a.	n.a.	Morocco	11.686	5,8
Algeria	230.000	11	n.a.	n.a.	Algeria	9.915	4,9
Tunisia	85.771	4	n.a.	n.a.	Tunisia	6.962	3,5
France	65.228	3	n.a.	n.a.	Italy	6.161	3,1

[77] Forest Products. Annual Market Review 2012-2013. UNEC/FAO
[78] UNECE and FAO (2010) Forest products annual market review 2011-2012
[79]UNECE/FAO Statistical Report 2012-1013
[80]MTCS, ATFS, SFI, CSA are amalgamated into PEFC data following the date of endorsement. The statistics do not consider an estimated overlap of roughly 7.2 million hectares (by May 2013)
[81]CORK 2014. APCOR
[82]CORK 2014. APCOR
[83]Personal communication with PEFC Spain
[84] Personal communication with PEFC Spain
[85]Sierra-Perez et. al. 2015. Production and trade analysis in the Iberian cork sector: Economic characterization of a forest industry, Resources, Conservation and Recycling, Vol. 98 p.55-66.
[86]Possible double certification is not taken into account

Italy	64.800	3	86,5	0,1%	France	5.200	2,6
Total	**2.119.089**	**100**	**226.086**	**≥ 10,6%**	**Total**	**201.428**	**100**

n.a. – data not found

The outer bark, or cork, can be extracted from cork oak (Quercus suber) without damaging the tree or affecting biodiversity as following extraction, new bark regrows. This process occurs every 9–14 years, depending on the area, until the tree is approximately 200 years old[87].

The industrial use of cork system could be divided into two production groups: the natural cork industry and the granulate-agglomerate industry. Approximately 70% of all the cork harvested is used by the wine industry. The solid corks are "punched" out of the bark, once the corks have been produced, the residual pieces of bark can be redirected to produce other agglomerated products. Most of the companies use hash by-products from the manufacture of the cork stoppers[88]. According to Rives et al.[89] the by-products represent in mass more than 70% of the initial raw cork.

At this time there are a few natural wine cork recycling programs in the EU or the USA. Cork ReHarvest organization operates the largest cork recycling program in North America. Last year, (2013) over 80 tons of natural cork was collected within the programme[90].

The comparison of the main sustainable forestry certification schemes on the market (FCS and PEFC) is set below:

FSC Labelling

In final products, one of three labels may be used:

- "**FSC 100%**", where 100% of the wood based materials used must come from FSC certified forests.
- "**FSC Mix**" where ≥70% of all wood based materials are FSC certified virgin materials and/or post-consumer reclaimed materials and the remainder consists of pre-consumer reclaimed materials and/or controlled wood.
- "**FSC Recycled**" where 100% of the wood based materials are reclaimed, with at least 85% being post-consumer and the remainder being pre-consumer recycled materials.

Figure 7. Examples of the 3 types of FSC labels currently in use.

[87]Pereira, H. and Tomé, M. 20014. Cork oak and cork . In: J. Burley, J Evans, JA Youngquist (Eds.), Encyclopedia of For Sci., Elsevier, Oxford, pp. 613–620

[88]Personal communication with Cork Forest Conservation Alliance: http://www.corkforest.org/

[89]Rives et al. (2011) Environmental analysis of the production of natural cork stoppers in southern Europe (Catalonia – Spain). Journal of Cleaner Production 19 (2–3), pp 259–271

[90] Personal communication with Cork Forest Conservation Alliance: http://www.corkforest.org/

PEFC labelling

This is an area where FSC and PEFC clearly differentiate, although certain common aspects can be found. The main differences are that PEFC does not have a specific 100% logo and that no distinction is made between pre-consumer and post-consumer recycled material by PEFC, unlike FSC.

The two types of PEFC logo, described in **PEFC ST 2001:2008**, that can be used are:

- **PEFC certified**: includes minimum of 70 % of "PEFC certified" material from forest which has been certified against a PEFC endorsed forest certification scheme as sustainably managed or from recycled material. The content of recycled material is lower than 85 %.

- **PEFC recycled**: The product includes a minimum of 70 % of "PEFC certified" material from recycled sources. The content of recycled material is calculated based on ISO / IEC 14021.

In both cases, any remainder of wood-based material that is not PEFC certified or PEFC recycled must be made up by PEFC controlled wood, as is implied on the labels, shown below.

Figure 8. Examples of the standard format for the two PEFC label types.

Comparison of different schemes conducted by the Central Point of Expertise on Timber (CPET) suggests that the FSC and PEFC certification schemes provide a high level of assurance in their verification of the chain of custody.[91] By May 2012, the global area of certified forest was 394 million hectares, a 4% increase since May 2011. Almost all the recent growth in certified area is in the CIS sub-region, primarily in the Russian Federation. In 2012, these schemes accounted for 9.6% of global forestry and 26.5% of industrial timber supplies[92].

3.1.4 Criterion 1 (d) Man-made cellulose fibres (including viscose, modal and lyocell)

Proposed criterion:

1(d) Man-made cellulose fibres (including viscose, modal and lyocell)

Criterion 1(d) shall apply when man-made cellulose fibre content used in shoe uppers and/or shoe soles is greater than 10.0% weight by weight of either component.

[91] CPET, UK Government timber procurement policy – definition of legal and sustainable for timber procurement. April 2010
[92] UNECE and FAO (2010) Forest products annual market review 2011-2012

A minimum of 25 % of pulp fibres shall be manufactured from wood that has been grown according to the principles of sustainable forestry management as defined by the UN FAO. The remaining proportion of pulp fibres shall be from pulp that is sourced from legal forestry and plantations.

Man-made cellulose fibres that contains equal or greater than 70% weight by weight of recycled content is exempted from the requirement of the criterion 1(d).

Textile products that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU are considered being compliant with criterion 1 (d).

***Assessment and verification**: the applicant or material supplier, as appropriate, shall provide a declaration of compliance.*

Where EU Ecolabel textile products are used, the applicant shall provide a copy of the EU Ecolabel certificate showing that it was awarded in accordance with the Commission Decision 2014/350/EU. Otherwise, the applicant shall obtain from the fibre manufacturer(s) valid, third-party certified chain of custody certificates demonstrating that the wood fibres have been grown according to sustainable forestry management principles and/or are from legal sources. FSC, PEFC or equivalent schemes shall be accepted as independent certification.

The fibre manufacturer shall demonstrate that due diligence processes have been followed as specified in Regulation (EC) 995/2010[93] in order to ensure that timber has been legally harvested. Valid EU Forest Law Enforcement, Governance and Trade (FLEGT) or UN Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) licenses and/or third party certification shall be accepted as evidence of legal sourcing.

Where applicable, recycled content shall be traceable back to the reprocessing of the feedstock. This shall be verified by independent third party certification of the chain of custody or by documentation provided by feedstock suppliers and reprocessors.

Rationales:

Viscose fibres are made from regenerated cellulose pulps. Timber and bamboo are the predominant sources of raw material for cellulose fibre manufacturing. This cellulose may be derived from a range of different sources, including timber, bamboo and, increasingly in China cotton pulp. Over the last decade production of viscose fibres stabilised at approximately 2.6 million tonnes world-wide (Europe: 600 thousand tons) but has recently risen sharply again to 5.5 million tonnes because of the increase in the price of cotton[94] The pulp required to manufacture viscose fibres is a specialised grade called dissolving pulp.

With the growth of viscose production in countries such as China concerns have risen about the possible extent of deforestation in order to supply cellulose pulp feedstock. A review of publicly available information from the major producers suggests that at least 14.5% of capacity may be certified to either FSC or PEFC. As reflected in the Technical Report supporting the EU Ecolabel criteria for Textile[95] not sufficient market data is currently available for the quantity of certified

[93] Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market Text with EEA relevance (OJ L 295, 12.11.2010, p. 23).
[94] Asia Paper Markets, Commodities to watch – dissolving pulp, Market briefing paper, February 2001)
[95] http://susproc.jrc.ec.europa.eu/textiles/docs/131021%20Ecolabel%20Textiles_EUEB%20vote_Technical%20report%20final.pdf

dissolving pulp. Consultation with the only current EU license holder confirmed that certified market for dissolving pulp can be obtained but that the maximum possible threshold to be achieved would be 50% of certified fibre content. Wider consultation by CIRFS with EU producers suggested 25%. Given that proportion of feedstock may be sourced from countries where the availability of certified timber is lower and where there may be greater concerns about illegal forestry[96], it appears substantial to seek for sustainable certification of dissolving pulp and exclude not legally sourced materials from EU Ecolabel products.

Similarly to Criterion 1(b) specific exemption is given for fibre that originate from recycling.[97] For the proportion of man-made cellulose fibre that corresponds to recycled material it is proposed not to require the compliance check of feedstock origin. Furthermore, in line with the EU Ecolabel criteria for textile specific exemption for recyclates used in blends has been proposed: The criterion does not have to be met if the product contains fibres that are of recycled origin constituting at least 70% w/w of the blend.

3.2 CRITERION 2: Reduction of water consumption and restrictions on tanning of hides and skins

Raw hides and skins that are destined to be used in the product shall be subject to the limit on water consumption in the tanning process as specified under criterion 2(a).

Leather used in products intended for children less than 3 years old shall be subject to restriction on the chromium – based tanning as specified under criterion 2(b).

The threshold values for the water consumed during leather manufacturing were revised in reference to Commission Implementing Decision 2013/84/EU[98]. Simultaneously, information gathered from the current EU Ecolabel for Footwear licence holders were integrated into criterion proposal. The criterion was also cross-checked with Blue Angel for footwear RAL-UZ 155 and CEN/TC 289/WG4/ Draft WI 00289154 "*Leather – Criteria defining the performance characteristics of leather with a low environmental impact*".

The sub-criterion on restriction on tanning method to process raw hide and leather destined to be used in linings and socks for children less than 3 years old is related to the leather manufacturing process. Consistently the requirements was moved from Criterion 1(a) and re-establish under Criterion 2(b)[99].

3.2.1 Criterion 2 (a) *Water consumption*

Proposed criterion:

2(a) Water consumption

The criterion shall apply when leather content used in shoe uppers and/or shoe soles is greater than 10.0% weight by weight of either component.

[96] Goetzl, A (2006) Wood for paper: fibre sourcing in the global pulp and paper industry, Presentation made to 'Forestry trends Potomac Forum' 14th February 2008

[97] As established in the Commission Decision 2014/350/EU

[98] OJ L 45, 16.2.2013, p. 13–29

[99] Criterion 1(a) when referenced to EU Ecolabel DRAFT criteria proposal presented in November 2014: http://susproc.jrc.ec.europa.eu/footwear/docs/Annex_proposal_Footwear_October%202014_v2.pdf

Water consumption expressed as annual average volume of water consumed per tonne of raw leather for the tanning of hides and skins shall not exceed the limits given in Table 1.

Table 1. Water consumption in tanning processes

Hides	28 m^3/t
Skins	45 m^3/t
Vegetable tanned leather	35 m^3/t
Pig skin	80 m^3/t
Sheepskins	180 l/skin

Water consumption shall be calculated based on the monthly average values of the last twelve months preceding the application and measured by the amount of water discharged.

***Assessment and verification**: the applicant shall provide a declaration of compliance from the leather supplier or leather manufacturing company, where relevant. The declaration shall specify the annual amount of leather production and related water consumption based on the monthly average values of the last twelve months preceding the application, measured by the quantity of waste water discharged.*

If the leather production process is conducted in different geographical locations, the applicant or supplier of semi-finished leather shall provide documentation that specifies the quantity of water discharged (m^3) for the quantity of semi-finished leather produced in tonnes (t) or number of skins for sheepskin, as appropriate, based on the monthly average values during the twelve months preceding the application.

Rationales

Most of a tannery's operations are wet-processes. Water consumption during tanning of hides and skins can be attributed to water used in the production processes and technical water needed for cleaning, energy generation, waste water treatment and sanitary purposes.

In order to minimise water consumption Best Available Techniques (BAT) Reference Document for the Tanning of Hides and Skins[100] suggests using one or both of the techniques given below:

- Optimization of water use in all wet process steps, including the use of batch washing instead of running water washes. Optimisation of water use is achieved by determining the optimum quantity required for each process step and introducing the correct quantity using measuring equipment. Batch washing involves washing hides and skins during processing by introducing the required quantity of clean water into the processing vessel and using the action of the vessel to achieve the required agitation, as opposed to running water washes which use the inflow and outflow of large quantities of water.

- The use of short floats. Short floats are reduced amounts of process water in proportion to the amount of hides or skins being processed, as compared to traditional practices. There is a lower limit to this reduction because the water also functions as a lubricant and coolant for the hides or skins during processing. The rotation of process vessels containing a limited

[100] http://eippcb.jrc.ec.europa.eu/reference/BREF/TAN_Adopted552013.pdf

amount of water requires more robust geared drives because the mass being rotated is uneven.

The Commission Implementing Decision 2013/84/EU established the relation between the leather origin (animal type) and the quantity of water consumed. Accordingly, "hides" and "skins" are defined as follows:

- Hides: the pelts of large animals, such as cattle or horses;
- Skin: the pelt of a small animal, such as calf, pig or sheep.

The BAT-associated consumption levels for water as established by the Commission Implementing Decision 2013/84/EU are specified in Table 3 (for bovine hides) and 4 (for sheepskins).

Table 4. BAT water consumption levels – Raw hide

Process stages	**Water consumption per tonne of raw hide**[101] **(m^3/tonne)**	
	Unsalted hides	Salted hides
Raw to wet blue/white	10 to 15	13 to 18
Post-tanning processes and finishing	6 to 10	6 to 10
Total	16 to 25	19 to 28

Table 5. BAT water consumption levels – Skin

Processes stages	**Specific water consumption**[102] **(litres/skin)**
Raw to pickle	65 to 80
Pickle to wet blue	30 to 55
Post-tanning processes and finishing	15 to 45
Total	110 to 180

The information on the water consumption during tanning process included in other schemes of reference have been crossed checked and can be summarised as follows:

1. Nordic Ecolabel for textiles, hides/skins and leather set the general requirement of 25m^3 water/tonne hides/skins and leather that is treated;

2. The Blue Angel for footwear RAL-UZ 155 establishes the relation between water consumption and animal typology:

    - 25 m^3/tonne for raw skins of cattle,
    - 45 m^3/tonne for hides of calves, goats and kangaroos,
    - 80 m^3/tonne for skins of pigs, and
    - 120 m^3/tonne for hides of sheep.

[101] Monthly average values. Processing of calfskins and vegetable tanning may require a higher water consumption.
[102] Monthly average values. Wool-on sheepskins may require a higher water consumption

The collated information was furthermore contrasted with the industry feedback. Correspondingly, the following specification is proposed to be introduced under the revised criteria for the EU Ecolabel in Footwear:

1. *Hides and skins:* For the purpose of the criterion revision, the water consumption during tanning of **hides** is proposed to be harmonised with the BAT-associated consumption levels (BAT-AELs) as indicated in Table 3 (i.e. 28 m^3/tonne). The BAT-AELs do not set a general limit for water consumption during processing of skins such as cattle, goats, kangaroos, etc. It is therefore proposed to refer in the criterion to average value calculated based on data gathered from several EU Ecolabel license holders for footwear: 44,61 m^3/tonne for **skins** (proposed limit value: 45 m^3/tonne of skins). The BAT Reference Document specifies that for the processing of calfskins about 40 m^3/tonne and sometimes more is needed[103]. Considering that no specific referenced value has been established, it is proposed to integrate this type of material into general category skins.

2. Pig skins: Following the information collected from operating European tanneries in 2008 and 2011 processing of pig skin required 85 m^3/tonne of skin. Blue Angel for Footwear refers to 80 m^3/tonne. It is proposed to align EU Ecolabel requirement with the Blue Angel criteria for Footwear.

3. Sheepskins: Because of the nature of the wool, sheepskins generally require more water in wet processing than bovine hides. Water consumption during sheepskin processing is related to the material weight and might range from 30 to 180 m^3/tonne. One sheep skin weighs from 1 to 6 kg. [104]. It is proposed to follow AELs-BAT value, i.e. to require 180 l/skin [105].

4. Vegetable tanning: The process might require higher water consumption than chromium-based technique. CEN/TC 289/WG4[106] specifies water consumption during "vegetable" leather tanning in pits at 35 m^3/tonne. The Commission Implementing Decision 2013/84/EU for Tanning of Hides and Skins does not introduce BAT-AELs value for water consumption during vegetable tanning process. Following the stakeholders feedback, it is proposed to harmonize requirement with CEN/TC 289/WG4: Leather – Criteria defining the performance characteristics of leather with a low environmental impact (i.e. to set the limit at 35 m^3/tonne).

Measures established in order to reduce water consumption should refer to the entire tanning process. Water consumed should be expressed by the amount of waste water discharged. This is considered a viable parameter to be monitored and quantified. This approach also offers certain flexibility to these sites that recirculate water within different process stages.

In reference to textile products, difficulties to gather relevant information on water consumption used during fibre processing were reflected by the technical work developed in the support of EU Ecolabel criteria for Textile. Water consumption will depend on the character of fibre to be treated and technology used hindering the possibility to establish a specific water consumption threshold. BAT water consumption levels related to textiles processing are presented in the Annex I. Criterion proposal targets alignment with the EU Ecolabel for Textile which does not introduce any specific limit per type of fibre.

[103] BREF for Tanning of Hides and Skins, 2013

[104] OJ L 45, 16.2.2013, p. 13–29

[105] According to Art. 3.12 of Directive 2010/75/EU on industrial emissions, BAT-AELs means the range of emission levels obtained under normal operating conditions using a best available technique or a combination of best available techniques, as described in BAT conclusions, expressed as an average over a given period of time, under specified reference conditions.

[106] CEN/TC 289/WG4/ Draft WI 00289154 Leather – Criteria defining the performance characteristics of leather with a low environmental impact

3.2.2 Criterion 2 (b) *Restrictions in tanning of hides and skins*

Proposed criterion:

2(b) Restrictions in tanning of hides and skins

For children less than 3 years old, raw hides and skins destined to be used in linings and socks, as defined in the Article 2(2) to this Decision, shall be processed using chromium-free tanning technology.

Assessment and verification: *for children less than 3 years old, the applicant shall submit a declaration of compliance from the leather manufacturer or leather supplier, as appropriate, with the information that leather used in the interior parts of footwear (lining and socks) is chromium-free tanned. The declaration shall specify the tanning technology used in the processing of raw hides and skins.*

Rationales:

The sub-criterion is related to the leather manufacturing process. Consistently the requirements is proposed to be re-establish under Criterion 2(b)[107].

The European Commission (EC) has issued a new Regulation (EU) No 301/2014[108] that amends Annex XVII of Regulation (EC) 1907/2006 (REACH) by adding new chemical requirements for Chromium VI compounds in leather articles. This Regulation will apply from the 1st of May 2015.

The most commonly used tanning agent is basic chromium sulphate. A high proportion (80 – 90 %) of the global leather production is tanned using chromium (III) salts. The remaining leather is usually treated in vegetable, aldehyde or mineral tanning process. The choice of tanning technology depends mainly on the required properties of the finished material, its cost, plant available, and the type of raw material processed. Because of its properties, vegetable tanned leather is often destined for the sole and hard leather production. Although Cr(VI) is not intentionally added during the tanning process, it may be generated in situ through the oxidation of Cr(III) compounds. The intensity of oxidation reaction will depend on synergetic effects of several components, e.g. the raising of the pH during the neutralisation of wet blue[109].

The substitution of chromium tanning agents has been limited because no alternative has been found which provides leathers with the same qualities. Hereof, BAT Reference Document for the Tanning of Hides and Skins addresses technical solutions that should be employed in order to optimise the chromium uptake in the hides. ECHA Committees for Risk Assessment (RAC)[110] concluded that a viable substitute for chromium tanned shoe leathers may not be available at the moment.

The current market situation clearly indicates the need to accommodate all available tanning methods under the revised EU Ecolabel criteria for Footwear. Furthermore, according to the Leather

[107] Criterion 1(a) when referenced to EU Ecolabel DRAFT criteria proposal presented in November 2014: http://susproc.jrc.ec.europa.eu/footwear/docs/Annex_proposal_Footwear_October%202014_v2.pdf

[108] OJ L 90, 26.3.2014, p. 1

[109] Joint Research Centre. Institute for Prospective Technological Study. (2013) Available at: http://eippcb.jrc.ec.europa.eu/reference/BREF/TAN_Adopted552013.pdf

[110] http://echa.europa.eu/documents/10162/181c7157-76cf-4356-b1d8-664e43a1a3bd

Technology Centre (BLC)[111], vegetable tanned leather production is not necessarily more sustainable than chrome-tanning. This is consistent with the findings of the Best Available Techniques (BAT) Reference Document for Tanning of Hides and Skins[112] which point out that vegetable tannins might have the potential to degrade surface waters.

It is estimated, on the basis of the available data, that 0.2-0.7% of the population in the EU are allergic to chromium VI corresponding to approximately one to three million people.[113] The efficiency in reduction of new chromium VI-related allergic dermatitis cases due to the presence of chromium VI in leather articles is expected to be 80 %. The threshold limit for causing Cr(VI) allergy might be lower than the detection limit of the proposed analytical method ISO 17075 (3 mg/kg)[114,115]. It should be stressed that the knowledge of the possible risk to develop allergic reaction might be lower for children. Atopic dermatitis is also most common in infants. It may start as early as age 2 to 6 months. Many people outgrow it by early adulthood[116].

Considering the market segmentation, it is proposed to require the use of non-chromium tanned leather in linings and socks (interior parts) in footwear intended for children under 3 years old. The criterion also intends to stimulate the development of the non-chromium tanning technologies. The testing for the absence of Cr (VI) in Cr- tanned leather in the proposed criteria footwear is established under Criterion 6 (Restricted Substances List). Annual testing has been proposed in order to ensure product safety and to demonstrate on-going compliance with the requirement.

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[111] http://www.blcleathertech.com/

[112] Joint Research Centre. Institute for Prospective Technological Study. (2013), Available at: http://eippcb.jrc.ec.europa.eu/reference/BREF/TAN_Adopted552013.pdf

[113] http://echa.europa.eu/documents/10162/13641/information_note_cr_vi_en.pdf

[114] Danish Ministry of Environment. Environmental Protection Agency. (2011). Survey and health assessment (sensitisation only) of chromium in leather shoes. Survey of Chemical Substances in Consumer Products No. 112 2011

[115] Limit of Detection refers to the smallest concentration of a measurand that can be reliably measured by an analytical procedure

[116] U.S. National Library of Medicine: http://www.nlm.nih.gov/medlineplus/ency/article/000853.htm

3.3 CRITERION 3: Emissions from the production of leather, textile, and rubber

Textile, leather, and rubber that are destined to be used in the product shall be subject to the limit on emissions to water.

The criterion shall apply when leather, or textile, or rubber content, as appropriate, used in shoe uppers and/or shoe soles is greater than 10.0% weight by weight of either component.

One of the objectives of the EU Ecolabel revision was to address the key types of materials entering the production of footwear. Therefore, the revised criterion is proposed to be expanded to[117]: leather, textile fibre, and rubber.

Chemical Oxygen Demand (COD) is a water quality indicator that represents the degree of water pollution and reflects the quantity of organic matter in the water which can be chemically oxidized. Chemical Oxygen Demand (COD) is one of the most widely used metrics in the field of water-quality analysis in water bodies and in the effluents from sewage and industrial plants. The Indicated standardised test method ISO 6060[118] defines COD as the mass concentration of oxygen equivalent to the amount of dichromate consumed by dissolved and suspended matter when a water sample is treated with that oxidant under defined conditions.

COD is assumed as the reliable parameter to assess wastewater quality. Its application allows evaluation of the impacts from production processes of various materials used in footwear products (i.e. leather, textiles, and rubber).

3.3.1 Criterion 3 (a) Chemical Oxygen Demand (COD) in wastewater from leather tanning sites

Proposed criterion:

3(a) Chemical Oxygen Demand (COD) in wastewater from leather tanning sites

The COD value in wastewater from leather tanning sites, when discharged to surface waters after treatment (whether on-site or off-site), shall not exceed 200 mg /l.

***Assessment and verification**: the applicant or material supplier, as appropriate, shall provide detailed documentation and test reports in accordance with ISO 6060 showing compliance with this criterion on the basis of monthly averages for the six months preceding the application. The data shall demonstrate compliance of the production site or, if the effluent is treated off-site, of the wastewater treatment operator.*

Rationales:

The proposed revised criterion is harmonised with the Commission Implementing Decision No 2013/84/EU[119] on industrial emissions for the tanning of hides and skins, proposing the minimum value 200 mg/l COD. The monitoring should be based on the monthly average for the six months preceding the application.

[117] In regard to the current EU Ecolabel for Footwear under revision as established by Commission Decision 2009/563/EC
[118] Water quality -- Determination of the chemical oxygen demand
[119] OJ L 45, 16.2.2013, p. 13–29

The proposal to integrate under the revised criterion other than COD emission parameters was generally not supported. The recommendation to assess fish eggs toxicity for direct discharges has been assumed as being of low reliability and limited applicability in the tannery process. It is not listed as BAT-AELs in the Commission Implementing Decision 2013/84/EU, being considered rather the quality parameter which is taken into account at the stage of operational permit of the treatment plant. The need to perform such a test depends on the receiving environment, the point of being monitored (if any fish eggs should be present).

3.3.2 Criterion 3 (b) Chemical Oxygen Demand (COD) in wastewater from textile

Proposed Criterion:

3(b) Chemical Oxygen Demand (COD) in wastewater from textile

The COD value in wastewater discharges from textile finishing processes shall not exceed 20 g COD/kg textiles processing.

Finishing processes shall include the thermosetting, thermosoling, coating and impregnating of textiles. This requirement shall apply to wet-processes used in the finishing of the textile fabric. The requirement shall be measured downstream of on-site wastewater treatment plant or municipal wastewater treatment plant receiving wastewater from these processing sites.

Textile products that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU are considered being compliant with Criterion 3(b).

***Assessment and verification**: the applicant or material supplier, as appropriate, shall provide a declaration of compliance.*

Where EU Ecolabel textile products are used, the applicant shall provide a copy of the EU Ecolabel certificate showing that it was awarded in accordance with the Commission Decision 2014/350/EU.

Otherwise, the applicant or material supplier, as appropriate, shall provide detailed documentation and test reports in accordance with ISO 6060, showing compliance with this criterion on the basis of monthly averages for the six months preceding the application. The data shall demonstrate compliance of the production site or, if the effluent is treated off-site, of the wastewater treatment operator.

Rationales:

The textile industry includes a variety of processes ranging from the manufacture of synthetic fibres and fabric production to retail sales. The first step in the production of a textile product is the manufacture of fibres or, in the case of natural fibres, the manipulation of these fibres into useful fibres. Afterward, the fibres are turned into yarn by spinning or texturing. Preparation, dyeing and finishing can be done on yarn or on the textile product obtained through knitting, weaving, and non-woven techniques. The last step is the fabrication of a finished product[120].

[120] Pollution Prevention Studies in the Textile Wet Processing Industry: http://infohouse.p2ric.org/ref/01/00469.pdf

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In order to seek for the synergy between different product groups, the criterion is proposed to be build up on the EU Ecolabel criteria for "Textile" as specified under the Commission Decision 2014/350/EU[121].

The textile BREF highlights the varying combinations of production processes and operating conditions that characterise the textile industry. This makes the application of a single COD value potentially difficult to apply as criteria. Following GOTS criteria[122] wastewater discharges to the environment must not exceed 20 g COD/kg of processed textile (output). The consultations with industry during EU Ecolabel criteria development for textile suggested that the 20 g COD/kg of finished fabric was workable[123].

The 'wet processing' of textiles, leads to the discharge of large quantities of wastewater containing toxic substances[124]. Generally, the process includes pretreatment, dyeing / printing, finishing and other technologies. Pre-treatment includes desizing, scouring, washing, and other processes. Dyeing mainly aims at dissolving the dye in water, which will be transferred to the fabric to produce coloured fabric under certain conditions. Printing is a branch of dyeing which generally is defined as 'localized dyeing'. Both natural and synthetic textiles are subjected to a variety of finishing processes. This is done to improve specific properties in the finished fabric and involves the use of a large number of finishing agents for softening, crosslinking, and waterproofing. All of the finishing processes contribute to water pollution. Pre-treatment wastewater accounts for about 45% of the total organic matter, and dyeing/printing process wastewater accounts for about 50%~55%[125]. Finishing operations change the properties of the fabric or yarn. They can increase the softness, luster, and durability of textiles. Finishing can also improve the water repelling and flame resistant properties of the fabric. The characteristics of textiles can be altered by physical techniques (dry finishing processes) or by application of chemicals (wet finishing processes).

To simplify the compliance verification, the scope of the requirement is proposed to focus on finishing process that shall include: thermosetting, thermosoling, coating and impregnating of textiles. During the finishing process the final washing take place.

The monitoring of colour removal[126] is proposed to be withdrawn considering the possible geographical separation of various textile processing stages, and thus limited ability of the applicant to collect necessary information.

3.3.3 Criterion 3 (c) Chemical Oxygen demand (COD) in wastewater form processing of natural and synthetic rubber

Proposed criterion:

3(c) Chemical Oxygen Demand (COD) in wastewater from processing of natural and synthetic rubber

[121] OJ L 174, 13.6.2014, p. 45–83
[122] Global Organic Textile Standard (GOTS) Version 4.0. March 2014
[123] http://susproc.jrc.ec.europa.eu/textiles/docs/131021%20Ecolabel%20Textiles_EUEB%20vote_Technical%20report%20final.pdf
[124] Lacasse K and Baumann W (2004). Textile chemicals: Environmental data and facts, Berlin, London: Springer, p81.
[125] Wang, Z., Xue, M., Huang, K., Liu, Z. 2011. Textile Dyeing Wastewater Treatment. Advances in Treating Textile Effluent, Prof. Peter Hauser (Ed.) InTech, Available from: http://www.intechopen.com/books/advances-in-treating-textile-effluent/textile-dyeing-wastewatertreatment
[126] In reference to the Criteria proposal presented during EUEB Meeting (November 2014): http://susproc.jrc.ec.europa.eu/footwear/docs/Annex_proposal_Footwear_October%202014_v2.pdf

The COD value in wastewater from the processing of natural or synthetic rubber, as applicable, when discharged to surface waters after treatment (whether on-site or off-site), shall not exceed 150 mg COD/l. This requirement shall apply to wet-processes used to manufacture the product(s).

***Assessment and verification**: the applicant or material supplier, as appropriate, shall provide a declaration of compliance supported by detailed documentation and test reports, based on ISO 6060 showing compliance with this criterion on the basis of monthly averages for the six months preceding the application, together with a declaration of compliance. The data shall demonstrate compliance by the production site or, if the effluent is treated off-site, by the wastewater treatment operator.*

Rationales:

The COD limit values specified in Reference Document on Best Available Techniques in the Production of Polymers (2007)[127] depend strongly on the type of polymer. Several synthetic materials of common use in footwear, such as PU, are not specifically covered by the BREF. BAT associated emissions levels for Polymers are presented in Annex I.

Furthermore, the Blue Angel was identified as the scheme that established requirement on wastewater from rubber and polymers processing. The values from Blue Angel stem from the German Waste Water Ordinance of 17 June 2004[128]. Following additional information inquired, the COD limit value of 150 mg/l set in the Blue Angel criteria for Footwear was discussed and contrasted with industry best practices. No additional data was provided nor found in scientific literature. Accordingly, the Criterion 3 (c) is proposed to be aligned with the COD threshold value established by the Blue Angel.

3.3.4 Criterion 3 (d) Chromium in tannery wastewater after treatment

Proposed criterion:

3(d) Chromium in tannery waste water after treatment

Total chromium concentration in tannery wastewater after treatment shall not exceed 1.0 mg/l.

***Assessment and verification**: the applicant or material supplier, as appropriate, shall provide a declaration of compliance supported by a test report of his supplier using the following test methods: ISO 9174 or EN 1233 or EN ISO 11885 for chromium and showing compliance with this criterion on the basis of monthly averages for the six months preceding the application. The applicant shall provide a declaration of compliance with BAT 11, and BAT 10 or 12 following Commission Implementing Decision 2013/84/EU[129] for the reduction of chromium content of waste water discharges.*

Rationales:

The wastewater produced by European tanneries is treated in many different ways, both on-site and off-site treatment is used. In some cases an individual plant applies the Best Available

[127] http://eippcb.jrc.ec.europa.eu/reference/BREF/pol_bref_0807.pdf
[128] Federal Law Gazette <BGBl. I > p. 1108
[129] Commission Implementing Decision of 11 February 2013 establishing the best available techniques (BAT) conclusions under Directive 2010/75/EU of the European Parliament and of the Council on industrial emissions for the tanning of hides and skins notified under document C(2013) 618 (OJ L 45, 16.2.2013, p.13)

Technologies (BAT) on-site, whereas in other situations only pre-treatment, partial pre-treatment or no treatment at all is applied, redirecting the effluent to a communal treatment plant. More than 80 % of tanneries in Europe discharge their effluent to public sewers. The main exceptions are those parts of Italy and Spain, where the tanneries are in clusters connected to common effluent treatment plants. The differences in legal requirements between Member States concerning the quality of the waste water discharged into environment along with the implementation of the Directive 91/271/EEC were stated during the consultation process for the EU Ecolabel criteria revision for Footwear.

The criterion proposal is harmonized with BAT-associated emissions levels for tanning of Hides and Skins[130].

BAT-AELs values according to the Commission Implementing Decision 2013/84/EU[131] for total chromium content are set for monthly average values in the range of 0.3 to 1 mg/l. In order to take into account the differences in the water treatment infrastructure throughout Europe, the proposed Cr total emission threshold value reflects the higher threshold of BAT-associated emission levels. The emission levels apply for:

- Direct waste water discharge from tanneries on-site waste water treatment plants,
- Direct waste water discharge from independently operated treatment of waste water under section 6.11 in Annex 1 to Directive 2010/75/EU treating waste water mostly from tanneries.

In order to reduce the chromium content of waste water discharges directly after treatment, BAT is to apply on-site or off-site chromium precipitation. The BAT-AELs[132] for direct dischargers applies to the point of discharge in the receiving water stream and the BAT-AELs for indirect dischargers applies to the waste water before it is discharged to the municipal (or industrial) waste water plant. In practice, it means that every tannery should apply water pre-treatment.

With reference to the analytical test method proposed according to Commission Implementing Decision 2013/84/EU, (point 1.2.) BAT is to monitor emissions and other relevant process parameters, with the given associated frequency and to monitor emissions according to EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality. The proposal to use other standardised quantification methods under EU Ecolabel aims at giving to the applicant more flexibility to check the compliance with the criterion.

BAT AELs- recommends using weekly or monthly monitoring of waste water. The annual reporting emission was perceived by stakeholders as the most practical approach for assessment and verification. It is proposed to use monthly average for 6 months before the application (6 values in total).

[130] OJ L 45, 16.2.2013, p. 13–29
[131] C(2013) 618) O.J. L 45/20 16.2.2013
[132] BAET-AELs: BAT- associated emission levels

3.4 CRITERION 4: Volatile Organic Compounds (VOCs)

Following stakeholders' consultation the current limit g VOCs/pair was revised.

Proposed criterion:

Criterion 4 – Volatile Organic Compounds (VOCs)

This criterion shall apply when any homogenous material or article used in shoe uppers and/or shoe soles is greater than 3.0% weight by weight of either component.

Unless specified, the total use of VOCs during final footwear production shall not exceed, on average, 18.0 g VOC/pair.

For footwear classified as personal protective equipment in accordance with Council Directive 89/686/EEC, the total use of VOCs during final footwear production shall not exceed, on average, 20.0 g VOC/pair.

***Assessment and verification**: the applicant shall provide a calculation of the total use of VOCs during final shoe production in accordance with EN 14602. Calculation shall be supported by test results and documentation (registration of purchased leather, adhesives, finishes and production of footwear) as appropriate. The calculation shall be provided for the period of at least six months prior the application.*

Where applicable, a copy of certification issued by certification body notified under Council Directive 89/686/EEC that proves that the product is classified as personal protective equipment shall be provided.

Rationales:

EN 14602[133] defines Volatile Organic Compounds (VOCs) as organic compounds that has, at 293,15 K, a vapour pressure of 0,01 KPa or more, or that has a corresponding volatility under the particular conditions of use. Volatile Organic Compounds emission (VOCs emission) is specified as amount of volatile organic compounds emitted to the atmosphere to produce a pair of shoes. VOCs play a significant role in the formation of ozone and respirable suspended particulates (RSPs) in the atmosphere. They are present in many dyes, adhesives, cleaners and polishes used within footwear supply chain.

Following the findings of LCA case study, footwear manufacturing accounts for 35-70% of overall photochemical ozone formation (37% based on the average scenario) being identified as one of the environmental "hot spots". In line with the IED Directive 2010/75/EU total emission limit value (expressed in grams of solvent emitted per pair of complete footwear produced) should be lower than 25 g VOC per pair[134].

The use of solvent-based adhesives is the most important source of solvent related VOCs emissions during footwear manufacture. According to information gathered from stakeholders about 40-50% of soles attachment technology is based on gluing. In fact, the process of sole

[133] Footwear – Test methods for the assessment of ecological criteria

[134] For the solvents consumption threshold > 5 tonnes/year

assembly of fashion footwear generates the highest solvent emissions (> 40 % of the total). About 10 % of adhesives used in the shoe uppers are solvent-based. The remaining adhesives are either dispersions (70 %) or hot-melt (10%)[135]. The finishing process also generates considerable amount of VOCs emission, e.g. for the fashion shoes - colouring, brilliant varnishing, etc – is responsible for 20 % of the total VOCs. The complete elimination of solvents from the adhesives and treatment process would mean a reduction of more than 80% of the use of solvents in the footwear manufacturing process[136].

A number of companies that are on the way to phase out the use of solvent-based adhesives have been identified within the Background Report[137]. The exact market penetration could not be quantitatively evaluated. The substitution of solvent-based adhesives by hot melts or water-based adhesives offers the greatest potential for reducing emissions[138]. In general, the quality tests to determine the upper-sole bonding strength with the use of water based-adhesives confirmed the feasibility of such replacements[139].

Nonetheless, the technical applicability of solvent-free systems will depend on various variables, among them: the type of footwear, materials used, and expected technical performance (durability) of the adhesive/product. Substitution of solvent-based adhesives is more difficult for the manufacture of heavy duty footwear such as heavy work/safety boots or walking/alpine boots. Solvent-based adhesives provide better grease-resistance and higher tensile strength compared to dispersions. Typically, polyurethane and neoprene adhesives are used. Durability performance should therefore be considered carefully[140].

All in all, the need to use solvent-based cementing techniques was reported by stakeholders as still necessary for connecting of the bottom part of shoe (sole), especially when specific technical requirements should be met.

The LCA case study[141] used the assumption that 20 g of VOC were emitted per one pair of shoes, which is the current limit value established by the EU Ecolabel criteria for Footwear[142] and Blue Angel. It has been estimated that photochemical ozone formation could be reduced by 3 % if a stricter emission limit of 18 V*OC*/pair is introduced. Considering the specific technical requirements, and the current stage of the art of footwear cementing techniques, more flexible approach of 20 g VOC/pair[143] is proposed for footwear classified as personal protective equipment (PPE).

The total amount of VOCs emission generated during footwear production is a sum of emission from various process stages[144]. European Standard EN 14602 "*Footwear-Test methods for the assessment of ecological criteria*" establishes the procedure to calculate the VOCs emission from purchased leather, adhesives, finishes and production of footwear, as follows:

[135] Peters, N. et al. 2002 Best Available Techniques (BAT) for the Paintand Adhesive Application in Germany, Volume II: Adhesive Application, Deutsch-Französische Institut für Umweltforschung (DFIU – German-French Institute for Environmental Research), Karlsruhe, 2002.

[136] ec.europa.eu/environment/life/publications/life/envcompilation02.pdf

[137] http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf

[138] http://www.specialchem4adhesives.com/home/editorial.aspx?id=232

[139] http://www.calsindis.inescop.es/results.pdf

[140] http://www.specialchem4adhesives.com/home/editorial.aspx?id=232

[141] For more information please refer to: http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf

[142] OJ L 196, 28.7.2009, p. 27–35

[143] In reference to currently valid EU Ecolabel criteria for footwear, according to the Commission Decision 2009/563/EC

[144] EN 14602 defines VOC emissions as "amount of volatile organic compounds emitted to the atmosphere to produce a pair of shoes".

$$M_{VOCtotal} = \sum(M_{adhesisves} \times C_{VOCa}) + \sum(A_{finishes} \times M_{finishes} \times C_{VOCf})$$

Where:
$M_{VOCtotal}$ is the total amount of VOCs used in the production of the pair of shoes, in g;
$M_{adhesives}$ is the amount of adhesives applied to the pair of shoes considered, in g; only adhesives with solvents have to be taken into account, water based and hot melt adhesives are exempted;
C_{VOCa} is the VOC content of the adhesives applied, in g of VOCs per g of adhesives; A finishes is the area of the pair of shoes onto which the finish is applied in m^2;
$M_{finishes}$ is the amount of finishes applied per metre square, in g/m^2;
C_{VOCf} is the VOC content of the finishes applied, in g of VOCs per g of finish

Finishes refers to base coats, top coats and repair coats, (upper) finish layers of leather, synthetics upper, lining, cotton, etc. only when based on solvents.

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3.5 CRITERION 5: Hazardous substances in the product and shoe components

The overall chemical requirements under proposed revised EU Ecolabel criteria for Footwear were divided into two supplementary parts that should be read together: Criterion 5 and 6 (Restricted Substances List).

The general approach of criterion 5 is to broadly screen the chemicals potentially present in the final product against SVHC list and substances that meet CLP hazard classification based primarily on available "at source" information. Whereas, Criterion 6 complements the chemical requirement focusing only on specific substances that are likely to remain in the final product and where, specified verification, test method and acceptable limits are defined.

Proposed criterion:

Criterion 5 - Hazardous substances in the product and shoe components

The presence in the final product, and any homogenous materials or articles that form part of the final product, of substances that meet the criteria for classification with the Article 59 of the REACH [145] or CLP [146] hazards listed in Table 2, shall be restricted in accordance with sub-criterion 5(a) and 5(b).

For the purpose of this criterion Candidate List Substances of Very High Concern (SVHCs) and CLP hazard classifications are grouped in Table 2 according to their hazardous properties.

The criterion does not apply to substances or mixtures which change their properties upon processing (e.g., become no longer bioavailable, undergo chemical modification) so that the identified hazard no longer applies.. This shall include chemical reactions where substances have been modified such as polymerisation where monomers or additives become covalently bonded.

Textile products that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU are considered being compliant with criterion 5.

Table 2. Candidate List SVHCs and CLP hazards

Group 1 hazards – Substances of Very High Concern *Hazards that identify a substance as being within Group 1:* ○ *Substances that appear on the Candidate List for Substances of Very High Concern (SVHC).* ○ *Category 1A or 1B CMR*: H340, H350, H350i, H360F, H360D, H360FD, H360Fd, H360Df*
Group 2 hazards – CLP *Hazards that identify a substance as being within Group 2:*

[145] 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 (OJ L 136, 29.05.2007, p. 3).

[146] Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (OJ L 353, 31.12.2008, p. 1).

○ *Category 2 CMR*: H341, H351, H361f, H361d, H361fd, H362* ○ *Category 1 aquatic toxins: H400, H410* ○ *Category 1 and 2 acute toxins: H300, H310, H330, H304* ○ *Category 1 STOT*: H370, H372* ○ *Category 1 Skin Sensitiser H317*
Group 3 hazards – CLP ○ *Category 2, 3 and 4 aquatic toxins: H411, H412, H413* ○ *Category 3 acute toxins: H301, H311, H331, EUH070* ○ *Category 2 STOT*: H371, H373*

*CMR = Carcinogenic, Mutagenic or toxic to reproduction; STOT = Specific Target Organ Toxicity

3.5.1 Criterion 5 (a) *Restriction of Substances of Very High Concern (SVHC's)*

Proposed criterion:

5(a) Restriction of Substances of Very High Concern (SVHC's)

The final product, and any homogenous materials or articles that form part of the final product shall not contain substances that have been identified according to the procedure described in Article 59(1) of Regulation (EC) No 1907/2006 (the 'REACH Regulation') and included in the Candidate List for SVHCs in concentrations higher than 0.10% (weight by weight).

No derogation shall be given to Candidate List SVHCs if they are present in the final product, and any homogenous materials or articles that form part of the final product in concentrations higher than 0,10 % (weight by weight).

Assessment and verification: *the applicant shall provide declaration of compliance supported, where relevant, by declarations from material supplier regarding the non-presence of SVHCs at or above the specified concentration limit for the final product, and any homogenous materials or articles that form part of the product. Declarations shall be referenced to the latest version of the Candidate List published by ECHA [147].*

Where EU Ecolabel textile products are used, the applicant shall provide a copy of the EU Ecolabel certificate showing that it was awarded in accordance with the Commission Decision 2014/350/EU.

Rationales:

Article 6(6) of EU Ecolabel Regulation 66/2010[148] requires that certain types of substances are not present in products: "*The EU Ecolabel may not be awarded to goods containing substances or preparations/mixtures meeting the criteria for classification as toxic, hazardous to the environment, carcinogenic, mutagenic or toxic for reproduction (CMR), in accordance with Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification,*

[147]ECHA, Candidate List of substances of very high concern for Authorisation, http://www.echa.europa.eu/candidate-list-table
[148]OJ L 27, 30.1.2010, p. 1–19

labelling and packaging of substances and mixtures nor to goods containing substances referred to in Article 57 of Regulation (EC) No 1907/2006 of the European Parliament and of the Council of18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency".

Accordingly, a final product, any homogenous material or article thereof shall not contain substances that have been identified as substances of very high concern and included in the list provided for in Article 59(1) of Regulation (EC) No 1907/2006, in concentrations over 0.10% (weight by weight).

In reference to the verification of the possible presence of SVHC substances in a product or materials that compose the final product, CEN/TR 16417[149] could serve as a one of a possible information routes. The latest available version of the document (CEN/TR 16417:2012) has been prepared by Technical Committee CEN/TC 309 "Footwear". The Technical Report is intended to provide information on the chemicals listed in the Candidate List / Annex XIV of the Regulation (EC) 1907/2006 and their usage and presence in the footwear industry. The Report shows which of restricted chemicals may be present in footwear materials and the footwear industry in order to help shoe manufacturers to collect mandatory information from suppliers regarding the content of these chemicals and, at same time, allow them to provide accurate information to their customers. The technical specification is annually revised to reflect new entries. It should therefore be stressed that the applicant is require to verify the possible presence of SHVC against the latest available version of the Candidate List published by ECHA at the time of application [150].

Furthermore, ISO/TR 16178 Technical Report prepared by Technical Committee ISO/TC 216, *Footwear* gives the information about the possible presence of critical substances[151] that is available at the time of publication a subjected to periodical update in order to reflect legislative changes. ISO/TR 16178 Technical Report which applies to any kind of footwear and footwear components establishes a list of critical chemical substances potentially present in footwear and footwear components. This Technical Report describes the critical chemical substances, their potential risks, the materials in which they can be found[152]. The report identifies 29 materials of possible use.

3.5.2 Criterion 5 (b) *Restriction based on CLP hazard classifications*

Proposed criterion:

*5(*b) Restriction based on CLP hazard classifications

With the exception of lining and socks, as defined in the Article 2(2) to this Decision, the criterion shall apply when the content of any homogenous material or article in shoe uppers and/or shoe soles is greater than 3.0% weight by weight of either component. For lining and socks, any homogenous material or article that composes lining and socks shall be subject to the restriction specified below.

Substances falling within the groups identified in Table 3 that meet the criteria for classification with the CLP hazards in Table 2 shall not be present in any homogenous materials or articles that

[149]FOOTWEAR. Footwear industry guideline for Substances of Very High Concern (ANNEX XIV OF REACH)
[150]ECHA, *Candidate List of substances of very high concern for Authorisation*, http://www.echa.europa.eu/candidate-list-table
[151]Defined as: *substances with proven dangerous effect on the wearer*
[152]https://www.iso.org/obp/ui/#iso:std:iso:tr:16178:ed-2:v1:en

form part of the final product in concentrations higher than 0.10% (weight by weight)0.10% (weight by weight).

The most recent classification rules adopted by the European Union as Adaptations to Technical Progress (ATPs) shall take precedence when determining hazard classifications.

Table 3. Substances groups to which criterion 5(b) shall apply

- *Biocides;*
- *Dyestuff (including inks, pigments and varnishes);*
- *Auxiliary carriers, levelling, blowing and dispersing agents, surfactants;*
- *Fatiquoring agents;*
- *Solvents;*
- *Print thickeners, binders, stabilizers, and plasticizers;*
- *Flame retardants;*
- *Cross linking agents, adhesives;*
- *Water, dirt, and stain repellents.*

The use of specific substances and groups of substances meeting the criteria for classification with CLP hazards listed in Table 2 are derogated from the requirements of criterion 5(b) under the conditions specified in Table 4.

Table 4. *Derogations conditions that shall apply to the use of functional substances and substance groups*

Substance groups	**Scope of derogation**	**Derogation conditions**	**Applicability to footwear**
Nickel	H317, H351, H372	Nickel can only be contained in stainless steel. Specific migration value shall be respected	Metal toe-caps and footwear accessories
Dyestuff for dyeing and non-pigment printing	H301, H311, H331, H317	Dust free dye formulations or automatic dosing and dispensing of dyes shall be used by dye houses and printers to minimise worker exposure	Dyestuff

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	H411, H412, H413	Dyeing processes using reactive, direct, vat, sulphur dyes with these classifications shall meet a minimum of one of the following conditions: 1) Use of high affinity dyes; 2) Achievement of a reject rate of less than 3.0%; 3) Use of colour matching instrumentation; 4) Implementation of standard operating procedures for the dyeing process; 5) Use of colour removal to treat wastewater 6) The use of solution dyeing and/or digital printing are exempted from these conditions water	Dyestuff
Water, dirt and stain repellents	H413	The repellent and its degradation products shall be readily and/or inherently biodegradable and non bioaccumulative in the aquatic environment, including aquatic sediment, as specified under Art 2 (7), (8), and (9) to this Decision	Water repellence
Residual auxiliaries found in any homogenous materials or articles that form part of the final product.			
Auxiliaries comprising: Carriers, Levelling agents, Dispersing agents, Surfactants, Thickeners, Binders,	H301, H311, H331, H371, H373, H317 (1B), H411, H412, H413, EUH070,	Recipes shall be formulated using automatic dosing systems and processes shall follow standard operating procedures. Individual residual auxiliaries classified with H311, H331, H317 (1B) shall not be present on the final product at concentrations greater than 1.0% w/w.	Auxiliaries

Assessment and verification: *the applicant shall provide declaration of compliance with the criterion 5(b) supported, where relevant, by declarations from material supplier(s). The declaration shall be supported by the list of restricted substances according to CLP hazards listed in Table 2 that are present in any homogenous material or article that form the final product, together with a declaration about their hazard classification or non-classification.*

Applicants shall identify where derogated substances are present in the product and provide supporting evidence showing how the derogation conditions have been met.

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The following information shall be provided to support declarations of the hazard classification or non-classification for each substance and material:

- *The substance's CAS, EC or list number;*
- *The physical form and state in which the substance is used;*
- *Harmonised CLP hazard classifications;*
- *Self-classification entries in ECHA's REACH registered substance database [153].*

Self-classification entries from joint submissions shall be given priority when comparing entries in the REACH registered substance database.

Where a classification is recorded as 'data lacking' or 'inconclusive' according to the REACH registered substance database, or where the substance has not yet been registered under the REACH system, toxicological data meeting the requirements in Annex VII to the REACH Regulation shall be provided that is sufficient to support conclusive self-classifications in accordance with Annex I of the CLP Regulation and ECHA's supporting guidance. In the case of data lacking' or 'inconclusive' database entries, self-classification shall be verified with the following sources of information:

- *Toxicological studies and hazard assessments by ECHA peer regulatory agencies [154], Member State regulatory bodies or Intergovernmental bodies;*
- *A Safety Data Sheet fully completed in accordance with Annex II o to Regulation (EC) No 1907/2006;*
- *A documented expert judgement provided by a professional toxicologist. This shall be based on a review of scientific literature and existing testing data, where necessary supported by results from new testing carried out by independent laboratories using methods recognised by ECHA;*
- *An attestation, where appropriate based on expert judgement, issued by an accredited conformity assessment body that carries out hazard assessments according to the GHS or CLP hazard classification systems. .*

Information on the hazardous properties of substances may, in accordance with Annex XI to Regulation (EC) No 1907/2006, be generated by means other than tests, for instance through the use of alternative methods such as in vitro methods, by quantitative structure activity models or by the use of grouping or read-across..

Where EU Ecolabel textile products are used, the applicant shall provide a copy of the EU Ecolabel certificate showing that it was awarded in accordance with the Commission Decision 2014/350/EU.

Rationales:

The footwear industry exhibits complex manufacturing chain. The final product may consist of one or a few components, or involve a complex construction, which in the case of an athletic shoe can comprise 65 (or more) distinct parts, often material blends[155,156]. Chemical substances present in

[153] ECHA, *REACH registered substances database*, http://www.echa.europa.eu/information-on-chemicals/registered-substances
[154] ECHA, *Co-operation with peer regulatory agencies*, http://echa.europa.eu/en/about-us/partners-and-networks/international-cooperation/cooperation-with-peer-regulatory-agencies
[155] Lee, J.L. and Rahimifard, S. (2012). An air-based automated material recycling system for post-consumer footwear products. Resource, Conservation and recycling 69, pp 90-99

preparations or formulations during materials manufacturing, finishing, or footwear assembly could potentially remain on the final product. Some of these substances are known to be classified according to the CLP[157] and REACH Regulation[158]. According to estimates reported by the Nordic Council of Ministers[159], as much as 900 tonnes per annum of SVHC contained in shoes could theoretically be imported into Europe without triggering information requirements. In general, the main observations and findings from our follow-up research show that poorly regulated production can result in greater risks of exposure as substances restricted by REACH may be used e.g. azo dyes which cleave to aryl amines. Following the market analysis conducted under Task 2 of the Background Report[160], extra-European import is the dominant source of footwear purchased in Europe (89% in terms of volume and 67% in terms of value of the apparent consumption in 2011[161]).

The implementation of Art. 6.6. of EU Ecolabel Regulation was subjected to the work of the Chemical Horizontal Task Force[162]. The outcome was approved by the EU Ecolabelling Board to be implemented in all EU Ecolabel criteria decisions. The research conducted by the EU Ecolabel Chemicals Horizontal Task Force's recognised the need for screening criteria that are holistic, objective, consistently and horizontally applied, and science-evidence based. The Task Force's research identified eight guiding principles with which the proposed approach must comply:

1. Front runner feasibility;
2. Integrating life cycle thinking;
3. Preventative action based on a precautionary approach;
4. Reference to EU policy tools: REACH and CLP shall be a key reference point used as an evidence base for substances and the prioritisation of hazards;
5. Proportionality within the workplan;
6. Administrative burden;
7. Verifiability;
8. Horizontal applicability.

Given the broad range of chemical substances and formulations of possible used within the footwear manufacturing supply chain, the analysis of the implementation of art 6.6. focused on the following issues:

- Which substances currently used by industry should be restricted?
- What proportion of these substances may subsequently remain in the final product, either as residues or as functional components?
- What is the capacity of industry to respond to restriction of listed classifications?
- Are all the classifications relevant, considering the exposure paths associated with the footwear supply chain and the subsequent use and disposal phases?

[156]Cheah, L., Ciceri, N.D., Olivetti, E., Matsumara, S., Forterre, D., Roth, R., Kirchain, R. (2013), Manufacturing-focused emissions reductions in footwear production. Journal of Cleaner Production 44, pp 18-29
[157]OJ L 353, 31.12.2008, p. 1
[158]OJ L 133, 31.5.2010, p. 1–43
[159]Nordic Council of Ministers. 2010. Assessment of application of the 0.1% limit in REACH triggering information on substances of very high concern (SVHC) in articles. TermNord.
[160]Task 2, Section 2 of the Background Report
[161]Estimated based on data available in Eurostat
[162]http://ec.europa.eu/environment/ecolabel/documents/Chemicals%20HTF_Approach%20paper.pdf

- Manufacture of footwear component materials and footwear itself can be performed in different geographical locations. What is the level of industry capacity to control this very complex supply chain?

Given the potential complexity of applying this criterion to footwear products it is important that the approach proposed is practical to implement and reflects industry best practices. The environmental improvement potential must also be balanced against the relative importance of the other EU Ecolabel criteria and the capacity of industry to respond. The notion of avoiding the use of hazardous substances at source should be prioritized. Considering the feasibility of a potential applicant to trace-back the use of certain chemicals, it is proposed to require verification from the footwear manufacturer and/or material supplier. The final product testing shall in general be carried when: clear evidence of systematic risks of non-compliance has been identified, the substance group is of a high level of concern and/or suppliers can change during a license period.

In order to address the complexity of the product group under revision, and reflect front-runner approach, grouping of substances evaluated as of possible presence in the final product have been proposed. This approach is in line with the approach set by the EU Ecolabel Chemicals Horizontal Task Force: *Grouping of substances according to function: For the purposes of informing performance comparisons between substances and simplifying derogations it is proposed that, where appropriate, substances should be grouped by common function.*

Available scientific literature, case studies and industry restricted substances lists have been collated to identify the following group of chemicals of key relevance for screening against CLP hazard classification:

- biocides,
- dyestuff (including pigments and varnishes),
- auxiliary carriers, levelling, blowing and dispersing agents,
- fatiquoring agents,
- solvents,
- print thickeners, binders, stabilizers, and plasticizers,
- flame retardants,
- cross linking agents, adhesives
- water, dirt, and stain repellents.

The scope of restriction was developed using the following methodology[163]:

- Characterisation of the main materials, parts and components relevant to product group Footwear;
- Screening of functional additives, coatings and treatments applied to materials or components for their potential hazards and/or exposure risk along the products lifecycle.
- Identification of relevant Candidate List and Article 57 substances by reference to European Commission initiatives, and Member State intentions;

[163]For more information please refer to http://susproc.jrc.ec.europa.eu/footwear/docs/Technical%20Report_v3_October_2014_r.pdf http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf

- Collating information contained in the following standards for Footwear:
  - ✓ CEN ISO/TR 16178
  - ✓ EN 14602
  - ✓ CEN/TR 16417
- Publically available industry Restricted Substances Lists, Ecolabel types I of relevance to the product group Footwear.

The further rationales that support criterion proposal are grouped grouped in sections, as follows:

(A) Specific restriction for linings and socks;
(B) Derogations;
(C) Assessment and verification.

(A) Specific restriction for linings and socks

The introduction of "skin contact" definition under revised EU Ecolabel criteria for footwear was proposed during the 2nd AHWG Meeting. In general, during the posterior consultation process, "skin contact" was perceived as rather intuitive, as footwear, in general, is a product of individual use that remains in close and prolonged contact with the skin.

The hazard associated with a chemical substance or a mixture of substances refers to their intrinsic properties to cause a particular effect. Therefore, the possible migration of the substance from footwear and the capacity to penetrate into the skin should be assessed on the case by case bases, e.g. easy skin penetration of the substance is a prerequisite for inducing allergic reactions of the skin[164].

In this line, in relation to possible Ni migration and "prolonged skin contact" the Commission requested ECHA to investigate the issue and provide to the Commission and to the Member States a justified value/definition or any additional information that could clarify how to understand this “prolonged contact”. After reviewing and evaluating the available relevant scientific information the ECHA defined "Prolonged contact with the skin" as contact with the skin of nickel of potentially more than[165]:

- 10 minutes on three or more occasions within two weeks, or
- 30 minutes on one or more occasions within two weeks.

Some stakeholder disagreed with differentiating of requirements based on skin contact for footwear. Consequently, the proposal to introduce any "skin contact" definition was withdrawn.

During the technical analysis conducted, materials used in linings and socks were considered the very first contact elements between feet and the shoe upper. In order to ensure that the materials do not contain substances that meet CLP hazard classification and especially H317, it is proposed to verify each material used in shoe linings and socks, without considering 3 % w/w threshold limit.

(B) Derogations

The EU Ecolabel Regulation 66/2010[166] recognises that in certain circumstances restriction of some substances may not be technically or economically viable. Therefore, Article 6(7) of the Regulation states that: "*For specific categories of goods containing substances referred to in paragraph 6, and*

[164]Stahlmann, R. et all. (2006) Sensitising potential of four textile dyes and some of their metabolites in a modified local lymph node assay. Toxicology 219, p. 113
[165]https://echa.europa.eu/documents/10162/13641/nickel_restriction_prolonged_contact_skin_en.pdf
[166]OJ L 27, 30.1.2010, p. 1

only in the event that it is not technically feasible to substitute them as such, or via the use of alternative materials or designs, or in the case of products which have a significantly higher overall environment performance compared with other goods of the same category, the Commission may adopt measures to grant derogations from paragraph 6". In accordance with Article 6(7), no derogation shall be given concerning substances that meet the criteria of Article 57 of Regulation (EC) 1907/2006 and are identified according to the procedure described in Article 59(1) of that Regulation, and that present in mixtures, in an article or in any homogeneous part of a complex article in concentrations higher than 0.10 % (weight by weight).

The potential for granting derogations, in line with Article 6(7) of the EU Ecolabel Regulation (EC) 66/2010, needs to be carefully evaluated and adjusted to the actual state-of-the art and industry best practices. This is also an area in which the cost and complexity of the verification process needs to be considered.

Stakeholders' consultation was conducted to identify substances, which might need to be derogated for this product group. In particular, the industry was invited to submit derogations (motivated and accompanied by information on the function of the respective substance, content in the product and the additional rationale substantiating the request – reasons) for substances, which are classified as hazardous but cannot be substituted or eliminated, and meet the conditions set in Article 6(7).

During technical meetings it was suggested to harmonise, where applicable, the respective criterion with the derogations granted under the EU Ecolabel criteria for Textile. This would allow to reach equal ambition level (harmonized criterion) and also to simplify the verification by the Competent Body.

This approach was discussed and agreed during the technical meetings. The proposed derogations are based on the harmonisation with EU Ecolabel for Textile (Commission Decision 2014/350/EU)[167]. The EU Ecolabel for Bed Mattresses[168] was simultaneously cross-checked for derogations (for auxiliaries).

The derogations proposal was presented to the Hazardous Substances sub-group created as the supportive panel of experts, discussed during technical meetings as well as subjected to the further consultation.

- H334, H317: Dyes carry these classifications because of their characteristics in dust form. Given the minimal risk that in most cases properly dyed garments pose to consumers (as identified by the testing studies reviewed), the most relevant exposure pathway may therefore be their handling by workers.
- H412, H413: The Blue Angel has derogated dyes from these classifications because it would exclude most common dyes. Dye fastness and efficient rinsing off of fabrics to avoid the wash out of dyes during use of textile products, coupled with the degradation of residual dyes by wastewater treatment works at the manufacturing stage therefore appear to be the most practical ways of minimising exposure risks.
- Carriers and levelling agents: These substances are used to assist with the dyeing of polyester fabric. They can be classified with a significant number of H Statements, including H300-362. Consumer risk can be minimised by careful dosing and the efficient rinsing off of fabrics. Carriers can be avoided by dyeing polyester at higher temperature and pressures, but this increases other environmental impacts through greater energy use.

[167]OJ L 174, 13.6.2014, p. 45
[168]OJ L 184, 25.6.2014, p. 18

- Finishes: Some easycare, softeners, water repellents and flame retardants are classified with acutely toxic, CMR and aquatic environment hazards that may lead to exposure of workers from VOC emissions in the factory, the environment from the rinsing off of fabrics and consumers as a result of leaching from a fabric during use. Many of these hazard statements are identified in the proposed EU Ecolabel criteria. Exposure can be minimised at source in the factory through adequate health and safety measures, process control to ensure fixation, and through the selection of finishes with a high level of fastness.
- Coatings, laminates and membranes: Some of these additional elements of a fabric or product may, depending on their content, contain phthalates and perfluorocarbons. Relevant acute toxicity, CMR and aquatic environment hazard statements are identified in the current criteria. Specific restricted substances are now contained within the proposed RSL.

The following modifications were introduced after the stakeholders' consultation[169]:

- PET production requires the use of catalysts such as antimony oxides or antimony acetate to regulate polymerisation. The derogation for the use of ATO in polyester textile backcoatings and flame retardants was removed, being considered of no relevance for the product group footwear. The most common catalyst of PET production is antimony (Sb). Antimony is present in 80 – 85% of all virgin PET. Antimony used in the production of PET fibres becomes chemically bound to the PET polymer. Antimony might however be present as a residue in polyester. Its content in commercial polyester fibres is cited to be in the range of 200 to 300 ppm. Requirement on residual antimony content in raw polyester fibre was added to the RSL (260 mg/kg) in line with EU Ecolabel for textile according to the Commission Decision 2014/350/EU. This ensures that requirement of Criterion 5(b) is met.
- Flame retardants: The daily footwear does not require specific heat protection. Therefore, responding to the inclusion of PPE in the product group scope, use of flame retardants could be considered only in case of safety footwear when particular product performance requirements need to be met: e.g. fireman or welder boots (PPE Category III -for use against "mortal danger"). Limited feedback was provided on this criterion. During the consultation process, it was stated that flame retardants are not commonly used to achieve footwear flame retardancy. The previously proposed derogation was build up on the base of the information gathered during EU Ecolabel criteria development for textile. Because of the limited relevance to the product group footwear and lack of specific information, it has been proposed to remove the derogation. The manufacturer should be aware of (or can identify) which substances are used to fulfil specific protective requirements required. The possible use of flame retardants is covered by Restricted Substances List (Criterion 6).

(C) Assessment and verification

The complete picture of a substances hazard classification may not be easily available. Based on the JRC-IPTS discussions with ECHA it has been identified that this may be the case because of a number of factors:

- Substances are progressively being registered under REACH and so a substance may not be registered yet;

[169]In reference to Draft Criterion proposal (October 2014) available at: http://susproc.jrc.ec.europa.eu/footwear/docs/Annex_proposal_Footwear_October%202014_v2.pdf

- Data gaps may exist in the hazard classifications for a substance and these may only be filled once testing proposals have been evaluated and agreed by ECHA;
- Where a substance has not been registered there may only be self-classifications to use as a reference point. These can be divergent depending on the state/form of the substance and, moreover, depending on the knowledge/expertise of the notifier they may not correspond to the final EU classification;
- Joint submissions and entries in the REACH registration database tend to provide greater confidence in the hazard classification because, as is encouraged by the REACH system, test data is shared by manufacturers;
- Harmonised classifications are only made where Member States or stakeholders make a proposal, as a result harmonisation may only focus on specific hazards associated with a substance.
- Adaptations to Technical Progress (ATPs) have resulted in changes to the classification rules, which may mean that self-classifications are incorrect.
- Data for low tonnage bands may more limited so, for example, there is the potential for gaps for hazards such as CMR which require longer term test data.

Because of these factors it was decided that, with input from ECHA, a decision making tool should be developed in order support the evaluation process. The resulting decision tree is presented in Figure 8.

The applicant should provide information from the product screening against the latest classification, followed by verification of the REACH registered data base. In case of data missing the number of options is given to provide information sufficient to conclude on the classifications. Accordingly, assessment and verification text was adapted. Whilst the option exists to accept the self-classifications made, cross checking a hazard assessment by an ECHA peer agency provides a potential means of filling the classification gaps and also highlights potential discrepancies in the self-classification for certain end-points.

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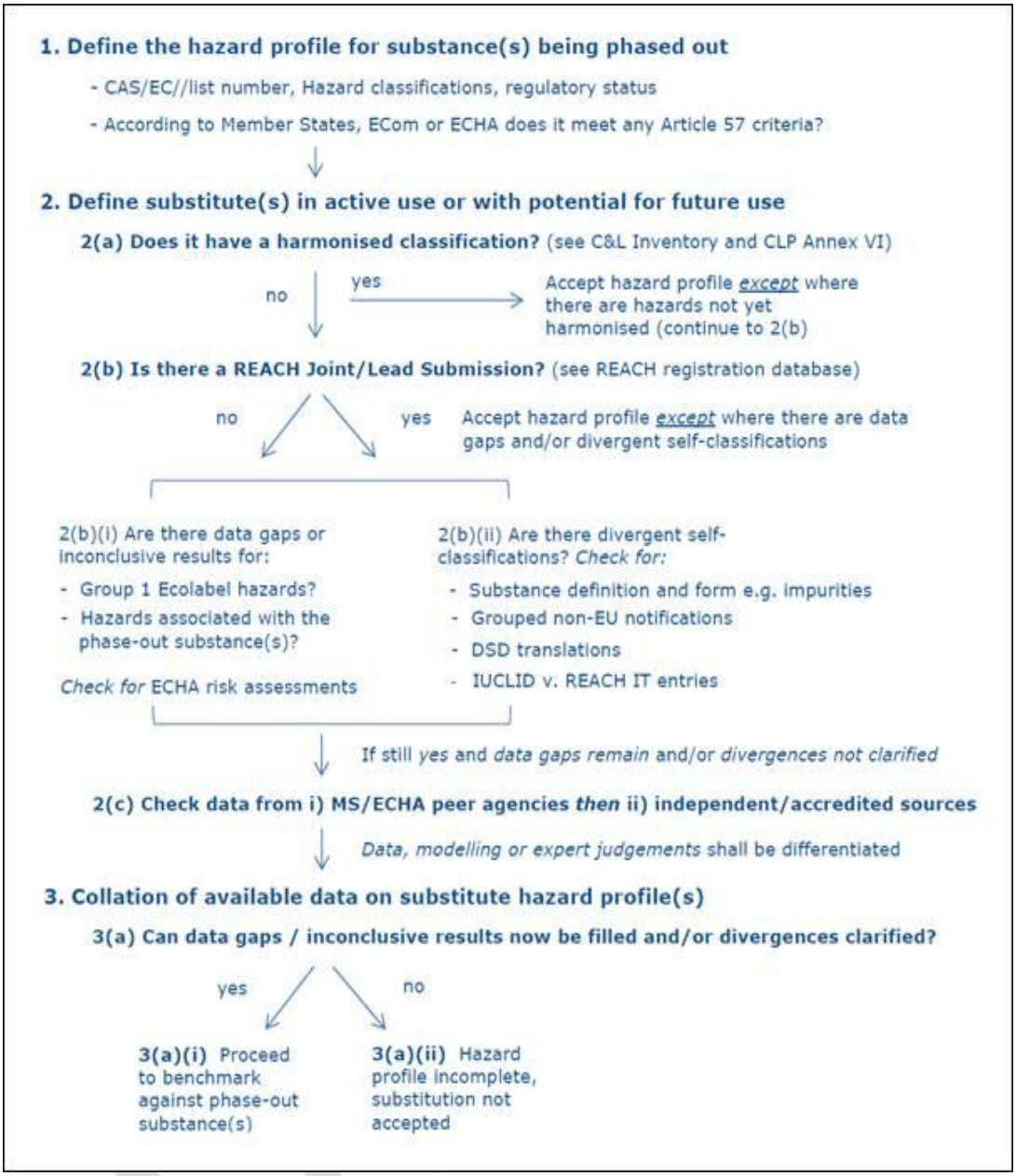

Figure 9. Decision tree used to determine hazard classifications

3.6 CRITERION 6: Restricted Substance List

Proposed criterion:

Criterion 6 – Restricted Substances List

The criterion shall apply when any homogenous material or article used in shoe uppers and/or shoe soles is greater than 3.0% weight by weight of either component.

The final product, homogenous materials or articles that compose the final product, or production recipes used, as applicable, shall not contain substances specified under the Restricted Substances List (RSL). Applicability, scope of restrictions, verification and testing requirements are provided in the RSL for each substance or group of substances.

The RSL can be found in Appendix I to this Decision.

The RSL shall be communicated by the applicant to all the suppliers of materials or articles that will be used as components of the ecolabelled product.

Textile products that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU are considered being compliant with Criterion 6.

***Assessment and verification**: the applicant and their material supplier(s), as appropriate, shall provide a declaration of compliance with the RSL supported by evidence as applicable to the substances and production recipes used to manufacture the composing material, or the final product. The requirements are indicated in the Restricted Substances List (RSL) and include declarations obtained from those responsible for related production stages, declarations from chemical suppliers and test results from laboratory analysis of samples of the final product. Declarations obtained from production stages shall be supported by declaration of no-use, or Safety Data Sheets (SDS) for production recipes and, where necessary, declarations from chemical suppliers, as applicable.*

Safety Data Sheets shall be completed in accordance with the guidance in Section 10, 11 and 12 of Annex II of Regulation (EC) 1907/2006 (Requirements for the Compilation of Safety Data Sheets). Incomplete Safety Data Sheets (SDS) will require supplemental declarations from chemical suppliers.

Laboratory analysis of the final product shall be performed for specific product lines, where specified in the RSL and according to the test methods listed. Laboratory testing shall be carried out for each product line based on random sampling. Where specified, testing shall be carried out annually during the license period in order to demonstrate ongoing compliance with the RSL criterion with results then communicated to the relevant Competent Body. Test data obtained for the purposes of compliance with industry RSLs and other footwear certification schemes shall be accepted where the test methods are equivalent. Failure of a test result during a license period shall result in retesting for the specific product line. If the second test fails, then the license shall be suspended for the specific product line. Remedial action consisting of an evaluation report identifying the reasons for test failure followed by achievement of a compliant test result will be required in order to re-instate the license.

Where EU Ecolabel textile products are used, the applicant shall provide a copy of the EU Ecolabel certificate showing that it was awarded in accordance with the Commission Decision 2014/350/EU.

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Rationales:

Out of the many chemicals used within footwear supply chain from raw materials production to final product assembly, not all will be found in the finished product. Their possible presence in the final product mostly depends on the specific physical and chemical properties, chemical interaction, and when they are used in the process, e.g. most chemicals in the finished textile derive from the dyeing/printing and finishing during the manufacturing process[170].

The European rapid alert system for non-food dangerous products (RAPEX) reports products that are hazardous to consumer health on its system for a number of hazardous chemicals (but not all), when levels of these chemicals exceed the regulatory limits, as well as the regulatory or voluntary action taken. The RAPEX findings demonstrated that poorly regulated production can also result in greater risks of exposure because substances restricted by REACH may be used e.g. azo dyes which cleave to aryl amines.

A search performed in March 2014 produced 87 results of chemical risk since 2010 (out of a total of 14,075 total entries) with the key word 'footwear' or 'shoes'[171]:

- Cr(VI): 121 entries
- DMF: 76 entries
- PCP: 5 entries
- Azo dyes: 9 entries
- Phtalates: 4 entries
- Nickel realese: 4 entries

Other hazardous chemicals, which are also found in footwear products do not appear to be included on the RAPEX system. For example, there are no entries for nonylphenol ethoxylates, the perfluorinated chemicals PFOS and PFOA, organotins or flame retardants.

The substances screening matrix applied for the purpose of the EU Ecolabel criteria revision for Footwear (Criterion 5 (b), and 6) was structured in line with EU Ecolabel Chemical Horizontal Task Force approach. The screening results were then compiled into a proposal for the Restricted Substances List (RSL) as reflected in the Annex IV. Functional substances are identified as they relate to sub-components and then substitutions and/or restrictions are identified based on publicly available information collated according to the following scheme[172]:

1. Component and sub-components;
2. Substance group;
3. Function;
4. What is used (Which substances are currently used);
5. Best practice identified (Substitutions and/or restrictions identified that have been implemented in mainstream products);
6. Summary evaluation of evidence (Discussion of evidence supporting substitutions and/or restrictions);
7. Questions and information gaps (For follow-up with stakeholders in order to address information gap).

[170] KEMI 2013

[171] http://ec.europa.eu/consumers/safety/rapex/alerts/main/index.cfm?event=main.search

[172] Detailed information on the methodology and substances identified within the course of the criteria revision can be found in the Draft Technical Report v.3. available at: http://susproc.jrc.ec.europa.eu/footwear/docs/Technical%20Report_v3_October_2014_r.pdf

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The proposed criterion summarizes and reflects the up-to-date information gathered from the product group screening against the legal requirements, industrial restricted substances lists, other Ecolabels type I of relevance, and industry best practices. It also takes into account the complexity of the footwear supply chain, and verification ability of footwear manufacturers. The Criterion mainly focuses on specific hazardous substances that in line with the information collated are likely to remain in the final product[173]. The proposed structure of the criterion responds to industry best practices in chemicals managements within the supply chain. The list is presented in a form that is familiar to suppliers and apparel industry.

The make a criterion workable it is necessary that the applicant/footwear manufacturer distribute the RSL requirements down the supply chain. Applicants and/or material supplier should verify the use of identified chemicals during specified production stages, or to perform testing of the final product/material. The possible verification should be done by declarations of no use and/or Safety Data Sheet obtained from material suppliers, or where specified by laboratory testing, as applicable. Testing already carried out in support of other certifications shall be accepted in order to reduce the burden as long as the same testing method is used. Where testing is required it is to be carried out at the time of application. It was discussed within the HS sub-group that for specific substances such as extractable metals or chromium (VI) content test should be carried out annually to ensure continued compliance.

Parts of the product composed of textiles that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU are considered compliant with this criterion. Still the final product testing should be performed, where applicable.

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[173]The detailed analysis of substances listed under proposed Appendix to Criterion 6 can be found in the Technical Report v.3 that reflects the overall criteria revision process: http://susproc.jrc.ec.europa.eu/footwear/docs/Technical%20Report_v3_October_2014_r.pdf

3.7 CRITERION 7: Parameters contributing to durability

Proposed criterion:

Criterion 7 – Parameters contributing to durability

Occupational and safety footwear shall carry the CE mark, in accordance with Council Directive 89/686/EEC.

All other footwear shall meet the requirements indicated in Table 5.

Assessment and verification*: the applicant shall provide a declaration of compliance supported by test reports. .*

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Table 5: Durability parameters

		General sports	School footwear	Casual	Men's town	Cold weather footwear	Women's town	Fashion	Infants	Indoor
Uppers flex resistant: (kc without visible damage)/*EN 13512*		Dry = 100 Wet = 20	Dry = 100 Wet = 20	Dry = 80 Wet = 20	Dry = 80 Wet = 20	Dry = 100 Wet = 20 – 20° = 30	Dry = 50 Wet = 10	Dry = 15	Dry = 15	Dry = 15
Uppers tear strength (Average tear force, N)/*EN 13571*	Leather Other materials	≥80 ≥40	≥60 ≥40	≥60 ≥40	≥60 ≥40	≥60 ≥40	≥40 ≥40	≥30 ≥30	≥30 ≥30	≥30 ≥30
Outsoles flex resistance/ *EN 17707*	Cut growth (mm) Nsc = no spontaneous crack	≤4 Nsc	≤4 Nsc	≤4 Nsc	≤4 Nsc	≤4 Nsc at – 10 °C	≤4 Nsc			
Outsoles abrasion resistance/ *EN 12770*	D ≥0,9 g/cm³ (mm³) D < 0,9 g/cm³ (mg)	≤200 ≤150	≤200 ≤150	≤250 ≤170	≤350 ≤200	≤200 ≤150	≤400 ≤250			≤450 ≤300
Upper-sole adhesion (N/mm)/ *EN 17708*		≥4,0	≥4,0	≥3,0	≥3,5	≥3,5	≥3,0	≥2,5	≥3,0	≥2,5
Outsoles tear strength (Average strength, N/mm)/*EN 12771*	D ≥ 0,9 g/cm³ D < 0,9 g/cm³	8 6	8 6	8 6	6 4	8 6	6 4	5 4	6 5	5 4
Colour fastness of the inside of the footwear (lining or inner face of the upper). Grey scale on the felt after 50 cycles wet/ *EN ISO 17700*		≥2/3	≥2/3	≥2/3	≥2/3	≥2/3	≥2/3		≥2/3	≥2/3
Lining and insoles abrasion resistance/ *EN 17704*		>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 25 600 dry >=12 800 wet	>= 8 400 dry >=1 600 wet

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Rationales:

EU Ecolabel criteria for footwear are meant to provide product of high environmental performance and ensured durability. Beyond product technical specifications, the durability of shoes is also subjected to consumer behaviour, product intended destination (e.g. protective shoes), and fashion trends. The potential improvement to longevity of the product is related to the use of appropriate materials and assembling processes that extend footwear lifetime.

The baseline LCA case study assumed that two pairs of footwear are required to fulfil the functional unit; that is to say, a consumer needs two pairs of footwear during one year[174]. Based on this assumption, usage of the same pair of footwear for 12 months (6 months longer than the base case scenario) would yield an improvement potential of 50 % on all impact categories (the environmental impacts would be reduced by half).

Existent performance parameters[175] were revised and compared with the technical specification provided by industry stakeholders. The current limit values and existing test methods were assessed as ambitious and up-to-date. Following the stakeholder's consultation, the requirement for testing of shoe insoles abrasion in accordance with EN 17704 was added. It was assessed that[176], soles wear out due to early abrasion and a repair by replacement is often not possible, because a corresponding bonding is not feasible.

Slip resistance proposed to be integrated into criteria is covered by test method for PPE footwear (ISO 20344). This technical specification is considered to fall under the scope of PPE Council Directive 89/686/EEC therefore independently of EU Ecolabel criteria must fulfil respective performance requirements.

Footwear categories are specified in respective norms (as indicated in Table 5), therefore the additional classification into sub-groups was perceived as not necessary. Injection moulded articles were advised to be classified into existent categories and their respective limit values. The proposal is to specify a minimum limit value for each selected test method.

Table 6. Test methods for footwear durability

EN 13512	Footwear. Test methods for uppers and lining. Flex resistance
EN 13571	Footwear. Test methods for uppers, lining and insocks. Tear strength
EN 17707	Footwear. Test methods for outsoles. Flex resistance
EN 12770	Footwear. Test methods for outsoles. Abrasion resistance
EN 17708	Footwear. Test methods for whole shoe. Upper sole adhesion
EN 12771	Footwear. Test methods for outsoles. Tear strength
EN ISO 17700	Footwear. Test methods for uppers, linings and in socks. Colour fastness to rubbing
EN 17704	Footwear. Test methods for uppers, linings and in socks. Abrasion resistance

[174]182.5 days during which the pair of footwear is worn (6 months worn every day, 1 year worn every other 2 days…). This approach comes from the PCR of ADEME-AFNOR and is the default scenario when performance tests have not been done.

[175]In reference to the EU Ecolabel criteria for Footwear under revision (according to Commission Decision 2009/563/EC, OJ L 196, 28.7.2009, p. 27–35)

[176]BIO by Deloitte (2015) Study on Socioeconomic impacts of increased reparability – Interim report. Prepared for the European Commission, DG ENV.

3.8 CRITERION 8: CORPORATE SOCIAL RESPONSABILITY

Proposed criterion:

Criterion 8. Corporate Social Responsibility

Requirements in this criterion apply to the final footwear assembly site.

Having regard to the International Labour Organisation's (ILO) Tripartite Declaration of Principles concerning Multinational Enterprises and Social Policy, the UN Global Compact (Pillar 2), the UN Guiding Principles on Business and Human Rights and the OECD Guidelines for Multi-National Enterprises, the applicant shall obtain third party verification supported by site audits that the applicable principles included in the ILO fundamental conventions and in the instruments identified in the supplementary provisions below have been respected at final footwear assembly site for the product.

Fundamental conventions of the ILO:

(i) Child Labour:

- Minimum Age Convention, 1973 (No. 138)
- Worst Forms of Child Labour Convention, 1999 (No. 182)

(ii) Forced and Compulsory Labour:

- Forced Labour Convention, 1930 (No. 29) and 2014 Protocol to the Forced labour Convention
- Abolition of Forced Labour Convention, 1957 (No. 105)

(iii) Freedom of Association and Right to Collective Bargaining:

- Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
- Right to Organise and Collective Bargaining Convention, 1949 (No. 98)

(iv) Discrimination:

- Equal Remuneration Convention, 1951 (No. 100)
- Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

Supplementary provisions:

(v) Working Hours:

- ILO Hours of Work (Industry) Convention, 1919 (No. 1)

(vi) Remuneration:

- ILO Minimum Wage Fixing Convention, 1970 (No. 131)
- Living wage: The applicant shall ensure that wages paid for a normal work week shall always meet at least legal or industry minimum standards, are sufficient to meet the basic needs of personnel and provide some discretionary income. Implementation shall be audited with reference to the SA8000 [177] guidance on "Remuneration";

(vii) Health & Safety

[177] Social Accountability International, *Social Accountability 8000 International Standard*, http://www.sa-intl.org

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- ILO Safety in the use of chemicals at work Convention, 1981 (No.170)
- ILO Occupational Safety and Health Convention, 1990 (No.155)

In locations where the right to freedom of association and collective bargaining are restricted under law, the company shall recognise legitimate employee associations with whom it can enter into dialogue about workplace issues.

The audit process shall include consultation with external stakeholders in local areas around sites, including trade unions, community organisations, NGOs and labour experts. The applicant shall publish aggregated results and key findings from the audits online in order to provide evidence of their supplier's performance to interested consumers.

***Assessment and verification**: the applicant shall provide a declaration of compliance together with copies of certificates and supporting audit reports for each final product assembly plant for the model(s) to be ecolabelled.*

Third party site audits shall be carried out by auditors qualified to assess the compliance of the footwear industry supply chain with social standards or codes of conduct. Valid certifications from schemes or processes that audit compliance with the applicable principles of the listed fundamental ILO Conventions, together with the supplementary provisions on working hours, remuneration and health & safety, shall be accepted.

Rationales:

The introduction of the new criterion that refers to social requirements and working conditions was generally welcomed by stakeholders. The EU Ecolabel Regulation 66/2010, Art 6.3. specifies that: *"EU Ecolabel criteria shall be determined on a scientific basis considering the whole life cycle of products. In determining such criteria, the following shall be considered: (...) e) where appropriate, social and ethical aspects, e.g. by making reference to related international conventions and agreements such as relevant ILO standards and codes of conduct."*

The common trends of outsourcing practices have raised within the recent years the importance of Corporate Social Responsibility (CSR) for overseas footwear and apparel manufacturers/suppliers. Some brands have received increasing attention from Governments, NGOs and consumers in relation to their social performance. Among the surveyed stakeholders, close to 40% have signed a declaration such as the "Global Compact"[178], or equivalent, or work with an international scheme (SA8000, ISO26000,...), and a few hold a certification and/or are certified through an industry or third-party CSR scheme.

The international standard SA8000 is an auditable certification standard. Based on international workplace norms of International Labour Organisation (ILO) conventions, the Universal Declaration of Human Rights and the UN Convention on the Rights of the Child, it entails nine elements to measure social compliance. The third party accredited certification scheme foresees audits being conducted by approved SA8000 auditors. The steps of certification process are reflected on Figure 9.

[178]https://www.unglobalcompact.org

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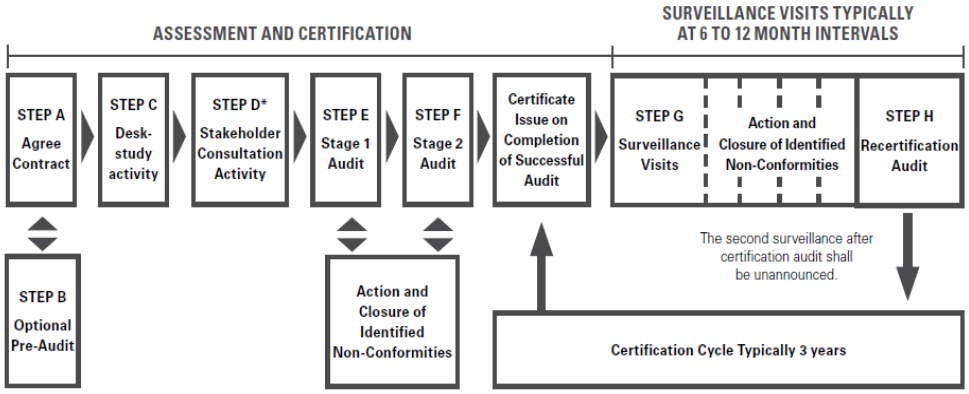

Figure 10. SA8000 certification process

The standard includes the eight fundamental labour conventions but goes far beyond them including also principles on health and safety, disciplinary practices, working hours, remuneration (by especially addressing "living wages" and "overtime payment" and management systems. The SA8000 standard is viewed as the most globally accepted independent workplace standard[179]. SA8000 standards and their basis of ILO fundamental and labour convention are described in Table 6.

Table 7. SA8000 standard and their basis of ILO fundamental and further labour conventions

SA8000	8 ILO fundamental labour conventions	Further ILO labour conventions relevant to SA8000 implementation and auditing
Child Labour: No use or support of child labour; policies and written procedures for remediation of children found to be working in situation; provide adequate financial and other support to enable such children to attend school; and employment of young workers conditional.	• **Minimum Age** Convention (No. 138) • Worst Forms of **Child Labour** Convention (No. 182)	
Forced and Compulsory Labour: No use or support for forced or compulsory labour; no required 'deposits' - financial or otherwise; no withholding salary, benefits, property or documents to force personnel to continue work; personnel right to leave premises after workday; personnel free to terminate their employment; and no use nor support for human trafficking.	• **Forced Labour** Convention (No. 29) • Abolition of **Forced Labour** Convention (No. 105)	
Health and Safety: Provide a safe and healthy workplace; prevent potential occupational accidents; appoint senior manager to ensure OSH; instruction on OSH for all personnel; system to detect, avoid, respond to risks; record all accidents; provide personal protection equipment and medical attention in event of work-related injury; remove, reduce risks to new and expectant mothers; hygiene- toilet, potable water, sanitary food storage; decent dormitories- clean, safe, meet basic needs; and worker right to remove from imminent danger.		• Occupational Safety and Health Convention (No. 155) • Occupational Health Services Convention (No. 161) • Safety in the Use of Chemicals at Work Convention (No. 170); Prevention of Major Industrial Accidents Convention (No. 174) • Asbestos Convention (No. 162); White Lead (Painting) Convention (No. 13); Radiation Protection Convention (No. 115); Benzene Convention (No. 136) • Occupational Cancer Conv. (No. 139); Guarding of Machinery Conv. (No. 119); Maximum Weight Conv. (No. 127); Maternity Protection Conv. (No. 183 rev.); Medial Examination of Young Persons

[179]www.sgs.com/~/media/Global/Documents/Brochures/SGS_SSC_NG_SA_8000_web_LR.pdf

		(Industry) Conv. (No. 77)
Freedom of Association and Right to Collective Bargaining: Respect the right to form and join trade unions and bargain collectively. All personnel are free to: organize trade unions of their choice; and bargain collectively with their employer. A company shall: respect right to organize unions & bargain collectively; not interfere in workers' organizations or collective bargaining; inform personnel of these rights & freedom from retaliation; where law restricts rights, allow workers freely elect representatives; ensure no discrimination against personnel engaged in worker organizations; and ensure representatives access to workers at the workplace.	• **Freedom of Association** and Protection of the Right to Organise Convention (No. 87) • Right to Organise and **Collective Bargaining** Convention (No. 98)	• Workers' Representatives Convention (No. 135) • Collective Bargaining (No. 154)
Discrimination: No discrimination based on race, national or social origin, caste, birth, religion, disability, gender, sexual orientation, union membership, political opinions and age. No discrimination in hiring, remuneration, access to training, promotion, termination, and retirement. No interference with exercise of personnel tenets or practices; prohibition of threatening, abusive, exploitative, coercive behaviour at workplace or company facilities; no pregnancy or virginity tests under any circumstances.	• **Discrimination** (Employment and Occupation) Convention (No. 111) • Equal **Remuneration** Convention (No. 100)	• Workers with Family Responsibilities Conv. (No. 156); Vocational Rehabilitation and Employment (Disabled Persons) Conv. (No. 159); Indigenous and Tribal Peoples Conv. (No. 169); Maternity Protection Conv. (No. 183); Migration for Employment Conv. (No. 97 rev.); Night Work (Women) Convention (Nr. 89 rev.)
Disciplinary Practices: Treat all personnel with dignity and respect; zero tolerance of corporal punishment, mental or physical abuse of personnel; no harsh or inhumane treatment.		
Working Hours: Compliance with laws & industry standards; normal workweek, not including overtime, shall not exceed 48 hours; 1 day off following every 6 consecutive work days, with some exceptions; overtime voluntary, not regular, not > 12 h/w; required overtime only if negotiated in CBA.		• Hours of Work (Industry) Convention (No. 1)
Remuneration: Respect right of personnel to living wage; all workers paid at least legal minimum wage; wages sufficient to meet basic needs & provide discretionary income; deductions not for disciplinary purposes, with some exceptions; wages and benefits clearly communicated to workers; paid in convenient manner – cash or check form; overtime paid at premium rate; prohibited use of labour-only contracting, short-term contracts, false apprenticeship schemes to avoid legal obligations to personnel.		• Minimum Wage Fixing Convention (No. 131)
Management Systems: Facilities seeking to gain&maintain certification must go beyond simple compliance to integrate the standard into their management systems & practices.		

During the consultation process it was stated that the verification of the criterion is complicated mainly because of complexity of the supply chain coupled by the common practices of production outsorsing. This would raise challenges, and result in additional workload and discourage uptake. It was therefore proposed to introduce the criterion gradually, focusing on these part(s) of the production process that is/are feasible to be verified. Considering the geographical dislocation of footwear manufacturing (including component materials) clear boundaries were proposed to be established.

After consultation with industry stakeholders and considering the specificity of the product group footwear it is proposed to require criterion verification referring to the final product assembly site. Addressing 9 fundamental rights from ILO convention was assessed as practical and feasible criterion.

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3.9 CRITERION 9: Packaging

Proposed criterion:

Criterion 9. Packaging

This criterion applies only to primary packaging, as defined in the Directive 94/62/EC.[180]

9(a) Cardboard and paper

Cardboard and paper used for the final packaging of footwear shall be made of 100% recycled material

9(b) Plastic

Plastic used for the final packaging of footwear shall be made of at least 80% of recycled material.

9(c) Textile

Textile used for the final packaging of footwear shall be made of at least 70% of recycled material.

***Assessment and verification**: the applicant or packaging supplier, as appropriate, shall provide a declaration of compliance specifying the material composition of the packaging and the share of recycled and virgin material.*

Rationales:

Although the packaging phase has not been highlighted as a key environmental hotspot through the LCA literature review and the specific LCA analysis, the improvement of environmental performance of packaging decreases the resource consumption by, among others, reduction of the quantity of material employed or use of packaging made of recycled materials.

One of the key parameters identified to reduce the quantity of packaging is to optimize its size and the weight. The primary function of packaging is to protect the product from being damaged during transport and storage. The introduction of horizontal requirement on the quantity and volume of packaging use is hindered by the individual product requirements. The assessment if the quantity of packaging used is adequate refers rather to case-by-case analysis being subjected to product specificity, material fragility and transport conditions.

The vast majority of footwear packaging used on the market is assumed to be corrugated cardboard. According to the information gathered from stakeholders most boxes or bags for footwear would already be made with 100% recycled fibres. In 2012, the average recycled content for corrugated boxes in Europe was 94.2% in 2012[181].

The paper industry assessed as relevant to require packaging recyclability, so as to allow another round in the recycling loop. The standard EN 13430 sets the criteria for packaging recoverable by material recycling[182]. Suitability for available recycling technology is defined as: to ensure that the

[180]European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste (OJ L 365, 31.12.1994, p. 10)

[181]Personal communication

[182]EN 13430 Packaging - Requirements for packaging recoverable by material recycling

design of packaging makes use of materials or combinations of materials which are compatible with the known, relevant and industrially available recycling technologies.

Whereas the paper itself is always recyclable, the choice of adhesives and printing inks in the converting process (making flat paper into final 3D packaging) may render the final packaging non-recyclable. Considering that the product group under revision is ¨footwear¨ setting complex requirement for packaging was considered as additional burden for footwear manufacturer.

Blue Angel (RAL-UZ 30a)[183] requires at least 80% of recycled plastics (post-consumer material) in the finished products. Blue Angel refers to EuCertPlast[184], a European audit scheme for the certification for post-consumer plastics recyclers. EuCertPlast sets the requirement to ensure that plastic bag is really made of post-consumer plastic. The certification works according to the European Standard EN 15343:2007 and aims to encourage an environmentally friendly recycling of plastics by standardizing it, particularly focusing on the process for traceability and assessment of conformity and recycled content of recycled plastics. Following the industry feedback, plastics bags can be made with 100% post-consumer plastic. Most of bags are made of LDPE (no multilayers) being 100% recyclable.

Having in mind the fact that environmental benefits of biodegradable and compostable plastics are not straightforward[185,186], especially in terms of very limited capacity of footwear manufacturer to control user behaviors, it is suggested not to set requirement on the use of biodegradable or compostable plastics.

The requirement of 70% of recycled content in the textile material that is used as primary packaging, searches for harmonisation with EU Ecolabel for textile and also addresses the approach integrated into Criterion 1 (b) and 1 (d): Specified fibre that contains at least 70% by weight of recycled content is exempted from the requirement of the Criterion.

Criterion aims at encouraging material recycling. Post-consumer waste is produced by end-user of the given material stream. Pre-consumer or post-industrial waste, or industrial scrap, refers to waste generated during converting or manufacturing processes, and sent by industry for disposal, which is not fed back into the production line[187]. The pre-consumer residues include the material generated by industry, either in the production of the polymers or when using or transforming them into the final product. The pre-consumer products generally consist of a unique feedstock, and are well identified, clean and homogeneous. In contrast, the post-consumer residues are a mixture of different plastics generally contaminated with dirt or other residues thus making recycling more difficult, although feasible[188]. Waste Framework Directive 2008/98/EC[189] sets the basic concepts and definitions related to waste management. Accordingly, Art 3. (17) defines recycling as: *any recovery operation by which waste materials are reprocessed into products, materials or substances whether for the original or other purposes. It includes the reprocessing of organic material but does not include energy recovery and the reprocessing into materials that are to be used as fuels or for backfilling operations*. Furthermore, depending on the way the industrial process is organised pre-consumer waste might be refer as by – product being *a substance or object, resulting from a production process, the primary aim of which is not the production of that item*.

It is therefore proposed to stick to the official nomenclature in line with Waste Framework Directive referring to "recycling" without further distinction of the material origin.

[183]http://www.blauer-engel.de/en/products/home-living/products-made-from-recycled-plastics/products-made-of-recycled-plastics-edition-may-2012
[184]http://www.eucertplast.eu/en/)
[185]http://www.futurenergia.org/ww/en/pub/futurenergia/chats/bio_plastics.htm
[186]http://ec.europa.eu/environment/waste/pdf/green_paper/green_paper_en.pdf
[187]http://ec.europa.eu/environment/waste/studies/pdf/plastics.pdf
[188]Brems, A., et al. (2012) Recycling and Recovery of Post-Consumer Plastic. THERMAL SCIENCE, 16 (3), pp. 669-685
[189]OJ L 312, 22.11.2008, p. 3–30

3.10 CRITERION 10: Information on the packaging

Proposed criterion:

10(a) User Instructions

The following information (or equivalent text) shall be supplied with the product:

- Cleaning and care instruction specified for each product.
- 'Repair your footwear rather than throw them away. This is less damaging to the environment.'
- 'Please dispose of your footwear in appropriate local recycling facilities .'

Assessment and verification: *the applicant shall provide a packaging sample or the proposed artwork showing the user instructions that will be supplied with the product.*

10(b) Information appearing on the eco-label

The optional label with text box shall contain the following text:

(i) Natural origin raw materials sustainably managed (in case Criterion 1 applies)
(ii) Reduced pollution in production processes
(iii) Minimized use of hazardous substances
(iv) Tested for durability

The guidelines for the use of the optional label with text box can be found in the "Guidelines for use of the Ecolabel logo" on the website:
http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf

Assessment and verification: *the applicant shall provide a declaration of compliance together with a sample of the product label or the proposed artwork showing where the EU Ecolabel is placed.*

Rationales:

Ecolabel Regulation No 66/2010 specifies that "*EU Ecolabel criteria shall include requirements intended to ensure that the products bearing the EU Ecolabel functions adequately in accordance with their intended use*. The objective of this criterion is to give the consumer valuable information on the product: its environmental performance and proposed maintenance." For the document clarity the former Criterion 8 and 9[190] were merged and divided into sub-criteria.

Some stakeholders suggested providing more information to the consumers, especially in regards to instructions on how to improve the footwear durability and how to manage the post-consumer waste disposal. The feasibility to introduce defined text for consumer instruction in the criterion was doubted, as manufacturer should freely decide what appears on the packaging and then address what specific treatment would be required for the footwear lifetime extension, also considering that different shoes would require different specifications. Accordingly, the specific instruction of the product care should be defined by manufacturer. The statement that refers to footwear disposal and possible extension of its life time was added accordingly.

[190] In reference to the EU Ecolabel for Footwear under revision (Commission Decision 2009/563/EC)

4 FURTHER CONSIDERATIONS

Within the preliminary discussions on the criteria development several areas that are not included in the final criteria proposal were discussed The rationales behind are summarized in the subsequent chapters.

4.1 Energy management

From the life cycle perspective, the energy consumption is one of the "hot spots" identified within the footwear LCA base-case study. For all selected categories, the impacts are mostly due to the production and supply of input materials. The contribution of energy consumption in the production has been roughly estimated to vary from 5 % to 40 %[191].

Task 4 of the Background Report simulates[192] the theoretical environmental benefits scenario possible to be achieved when using only energy from cleaner sources (assumed as wind power) instead of the European mix[193]. According to EUROSTAT data, renewable energy sources have undergone remarkable change in the energy mix as their gross inland consumption of primary energy has increased by 74% between 2000 and 2010, reaching 9.8% of EU-27 share. Even if considering the increase in the use of energy from cleaner sources, it is still below the EU Ecolabel targeted market share of 10-20%. Additionally, the contribution of renewable energy to primary energy supply varies substantially by country and region, and depends, to a large degree, on the structure of its energy system, the availability of natural resources for primary energy production, and the structure and development of each economy.

Investigating with stakeholders how to best address energy consumption through a revised criterion, it turned out to be impossible to establish a model which relates the large number of variables (materials diversity, footwear typology and intended destination, specific machinery and technologies, as well as hand craft processes) to individual generic pairs of shoes, and to consequently establish one or more benchmarks (energy consumption threshold value) in the production phase.

The main barriers identified to introduce specific energy consumption threshold within the current EU Ecolabel criteria revision for Footwear are as follows:

- For the purpose of the LCA analysis included in the Background Report, for the manufacturing of footwear, aggregated energy input (electricity and heat) for the process was considered. An average value and a range of variations were calculated on the base of finite range of data provided, and ADEME-AFNOR PCR for footwear. Due to the limited data available, energy figures can serve for the purposes of the LCA but they cannot be considered as statistically representative;

[191] For more information about bill of materials, assumptions of the LCA model and main outcomes please refer to Background Report (p. 182-217, and 305-352) available at: http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf

[192] Limited data availability. The level of aggregation of the available information did not allow for the quantification of the energy consumption for various steps of the manufacturing. Production of footwear was considered in the LCA model as a single process, i.e. without modelling individual sub-processes.

[193] Based on an estimated electricity consumption of 2 kWh / pair of shoes following stakeholder feedback

- The overall numerical data gathered within the revision process indicate that the range of energy consumption in the production stage varies from 0.5 – 6.7 kWh/pair, depending on the type of shoes and of manufacturing processes applied;

- Data reported from license holders reflects the Average Energy Consumption (AEC) calculated according to Standard EN 14602. To allocate single machinery usage (and related impacts) to a specific shoe is complicated and labour intensive due the complex layout of premises and constant moving of different models of shoes during the production between machineries (in order to maintain machineries working continuously for production and energy efficiency reasons), and accordingly is not practiced in shoe manufacturing;

- It was found that footwear manufacture is labour intensive, with stages that involve machines requiring human operation and other stages that are typically completed by hand e.g. gluing. The type and number of machines used to produce any given pair of footwear varies depending on the organisation of the production line, the type of product, size of the company, production capacity, etc;

- Following the stakeholders feedback, fixing a limited number or type of machines associated with footwear manufacturing in general, or for each type of footwear, does not reflect industrial reality, given the heterogeneity as well as the quick model turnover of the product group "footwear";

- No data was provided within stakeholder consultations that could establish relation between specific type of machinery used and footwear category. The dynamism and multitude of possible footwear production scenarios do not establish a clear base for the fair comparison of the energy intensity demand for the different production processes and the technology used, quantity of different materials involved, and the scale of plant operation;

- Outcomes from the consultation of stakeholders showed that, typically, footwear manufacturing companies produce more than one type of shoe and have track of energy consumption data only at aggregated level (i.e. for the whole production process, or site) for established period of times (e.g. month, year) as reflected in energy consumption bill. Data provided does not allow distinguishing between different types of shoes, materials or processes/machinery used;

- Industry input clearly indicated that economic saving potential is the key driver for energy efficiency management.

Considering the lack of available data on energy consumption that hinders the feasibility to introduce a specific threshold, and thus quantitative verification of the criterion it is proposed to withdraw the proposal. Nonetheless, considering the relevance to introduce the energy consumption threshold it is recommendable to address this area during the next revision of the EU Ecolabel criteria for the product group Footwear.

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4.2 Waste management

Material savings was assessed as one of the possible improvement areas within the LCA case-study[194]. Simultaneously, waste prevention and its proper management was identified as one of the best practices.. High environmental benefit/high savings can potentially be achieved through waste management practices according to environmental standards in the textile and shoe sector[195]:
Materials used for footwear manufacturing are processed to achieve the appropriate size and format. The waste is mainly derived from process rejects composed of different materials. The shape of the components to be cut is rarely the same, therefore, the optimization of material cutting is one of the key challenges of the material management. This is especially true when leather is used because it is neither homogenous nor rectangular. According to Ferreira et al[196] residues from footwear roughing and carding operations represent 5–15% (w/w) of the solid wastes generated by shoe-making companies. Following the AFIRM group information, the highest quantity of waste is generated during material cutting[197]:

- Waste from upper = 132.6 tons/ M pairs
- Waste from sole = 118 tons/ M pairs
- Adhesives, oils, solvents = 4.6 tons/ M pairs
- Household type waste = 10.8 tons / M pairs

In general terms, the implementation of waste management plan is influenced by the geographical coverage of the planning area at regional/local scale (e.g. availability of recycling sites, MSW segregation system, etc). The criterion should then give the applicant enough flexibility to adapt the waste management plan to the local conditions; this is why no specific requirements on the waste segregation or recycling system could be proposed.

The difficulties to establish precise and quantitative threshold for wastages efficiency and consequently a specific limit value, coupled with the variability of accessible recycling facilities at the local level hinders the feasibility to specify the criterion.

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[194] http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf
[195] http://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/4289.pdf
[196] Ferreira, M.J., Almeida, M.F., Fernanda Freitas, F. 2011. Formulation and Characterization of Leather and Rubber Wastes Composites. Polymer Engineering and Science 51, pp 1418-1427
[197] http://www.afirm-group.com/hongkong/17%20Hengstmann%20Waste%202010.pdf

4.3 Origin of natural rubber

Natural Rubber (NR) is tapped from rubber trees (*Hevea brasiliensis*) grown mainly on plantations in Southeast Asia and other parts of the world. 85 % of rubber agroforests are managed by smallholders, and are characterised by a high industry fragmentation Asia accounted for over 90% of the 11.4 million tonnes produced globally in 2012. Production was concentrated in Thailand, Indonesia, Malaysia, and Vietnam, which together are responsible for 82% of global production and about 87% of global natural rubber export volume[198]. Two-thirds of global demand and almost 90% of the Indonesian production is absorbed by tire manufacturers[199]. The European Union is the second biggest consumer of NR (1.3 million tonnes in 2009) after China (3.6 million tonnes)[200].

The vast majority of rubber production comes from small growers. The fragmented industry hasn't been able to agree on industry-wide sustainability standards[201]. Very limited information has been found in respect to rubber certification. It can be assumed that at present there is a limited market share for CoC certified natural rubber. With the growing concern from international buyers about the sustainability of their supply chain, usually the plantation systems are being certified, and that the product gets a certification/label that originates from a source that is managed in accordance with the principles of the certification scheme. Several studies indicated the potential for existing environmental standards such as FSC, Rainforest Alliance, Organic (such as IFOAM), Lembaga Ekolabel Indonesia (LEI) and the Analog Forestry Network (IAFN) to address rubber cultivation and production[202]. The production of rubber is FSC-certified as part of the general forest management standard with the inclusion of an explicit management plan for rubber tapping, including an effluent treatment plant[203]. Global Organic Latex Standard (GOLS) was developed by the international certification body Control Union in 2012, GOLS is a newly introduced standard for sustainable processing methods of latex products from organic raw materials. Products carrying the GOLS label must contain no less than 95% organic latex of its total weight[204]

In May 2013, the International Rubber Study Group (IRSG)[205] established "Sustainable Natural Rubber Action Plan" that aims at promoting a common set of voluntary rubber sustainability standards within highly fragmented industry (IRSG 2013). Nevertheless, industry-level interest in environmental standards for natural rubber is a relatively recent development[192].

The data on the content of natural rubber cannot be extracted from official European statistical data because it is aggregated with synthetic rubber; and together accounting for 12% of European production, and 43% of consumption[206]. Limited information found in respect to rubber certification, and the scarcity of natural rubber coupled by its extensive use by automotive industry backup the assumption that the use of natural rubber in footwear represent only minor market share. The withdrawal of the criterion proposal reflects the general EU Ecolabel approach to seek for the right balance between possible environmental benefits and additional administrative

[198]Kennedy, F. 2014. From certification outcomes to certification processes: Demand, supply and adoption of eco-certification along the natural rubber supply chain. From certification outcomes to certification processes. University of California. Master of Urban and Regional Planning. http://innovation.luskin.ucla.edu/sites/default/files/Sean%20F%20Kennedy%20-%20MURP%20Thesis.pdf

[199]IndustriALL Global Union's World Conference for the Rubber Industry. 2013. Budapest 23-24 April

[200]Brentin, R and Sarnacke, Ph. 2011. Rubber compounds. A market opportunity study. OMNI TECH INTERNATIONAL, LTD.

[201]http://www.environmentalleader.com/2013/09/04/rubber-industry-to-create-sustainability-standards

[202]Rosa Van den Beemt, R. 2011. Green Rubber. Potentials and pitfalls of upgrading rubber agroforests through eco-certification International Development Studies University of Amsterdam.

[203]http://befair.be/sites/default/files/all-files/brochure/EU%20market%20for%20fair%20and%20sustainable%20sports%20balls_1.pdf

[204]Global Organic Latex Standard v.2.0.

[205]http://www.rubberstudy.com/

[206]EUROSTAT, 2011

burdens. Nevertheless, having in mind the need to stimulate the market for certified rubber, it is proposed to revise the market share for certified rubber within the next criteria revision.

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4.4 Minimum content of recycled materials

Limited feedback was received concerning the introduction of the criterion. Insufficient quantitative data are available to analyse the market penetration of such initiative. Market share for shoes that contains material from recycling was assumed as niche. The information found refers rather to the specific footwear models or solutions applied by the individual producers as reflected in the Technical Background Report under Section 2.6.[207]

When discussing the recycling of materials of possible use in footwear one has to distinguish between industrial waste and consumer waste. Pre-consumer waste comes from processing and/or product manufacturing, or excess production. Post-consumer waste forms a part of household waste stream, e.g. used apparel or home textile products. Its recycling is more complex mainly because of the need to identify and separate, if feasible, the mixture of materials of different characteristic.

According to the information gathered from stakeholders use of recycled material might have influence on the quality of the product e.g. lower abrasion resistance. The patent by Borredon et al.[208] (1994) describes the treatment of polymeric materials containing EVA (Ethylene-Vinyl-Acetate) waste (from the footwear industry). The patent shows that it is possible to break certain chemical bonds of the polymer without damaging the functional groups and therefore reuse the end product in the production of soles by mixing it with other virgin polymers (e.g. SBR). According to Lopesa et al.[209] the flexion, density, hardness and abrasion of all composites, produced at a laboratory and industrial scale, were not significantly affected by the addition of up to 20 phr[210] of EVA-waste . The tear strength and the tensile strength were the most affected properties. The quantity of recyclates that could be used in the product would then depend on the type of material, and expected product durability. Groover M.P.[211] estimated that up to 10% of recycled rubber could be added in some rubber products.

The industry usually adapts internal recycling schemes e.g. moulded polyurethane footwear. In this sense the pre-consumer waste is, in most cases, recirculated into production process and the recovery system works in a close loop.
In reference to fibre recycling, in general, most waste textiles are blended fabrics[212]. The recovered fibres from cotton waste can be used to produce blended yarns (cotton waste/virgin fibres) in different portions[213].

When recycled, the waste are segregated by type and colour then placed into stripping machines that break the fabric into pieces. Fibres are then pulled apart and the mixture is carded several times to clean and mix the fibres before being respun into new yarns.[214] The colour and composition separation at the beginning of the process is a labour-intensive operation that is not

[207]http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf
[208]Borredon, E., Delmas, M., Gaset, A., Fahimi, A., Abdennadher, M., Raynaud, G., Jakubowski, M., 1994. Process for treatment of polymers based on cross-linked EVA and applications. Patent US5373067 A. Entreprise "Malet", Toulouse Cedex.
[209]Lopesa, D., Ferreira, M.J., Rui Russoc, J., Diasa, J.M. 2014. Natural and synthetic rubber/waste – EVA (Ethylene-Vinyl Acetate) composites for sustainable application in the footwear industry. Journal of Cleaner Production, in press
[210]phr: pounds of an ingredient added to 100 pounds of resin
[211]M. P. Groover. 2002 Fundamentals of Modern Manufacturing 2/e.John Wiley & Sons, Inc., "
[212]Lv, F., Wang, C., Zhu, P., and Zhang, C.,Isolation (2015) Isolation and recovery of cellulose from waste nylon/cotton blended fabrics by 1-allyl-3-methylimidazolium chloride. Carbohydrate Polymers. In press
[213]http://www.bir.org/industry/textiles/
[214]http://www.bir.org/industry/textiles/

financially viable in all economies[215]. The material knowledge is key issue for the recycling process, if considered and technically viable, the blended fibres are separated.

The high content of short fibres that is typical for recycled material, decrease mechanical properties of the yarn. The requirements of the final product quality imposed on the finished products allow the addition of tiny/specified quantities of recovered fibres[216]. Therefore the proportion of secondary raw material blended with primary material must be carefully studied. Wulfhorst[217] concluded that up to 20% of recovered fibres can be blended with primary raw material without noticeable changes in quality.

Apart of technical constrains to set up the threshold of recyclates content, consultation with industry stakeholders showed that the obligatory requirement on the use of recycled material would narrow the EU Ecolabel to suppliers able to the close the circle of material flow.

Due to the lack of relevant data to build up the proposal combined with additional technical constrains, it was proposed to withdrawn the criterion from the on-going revision.

It should be nevertheless stressed that the proposed criteria set does not exclude the use of recycled material, as long as the final product complies with the criteria. In fact, the use of recycled wood and cork, cotton is covered by the criteria proposal. Additionally, flexible approach is given to verification of recycled cotton and man-made cellulose fibres (Criterion 1).

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[215]http://textileexchange.org/node/958

[216]Taher Halimi, M., Hassen, M.B., Faouzi Sakli, F. (2008) Cotton waste recycling: Quantitative and qualitative assessment. Resources, Conservation and Recycling 52 , pp. 785–791

[217]Wulfhorst, B. (1984) The technological and economic aspects of the recycling of wastes in modern cotton mills. Foreign-edition with english supplement, vol. 8 Textile Praxis International (1984) p. 741–3

4.5 PVC restriction

Analysis of PVC usage as a footwear component has been suggested by the Commission Statement 2009/ ENV G2 the EU Ecolabel which supported the Commission Decision 2009/563/EC establishing the EU Ecolabel criteria for footwear. A number of diverging scientific, technical and economic opinions have been expressed on the question of PVC and its possible effects on human health and the environment[218,219,220].

PVC when used in footwear does not consist of pure material but of PVC compounds which contain different quantities of additives, such as softeners, filling agents, stabilizers and others.[221]. Additives used in the production process are not covalently bound to the polymeric matrix, and can gradually leach out, or volatilize from the product over its lifetime. PVC plasticizers are used in the amounts ranging up to 50 % w/w.[221] Some phthalate esters, stabilizers, and organotin compounds have been listed as an SVHC[222] by the European Chemical Association (ECHA) under the Article 54 of REACH Regulation.

Recognizing the feasibility of existent alternatives, many brands are on the way to becoming PVC-free; this approach has been adopted by Nike, Esprit, Adidas, Puma, and Timberland, among others. Blue Angel and Nordic Swan also restrict PVC usage.

From the market perspective, the use of PVC in footwear was assessed as of low relevance[223]. Additionally, the EU Ecolabel should be material and technology independent. The proposal to ban PVC usage was actively supported by many Member States and is reflected in several Type I Ecolabel criteria of reference. Nevertheless, it was strongly questioned by industry stakeholders, who argued that despite possible challenges with regard to the end-of-life phase of PVC (recycling, landfilling, incineration), PVC itself is not classified with any hazard statements. It was deemed relevant to instead require that any PVC is produced according to current best available techniques[224,225]. In this sense, the chemical performance of PVC is proposed to be addressed through the Restricted Substances List (Criterion 6).

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[218] www.epa.gov/ttn/atw/hlthef/vinylchl.html.
[219] http://toxnet.nlm.nih.gov/
[220] Huisingh, D (Editor-in Chief). 2011. Special Issue. Improving the health of the public, workers and the environment. Twenty years of toxic use reduction. Journal of Cleaner Production,. Volume 19/5, March 2011. 572 pp. Elsevier
[221] Lithner, D. Larsson,A. Dave, G. 2011. Environmental and health hazard ranking and assessment of plastic polymers based on chemical composition. Science of the Total Environment 409, pp 3309–3324
[222] Substance of Very High Concern
[223] Information received from PlasticEurope
[224] http://www.eesc.europa.eu/?i=portal.en.smo-database&fiche=32#case-d
[225] http://www.pvc.org/en/p/industry-responsible-care

4.6 Post-consumer footwear wastes

It is estimated that the amount of waste arising from post-consumer shoes could reach 1.2[226]–1.5[227] million tonnes per year. Less than 5% of global footwear production has been estimated to be recycled or reused, with most being disposed of in landfill sites[228,229]. Footwear recycling and material recovery efforts continue to be hindered mainly by lack of well-established recovery systems and incorporation of a variety of materials. The footwear contains a complex mixture of leather, rubber, textile, polymers and metallic materials that makes it difficult to perform complete separation and reclamation of material streams in an economically sustainable manner.

The difficulties in post-consumer shoes recollection and controlling of its possible recycling routes were raised by stakeholders. Establishment of municipal footwear segregation system appears to be the most effective way to increase the feasibility of reusing and recycling old shoes.

The criterion proposal was perceived as not feasible to be controlled and verified by footwear manufacturer/applicant, mainly considering the lack of mechanism that would allow license holder to influence user behaviour and verify the criterion. Therefore, the proposal is to address this issue by introducing specific information for the consumer indicating that footwear should be dispose according to the adopted segregation system (usually used apparel bins). Generally, stakeholders agreed on this criterion as a good start to improve this aspect in the future revision. Consequently the following phrases were incorporated into Criterion 12 (a). User instruction:

- *'Repair your footwear rather than throw them away. This is less damaging to the environment.'*
- *'Please dispose of your footwear in appropriate local recycling facilities'.*

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[226]Michael James Lee, M.J., Rahimifard, S. 2012. An air-based automated material recycling system for postconsumer footwear products. Resources, Conservation and Recycling 69, pp 90– 99

[227]http://www.eco-naturalista.eu

[228]World Footwear. The future of polyurethane soling, world footwear. Cambridge, MA: Shoe Trades; 2005. p. 18–20.

[229]SATRA. Footwear market predictions: forecasts for global footwear trading to 2009. Kettering: SATRA Technology Centre; 2003.

4.7 Use of wool fibre

The need to set out a specific requirement for wool in line with EU Ecolabel for textile was pointed out within the consultation process.

The Commission Decision 2014/350/EU[230] establishing the ecological criteria for the award of the EU Ecolabel for textile products set the requirements on the following aspects of wool production.

a) Wool ectoparasiticide concentrations on raw wool prior to scouring;

b) COD values for the final discharge of effluent from wool scouring;

c) Requirement on the post-scouring operation.

The exact market share of wool used in footwear is not known, hoverer wool was not found out as being one of the main materials used in a product[231][232]. The possible key application of wool might fall under the product type – slippers[233]

The total global production of wool is approximately 1.3 million tons per year but it is hard to find estimates for the production of organic wool. The figure is most likely to still be very small and it may be too early to have a criterion that requires a minimum content of organic wool. During the textile criteria development process stakeholders cited the limited development of the supply chain, albeit without data to back this up, and minimal customer demand[234].

From the perspective of an applicant (footwear manufacturer), and considering limited application of wool in footwear, the introduction of the criterion on wool origin could create additional burden providing limited potential environmental savings in absolute terms.

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[230] OJ L 174, 13.6.2014, p. 45–83
[231] http://susproc.jrc.ec.europa.eu/footwear/docs/EU_Ecolabel_Footwear_%20Background%20Report.pdf
[232] PEFCR Pilot: Non-leather shoes
[233] According to EUROSTAT data, the apparel consumption of all type of slippers represented approx. 13% of market share in 2011
[234] http://susproc.jrc.ec.europa.eu/textiles/docs/131021%20Ecolabel%20Textiles_EUEB%20vote_Technical%20report%20final.pdf

5 POSSIBLE ISSUES TO BE CONSIDERED DURING THE NEXT REVISION

Within the revision process several issues and actions have been outlined. Several of them have not been taken into consideration within the current revision, mainly because of the limited market share, or their complex applicability. Aspects of interest for the next revision could include:

A. Materials

- Sustainable sourcing and production of natural rubber;
- Use of minimum content of recycled materials
- Additional criteria on emission from production of materials

B. Manufacture

- Energy consumption threshold for the footwear assembly site
- Waste generating threshold for the footwear assembly site

C. End of Life

- Availability of post-consumer footwear recovery schemes and technologies
- Promotion of disposal practices aimed at diverting from landfill

D. Environmental performance

- Implementation of lifecycle requirements (e.g. for GHG emissions)

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6 ANNEXES

ANNEX I BAT consumption and emissions levels (hides, skins, textiles, and polymers)

Table 2: BAT water consumption levels – Raw hide[235]

Process stages	Water consumption per tonne of raw hide[236] (m^3/t)	
	Unsalted hides	Salted hides
Raw to wet blue/white	10 to 15	13 to 18
Post-tanning processes and finishing	6 to 10	6 to 10
Total	16 to 25	19 to 28

Table 3: BAT water consumption levels – Skin[235]

Processes stages	Specific water consumption[237] (litres/skin)
Raw to pickle	65 to 80
Pickle to wet blue	30 to 55
Post-tanning processes and finishing	15 to 45
Total	110 to 180

Table 4: BAT water consumption levels – Textiles processing[238]

Process stages	Water consumption
finishing of yarn	70 - 120 l/kg
finishing of knitted fabric	70 - 120 l/kg
pigment printing of knitted fabric	0.5 - 3 l/kg
finishing of woven fabric consisting mainly of cellulosic fibres	50 - 100 l/kg
finishing of woven fabric consisting mainly of cellulosic fibres (including vat and/or reactive printing)	_ <200 l/kg
finishing of woven fabric consisting mainly of wool	<200 l/kg
_ finishing of woven fabric consisting mainly of wool (for processes that require high liquor ratio)	<250 l/kg

[235]Source: BREF on Tanning of Hides and Skins
[236]Monthly average values. Processing of calfskins and vegetable tanning may require a higher water consumption.
[237]Monthly average values. Wool-on sheepskins may require a higher water consumption
[238]BREF for Textiles Industry

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Table 5: BAT emissions levels - (BREF Polymers, 2007)

	VOC (g/t)	Dust (g/t)	COD (g/t)	Suspended solids (g/t)	Direct energy (GJ/t)	Hazardous waste (kg/t)
LDPE	New: 700 - 1100 Existing: 1100 - 2100	17	19-30		Tube: 2.88 – 3.24* Autoclave: 3.24 – 3.60	1.8-3.0
LDPE copolymers	2000	20			4.5	5.0
HDPE	New: 300 - 500 Existing: 500 - 1800	56	17		New: 2.05 Existing: 2.05 – 2.52	3.1
LLDPE	New: 200 - 500 Existing: 500 - 700	11	39		New: 2.08 Existing: 2.08 – 2.45	0.8
GPPS	85	20	30	10	1.08	0.5
HIPS	85	20	30	10	1.48	0.5
EPS	450-700	30			1.80	3.0
S-PVC	VCM: 18 - 45 Splitview: 18 - 72	10-40	50-480	10**		0.01-0.055
E-PVC	100 - 500 Splitview: 160 - 700	50-200	50-480	10**		0.025-0.075
UP	40-100	5-30			2-3.5	7
ESBR	170-370		150-200			

*Excludes a potential positive credit of 0 to 0.72 GJ/t for low pressure steam (depending on export possibilities for low pressure steam)
'New' and 'existing' refers to new or existing installations.
** Alternatively, 1 – 12 g/t AOX are achieved for PVC production sites or combined sites with PVC production

	S to air (kg/t)	SO4 2- to water (kg/t)	COD (g/t)	Zn to water (g/t)	Direct energy (GJ/t)	Hazardous waste (kg/t)
Viscose staple fibres	12-20	200-300	3000-5000	10-50	20-30	0.2-2.0

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ANNEX III Derogation request form

EU Ecolabel revision

Derogation request		Substitution proposal	
Chemical substance name(s)		**Chemical substance name(s)**	
CAS, EC or Annex VI numbers		**CAS, EC or Annex VI numbers**	
Functional need and significance in the final product		**Functional need and significance in the final product**	
CLP Classifications from EU Ecolabel listing	*Please note if they are self-classified or have a harmonised classification*	**CLP Classifications from EU Ecolabel listing**	*Please note if they are self-classified or have a harmonised classification*
Current regulatory status	*E.g. on or proposed for the SVHC candidate list, registered, restricted*	**Current regulatory status**	*E.g. on or proposed for the SVHC candidate list, registered, restricted*
Existing scientific evidence and risk assessments relating to the substance	*E.g. REACH/ECHA dossiers, reference to scientific research*	**Indication and comparison of environmental performance**	*- Identification of classification/non-classification status of the substance* *- identification of substances that can/have been substituted and supporting evidence of the improvement for specific hazards i.e. CLP classification, reference to scientific research/screening exercises*
The relevance of hazard classifications along the life cycle of the product *e.g.* manufacturing, use, disposal	*E.g. if the CLP classification and greatest risk of exposure relates to the form in which a substance is handled in the factory*	**The life cycle relevance of environmental improvements**	*Quantitative evidence of where the greatest improvement potential can be evidenced e.g. workforce exposure, wastewater, consumer exposure risk*
Typical concentration in the final product or specific components and articles (including ranges depending on function)		**Typical concentration in the final product or specific components and articles (including ranges depending on function)**	
Proportional contribution to final product classification (where relevant)	*Particularly relevant for mixtures and with reference to CLP rules*	**Proportional contribution to final product classification (where relevant)**	*Particularly relevant for mixtures and with reference to CLP rules*
Technical assessment of the functional need	*The necessity to be present in the product and according to its end-use or consumer requirements*	**Compliance with product performance and functional requirements**	*Evidence that the substitute fulfills the same requirements and technical needs, mechanisms used e.g. fitness for use test results, specifications*
Market availability of alternatives, their hazard profile and the potential for substitution	*Market availability and technical status of alternatives – why are they currently not suitable?*	**Market availability, production volumes and other potential substitutes**	*E.g. Market diffusion and technical status of substitute(s)*
Additional information		**Additional information**	

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ANNEX IV Proposed Footwear Restricted Substances List (RSL)

Appendix I

Footwear Restricted Substances List (RSL)

The list applies to substances that may be used during the production process or may be present in the final product. The EU Ecolabel RSL for Footwear compiles substances or group of substances which presence in the final product, materials or article thereof, or production recipes, as applicable, shall be specifically restricted or verified. The restrictions apply to:

1. Production stages (e.g dying);
2. Recipes used in the footwear production stages (e.g. auxiliaries);
3. Homogenous materials or articles (e.g. synthetic or natural rubber).
4. Final product.

Applicability (relevant material(s) and/or production stage(s)), scope of restriction, verification and/or testing requirements are specified for each requirement.

The RSL shall be communicated by the applicant to all the material suppliers.

Textile products that are awarded with the EU Ecolabel based on the ecological criteria of the Commission Decision 2014/350/EU are considered being compliant with Criterion 6.

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1. The following restrictions apply to specified production stages

Applicability	Scope of restriction	*Limit values*	*Verification*
(a)Auxiliaries			
Any preparation or formulation/ Leather, coated leather and textile	The following substances shall not be used in any textile or leather preparations or formulations and are subject to the limit values for the presence of substances on the final product: Nonylphenol, mixed isomers 25154-52-3 4-Nonylphenol 104-40-5 4-Nonylphenol, branched 84852-15-3 Octylphenol 27193-28-8 4-Octylphenol 1806-26-4 4-tert-Octylphenol 140-66-9 Alkylphenolethoxylates (APEOs) and their derivatives: Polyoxyethylated octyl phenol 9002-93-1 Polyoxyethylated nonyl phenol 9016-45-9 Polyoxyethylated p-nonyl phenol 26027-38-3	*25 mg/kg sum total for textile 100 mg/kg sum total for leather*	***Assessment and verification:** the applicant and/or material supplier shall provide a declaration of compliance supported by the test results of the final product or of leather, coated leather and/or textile that compose the final product. Test method: Leather: ISO/DIS 18218-2 (Indirect method). Textile: ISO/DIS 18254*
Dyeing, finishing/, leather, coated leather and textiles	The following substances shall not be used in any preparations or formulations for dyeing and finishing leather, coated leather, and textiles. Bis(hydrogenated tallow alkyl) dimethyl ammonium chloride (DTDMAC) Distearyl dimethyl ammonium chloride (DSDMAC) Di(hardened tallow) dimethyl ammonium chloride (DHTDMAC) Ethylene diamine tetra acetate (EDTA), Diethylene triamine penta acetate (DTPA) 4-(1,1,3,3-tetramethylbutyl)phenol Nitrilotriacetic acid (NTA)	*n/a*	***Assessment and verification:** the applicant and/or material supplier(s) shall provide declaration of non-use.*
(b) Colophony			
Printing, Glueing/ inks, varnishes and adhesives.	Colophony shall not be used as an ingredient in printing inks, varnishes and adhesives.	*n/a*	***Assessment and verification:** the applicant and/or material supplier(s) shall provide declaration of non-use.*
(c) Solvents			

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Applicability	Scope of restriction	*Limit values*	*Verification*
Auxiliaries used in preparations, formulations and adhesives/ Dyeing and finishing leather, coated leather, textiles, plastics and final product.	The following substances shall not be used in any preparations or formulations for processing of component materials, any preparations, formulations, and adhesives used during the final product assembly - 2-Methoxyethanol - N,N-dimethylformamide - 1-Methyl-2-pyrrolidone - Bis(2-methoxyethyl) ether - 4,4'- Diaminodiphenylmethane - 1,2,3-trichloropropane - 1,2-Dichloroethane; ethylene dichloride - 2-Ethoxyethanol - Benzene-1,4-diamine dihydochloride - Bis(2-methoxyethyl) ether - Formamide - N-methyl-2-pyrrolidone; 1-methyl-2-pyrrolidone - Trichloroethylene	*n/a*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of non-use.*
(d) Chlorinated paraffins			
All production stages/ Leather, synthetic rubber, coatings	Chlorinated paraffins, C10-C13, (SCCPs) , shall not be used in the production of leather, rubber or textile components.	*n/a*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a declaration that Short Chain Chlorinated Paraffins C10-C13 have not been used supported by Safety Data Sheet. Otherwise. the applicant and/or material supplier(s) shall provide a declaration of compliance supported by the results of a test report according to EN ISO DIS 18219.*
Materials processing/ Leather, synthetic rubber, coatings	Chlorinated paraffins, C14-C17, (MCCPs), shall be restricted in the production of leather, rubber or textile components.	*100 mg/kg*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a declaration of compliance supported by the results of a test report according to EN ISO DIS 18219.*
(e) Biocides			

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Applicability	Scope of restriction	*Limit values*	*Verification*
Used during transportation or storage of raw and semi-finished materials, final product or final product packaging.	(i) Only active substances included in Annex IA of the Directive 98/8/EC of the European Parliament and of the Council, and Biocide Regulation (EC) No 528/2012 shall be allowed. Applicants should consult the most current authorisation list.	*n/a*	***Assessment and verification:*** *the applicant and/or material supplier shall provide either declarations of non-use prior to transportation and storage, or evidence that the use of biocides is authorised under Annex IA of the Directive 98/8/EC of the European Parliament, or Regulation (EC) No 528/2012.* *If used, a list of biocidal products added during transportation or storage of raw, semi-finished materials or to final product packaging shall be provided, including related H statements / R phrase.*
	(ii) Biocides shall not be incorporated into final product or any part thereof during the footwear production process in order to impart biocidal properties to the final product.	*n/a*	***Assessment and verification:*** *the applicant and/or material supplier shall provide declarations of non-use in the final product or any part thereof.*
	(iii) Chlorophenols (their salts and esters), organo-tin compounds (including TBT, TPhT, DBT and DOT) diemthyl fumarate (DMFu), triclosan, and nanosilver shall not be used during the transportation or storage of the product, any article of it and any homogeneous part of it and shall not be incorporated into the final product and product packaging.	*Not detectable*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a declaration of non-use. The declaration shall be supported by the results of final product testing for the presence of following substances:* *Chlorophenols: Leather, EN ISO 17070; Textile, XP G 08-015 (Detection limits: Leather: 0,1 ppm; Textile: 0,05 ppm),* *Dimethyl fumarate: ISO/TS 16186*
(f) Other specific substances			

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Applicability	Scope of restriction	*Limit values*	*Verification*
Production recipes/ adhesives, final product and any part thereof.	The following substances shall not be intentionally added into preparations, formulations, and into adhesives during footwear assembly. - Chlorinated or brominated dioxines or furans - Chlorinated hydrocarbons (1,1,2,2-Tetrachloroethane, Pentachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethylene) - Hexachlorocyclohexane - Monomethyldibromo–Diphenylmethane - Monomethyldichloro-Diphenylmethane - Nitrites - Polybrominated Biphenyls (PBB) - Pentabromodiphenyl Ether (PeBDE)) - Octabromodiphenyl Ether (OBDE) - Polychlorinated Biphenyls (PCB) - Polychlorinated Terphenyls (PCT)) - Tri-(2,3-dibromo-propyl)-phosphate (TRIS) - Trimethylphosphate - Tris-(aziridinyl)-phosphinoxide (TEPA) - Tris(2-chloroethyl)-phosphate (TCEP)) - Dimethyl methylphosphonate (DMMP))	*n/a*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of non-use.*

2. The following restrictions apply to processes taking place in the dye house

Applicability	Scope of restriction	Limit values	Verification
(a) Carriers			
Carriers used in dying process	Where disperse dyes are used, halogenated dyeing accelerants (carriers) shall not be used (Examples of carriers include: 1,2-dichlorobenzene, 1,2,4-trichlorobenzene, chlorophenoxyethanol).	n/a	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.*
Carriers used as blowing agents for plastics foams	Halogenated organic compounds shall not be used as blowing agents or as auxiliary blowing agents.	n/a	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.*

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<table>
<tr><td colspan="3">(b) Restricted dyes</td><td></td></tr>
<tr><td>Azo dyes and azo colourants
Application in dying process</td><td>Below listed azo dyes and azo colourants that may cleave to aromatic amines that are known to be carcinogenic shall not be used.

<table><tr><th>Arylamine</th><th>CAS number</th></tr><tr><td>4-aminodiphenyl</td><td>92-67-1</td></tr><tr><td>Benzidine</td><td>92-87-5</td></tr><tr><td>4-chloro-o-toluidine</td><td>95-69-2</td></tr><tr><td>2-naphtylamine</td><td>91-59-8</td></tr><tr><td>o-amino-azotoluene</td><td>97-56-3</td></tr><tr><td>2-amino-4-nitrotoluene</td><td>99-55-8</td></tr><tr><td>p-chloroaniline</td><td>106-47-8</td></tr><tr><td>2,4-diaminoanisol</td><td>615-05-4</td></tr><tr><td>4,4′-diaminodiphenylmethane</td><td>101-77-9</td></tr><tr><td>3,3′-dichlorobenzidine</td><td>91-94-1</td></tr><tr><td>3,3′-dimethoxybenzidine</td><td>119-90-4</td></tr><tr><td>3,3′-dimethylbenzidine</td><td>119-93-7</td></tr><tr><td>3,3′-dimethyl-4,4′-diaminodiphenylmethane</td><td>838-88-0</td></tr><tr><td>p-cresidine</td><td>120-71-8</td></tr><tr><td>4,4'-methylene-bis-(2-chloroaniline)</td><td>101-14-4</td></tr><tr><td>4,4′-oxydianiline</td><td>101-80-4</td></tr><tr><td>4,4′-thiodianiline</td><td>139-65-1</td></tr><tr><td>o-toluidine</td><td>95-53-4</td></tr><tr><td>2,4-diaminotoluene</td><td>95-80-7</td></tr><tr><td>2,4,5-trimethylaniline</td><td>137-17-7</td></tr><tr><td>o-anisidine (2-Methoxyanilin)</td><td>90-04-0</td></tr><tr><td>2,4-Xylidine</td><td>95-68-1</td></tr><tr><td>2,6-Xylidine</td><td>87-62-7</td></tr><tr><td>4-aminoazobenzene</td><td>60-09-3</td></tr></table>
An indicative list of azodyes that may cleave to arylamines is provided in the following.
<table><tr><td>Disperse dyes that may cleave to aromatic amines</td></tr></table></td><td>30 mg/kg for each arylamine in the final product</td><td>Assessment and verification: the applicant and/or material supplier(s) shall provide declaration of compliance supported by the results of specific testing according to EN 14362-1:2012 and 3:2012 for textile, and CEN ISO/TS 17234-1 and 2 for leather.

(Note: false positives may be possible with respect to the presence of 4-aminoazobenzene, and confirmation is therefore recommended).</td></tr>
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Disperse Orange 60	Disperse Yellow 7
Disperse Orange 149	Disperse Yellow 23
Disperse Red 151	Disperse Yellow 56
Disperse Red 221	Disperse Yellow 218

Basic dyes that may cleave to aromatic amines	
Basic Brown 4	Basic Red 114
Basic Red 42	Basic Yellow 82
Basic Red 76	Basic Yellow 103
Basic Red 111	

Acid dyes that may cleave to aromatic amines		
CI Acid Black 29	CI Acid Red 24	CI Acid Red 128
CI Acid Black 94	CI Acid Red 26	CI Acid Red 115
CI Acid Black 131	CI Acid Red 26:1	CI Acid Red 128
CI Acid Black 132	CI Acid Red 26:2	CI Acid Red 135
CI Acid Black 209	CI Acid Red 35	CI Acid Red 148
CI Acid Black 232	CI Acid Red 48	CI Acid Red 150
CI Acid Brown 415	CI Acid Red 73	CI Acid Red 158
CI Acid Orange 17	CI Acid Red 85	CI Acid Red 167
CI Acid Orange 24	CI Acid Red 104	CI Acid Red 170
CI Acid Orange 45	CI Acid Red 114	CI Acid Red 264
CI Acid Red 4	CI Acid Red 115	CI Acid Red 265
CI Acid Red 5	CI Acid Red 116	CI Acid Red 420
CI Acid Red 8	CI Acid Red 119:1	CI Acid Violet 12

Direct dyes that may cleave to aromatic amines		
Direct Black 4	Basic Brown 4	Direct Red 13
Direct Black 29	Direct Brown 6	Direct Red 17
Direct Black 38	Direct Brown 25	Direct Red 21
Direct Black 154	Direct Brown 27	Direct Red 24
Direct Blue 1	Direct Brown 31	Direct Red 26
Direct Blue 2	Direct Brown 33	Direct Red 22
Direct Blue 3	Direct Brown 51	Direct Red 28
Direct Blue 6	Direct Brown 59	Direct Red 37
Direct Blue 8	Direct Brown 74	Direct Red 39
Direct Blue 9	Direct Brown 79	Direct Red 44
Direct Blue 10	Direct Brown 95	Direct Red 46
Direct Blue 14	Direct Brown 101	Direct Red 62

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<table>
<tr>
<td></td>
<td>
<table>
<tr><td>Direct Blue 15</td><td>Direct Brown 154</td><td>Direct Red 67</td></tr>
<tr><td>Direct Blue 21</td><td>Direct Brown 222</td><td>Direct Red 72</td></tr>
<tr><td>Direct Blue 22</td><td>Direct Brown 223</td><td>Direct Red 126</td></tr>
<tr><td>Direct Blue 25</td><td>Direct Green 1</td><td>Direct Red 168</td></tr>
<tr><td>Direct Blue 35</td><td>Direct Green 6</td><td>Direct Red 216</td></tr>
<tr><td>Direct Blue 76</td><td>Direct Green 8</td><td>Direct Red 264</td></tr>
<tr><td>Direct Blue 116</td><td>Direct Green 8.1</td><td>Direct Violet 1</td></tr>
<tr><td>Direct Blue 151</td><td>Direct Green 85</td><td>Direct Violet 4</td></tr>
<tr><td>Direct Blue 160</td><td>Direct Orange 1</td><td>Direct Violet 12</td></tr>
<tr><td>Direct Blue 173</td><td>Direct Orange 6</td><td>Direct Violet 13</td></tr>
<tr><td>Direct Blue 192</td><td>Direct Orange 7</td><td>Direct Violet 14</td></tr>
<tr><td>Direct Blue 201</td><td>Direct Orange 8</td><td>Direct Violet 21</td></tr>
<tr><td>Direct Blue 215</td><td>Direct Orange 10</td><td>Direct Violet 22</td></tr>
<tr><td>Direct Blue 295</td><td>Direct Orange 108</td><td>Direct Yellow 1</td></tr>
<tr><td>Direct Blue 306</td><td>Direct Red 1</td><td>Direct Yellow 24</td></tr>
<tr><td>Direct Brown 1</td><td>Direct Red 2</td><td>Direct Yellow 48</td></tr>
<tr><td>Direct Brown 1:2</td><td>Direct Red 7</td><td></td></tr>
<tr><td>Direct Brown 2</td><td>Direct Red 10</td><td></td></tr>
</table>
</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CMR dyes</td>
<td>Dyes that are carcinogenic, mutagenic or toxic to reproduction shall not be used.
<table>
<tr><th>Dyes that are carcinogenic, mutagenic or toxic to reproduction</th><th>CAS number</th></tr>
<tr><td>C.I. Acid Red 26</td><td>3761-53-3</td></tr>
<tr><td>C.I. Basic Red 9</td><td>569-61-9</td></tr>
<tr><td>C.I. Basic Violet 14</td><td>632-99-5</td></tr>
<tr><td>C.I. Direct Black 38</td><td>1937-37-7</td></tr>
<tr><td>C.I. Direct Blue 6</td><td>2602-46-2</td></tr>
<tr><td>C.I. Direct Red 28</td><td>573-58-0</td></tr>
<tr><td>C.I. Disperse Blue 1</td><td>2475-45-8</td></tr>
<tr><td>C.I. Disperse Orange 11</td><td>82-28-0</td></tr>
<tr><td>C.I. Disperse Yellow 3</td><td>2832-40-8</td></tr>
</table>
</td>
<td>n/a</td>
<td>Assessment and verification: the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.</td>
</tr>
<tr>
<td>Potentially sensitising dyes</td>
<td>Dyes that are potentially sensitising shall not be used.
<table>
<tr><th>Disperse dyes that are potentially sensitising</th><th>CAS numbe</th></tr>
<tr><td>C.I. Disperse Blue 1</td><td>2475-45-8</td></tr>
<tr><td>C.I. Disperse Blue 3</td><td>2475-46-9</td></tr>
<tr><td>C.I. Disperse Blue 7</td><td>3179-90-6</td></tr>
<tr><td>C.I. Disperse Blue 26</td><td>3860-63-7</td></tr>
<tr><td>C.I. Disperse Blue 35</td><td>12222-75-</td></tr>
<tr><td>C.I. Disperse Blue 102</td><td>12222-97-</td></tr>
</table>
</td>
<td>n/a</td>
<td>Assessment and verification: the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.</td>
</tr>
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DRAFT

	C.I. Disperse Blue 106	12223-01-7		
	C.I. Disperse Blue 124	61951-51-7		
	C.I. Disperse Brown 1	23355-64-8		
	C.I. Disperse Orange 1	2581-69-3		
	C.I. Disperse Orange 3	730-40-5		
	C.I. Disperse Orange 37	12223-33-5		
	C.I. Disperse Orange 76	13301-61-6		
	C.I. Disperse Red 1	2872-52-8		
	C.I. Disperse Red 11	2872-48-2		
	C.I. Disperse Red 17	3179-89-3		
	C.I. Disperse Yellow 1	119-15-3		
	C.I. Disperse Yellow 3	2832-40-8		
	C.I. Disperse Yellow 9	6373-73-5		
	C.I. Disperse Yellow 39	12236-29-2		
	C.I. Disperse Yellow 49	54824-37-2		
Chrome mordant dyes	Chrome mordant dyes shall not be used.		n/a	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.*
Metal complex dyes	Metal complex dyes based on copper, chromium and nickel shall only be permitted for leather, dyeing wool, polyamide or blends of these fibres with man-made cellulose fibres (e.g. viscose).		n/a	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.*
Pigments	Pigments based on cadmium, lead, chromium, mercury, antimony shall not be used		*n/a*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of compliance supported by Safety Data Sheet.*

3. The following restriction apply to finishing process of the final product

Applicability	**Scope of restriction**	**Limit values**	**Verification**
(a) PFCs			
Final product	(i) Fluorinated water, stain and oil repellent treatments shall not be used for footwear impregnation. These shall include perfluorinated and polyfluorinated treatments. Non-fluorinated treatments shall be readily biodegradable and non-bioacumulative in the aquatic environment including aquatic sediment.	n/a	***Assessment and verification:*** *the applicant shall provide declaration of compliance supported by Safety Data Sheet.*

DRAFT

Footwear with declared integrated water repellence function	(ii) Fluopolymer membranes and laminates may be used for footwear only if the required water penetration of the material shall be lower than 0.2 g and the water absorption shall be lower than 30% according to Standard ISO 20347. They shall not be manufacturer using PFOA or any of its higher homologous as defined by the OECD[239].	n/a	***Assessment and verification:*** *the applicant shall provide declaration of compliance from the membrane or laminate manufacturer with respect to the polymer production. The declaration shall be supported by technical test results for material water penetration according to ISO 20347.*
(b) Flame retardants			
Final product	(i) Flame retardants shall not be used with the exception 3 (b)ii	n/a	***Assessment and verification:*** *the applicant shall provide declaration of non-use.*
Footwear with incorporated flame retardant **function**	(ii) The use of flame is allowed for footwear classified and CE marked as Category III personal protective equipment with incorporated flame retardants function to ensure safety at work in line with the specifications laid down by PPE Directive 89/686/EEC. The substance(s) used to achieve flame retardancy shall comply with the Criterion 5.	n/a	***Assessment and verification:*** *the applicant shall provide either declarations of non-use of flame retardants or declaration of compliance with criterion 5.* *In both cases the declaration shall be supported by Safety Data Sheet. When applicable, a list of flame retardants used in the product shall be provided together with related H statements / R phrases. Proof that the product is marketed as flame-proof Category III personal protective equipment shall be provided.*

4. The following restrictions apply to the final product or specified parts thereof

Applicability	***Scope of restriction***	***Limit values***	***Verification***
(a) PAHs			
Plastics and synthetic rubber, textile or leather coatings	Below listed Polycyclic Aromatic Hydrocarbons (PAHs) shall not be present above the specified limits in the plastic, synthetic rubber, textile and leather coatings. Polycyclic Aromatic Hydrocarbons (PAHs) classified with Group 1 and 2 hazards shall not be present at concentrations greater than or equal to individual and sum total concentration limits in plastic, synthetic rubber, textile or leather coatings :	*The individual concentration limits for PAHs restricted under REACH < 1 mg/kg* *The sum total*	***Assessment and verification****: the applicant and/or material supplier(s) shall provide a declaration of compliance supported by the test report, using test method* AfPS GS 2014:01 PAK

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<table>
<tr><th>Applicability</th><th>Scope of restriction</th><th>Limit values</th><th>Verification</th></tr>
<tr><td></td><td>The presence and concentration of the following PAHs shall be verified:
PAH's restricted by the REACH Regulation:
<table>
<tr><th>Name</th><th>CAS</th></tr>
<tr><td>Chrysen</td><td>218-01-9</td></tr>
<tr><td>Benzo[a]anthracene</td><td>56-55-3</td></tr>
<tr><td>Benzo[k]fluoranthene</td><td>207-08-9</td></tr>
<tr><td>Benzo[a]pyrene</td><td>50-32-8</td></tr>
<tr><td>Dibenzo[a,h]anthrancene</td><td>53-70-3</td></tr>
<tr><td>Benzo[j]fluoranthen</td><td>205-82-3</td></tr>
<tr><td>Benzo[b]fluoranthene</td><td>205-99-2</td></tr>
<tr><td>Benzo[e]pyren</td><td>192-97-2</td></tr>
</table>
Additional PAH's subject to restriction:
<table>
<tr><th>Name</th><th>CAS</th></tr>
<tr><td>Naphthalene</td><td>91-20-3</td></tr>
<tr><td>Acenaphthylene</td><td>208-96-8</td></tr>
<tr><td>Acenaphthene</td><td>83-32-9</td></tr>
<tr><td>Fluorene</td><td>86-73-7</td></tr>
<tr><td>Phenanthrene</td><td>85-1-8</td></tr>
<tr><td>Anthracene</td><td>120-12-7</td></tr>
<tr><td>Fluoranthene</td><td>206-44-0</td></tr>
<tr><td>Pyrene</td><td>129-00-0</td></tr>
<tr><td>Indeno[1,2,3-c,d]pyrene</td><td>193-39-5</td></tr>
<tr><td>Benzo[g,h,i]perylene)</td><td>191-24-2</td></tr>
</table></td><td>concentration limit for the 18 listed PAHs <10 mg/kg
For children less than 3 years old:.
The individual concentration limits for PAHs restricted under REACH < 0.5 mg/kg
The sum total concentration limit for the 18 listed PAHs <1 mg/kg</td><td></td></tr>
<tr><td colspan="4">(b) N-Nitrosamines</td></tr>
<tr><td>Natural and synthetic rubber</td><td>The following N-Nitrosamines shall not be detected in synthetic and natural rubber
<table>
<tr><th>N-nitrosamine</th><th>CAS</th></tr>
<tr><td>N-nitrosodiethanolamine (NDELA)</td><td>1116-54-7</td></tr>
<tr><td>N-nitrosodimethylamine (NDMA)</td><td>62-75-9</td></tr>
<tr><td>N-nitrosodipropylamine (NDPA)</td><td>621-64-7</td></tr>
<tr><td>N-nitrosodiethylamine (NDEA)</td><td>55-18-5</td></tr>
<tr><td>N-nitrosodiisoprpylamine (NDiPA)</td><td>601-77-4</td></tr>
<tr><td>N-nitrosodibutylamine (NDBA)</td><td>924-16-3</td></tr>
<tr><td>N-nitrosopiperidine (NPIP)</td><td>100-75-4</td></tr>
</table></td><td>Not detectable</td><td>Assessment and verification: the applicant and/or rubber supplier shall provide a declaration of compliance supported by the test report, using test method EN 12868 or EN 14602</td></tr>
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Applicability	Scope of restriction	Limit values	Verification
	N-nitrosodiisobutylamine (NdiBA) 997-95-5 N-nitrosodiisononylamine (NdiNA) 1207995-62-7 N-nitrosomorpholine (NMOR) 59-89-2 N-nitroso N-methyl N-phenylamine (NMPhA) 614-00-6 N-nitroso N-ethyl N-phenylamine (NEPhA) 612-64-6 N-Nitrosopyrrolidine 930-55-2		
(c) Organotin substances			
Final product	Below listed tinorganic compunds shall not be present in the final product above specified limit concentrations. Tributyltin compounds (TBT) 0,025 mg/kg Dibutyltin compounds (DBT) 1 mg/kg Monobutyltin compounds (MBT) 1 mg/kg Dioctyltin compounds (DOT) 1 mg/kg Triphenyltin (TPT) 1 mg/kg	*limit values specified for each organotin compound*	***Assessment and verification:*** *the applicant shall provide a declaration of compliance supported by test results in accordance with test method ISO/TS 16179.*
(d) Phtalates			
Final product/ plastics, rubber, artificial leather, coatings and printings of materials	(i) Only phthalates that at the time of application have been risk assessed and fulfil the requirements of criterion 5 may be used in the product.	*n/a*	***Assessment and verification:*** *the applicant shall provide declaration of compliance supported by Safety Data Sheet*
	(ii) The following plasticizers shall not be used to the product, any article of it and to any homogeneous part of it: – 1,2-Benzenedicarboxylic acid, di-C6-8-branched alkyl esters, C7-rich (DIHP) CAS: 71888-89-6 – 1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters ((DHNUP) CAS: 68515-42-4 – Bis(2-methoxyethyl) phthalate (DMEP) CAS: 117-82-8 – Diisobutyl phthalate (DIPB) CAS: 84-69-5 – Bis (2-ethylhexyl) phthalate (DEHP) CAS: 117-81-7 – Dibutyl phthalate (DBP) CAS: 84-74-2	*The sum of the prohibited plasticizers shall be lower than 0.10 % by weight;* *The sum of the prohibited plasticizers for footwear intended for*	***Assessment and verification:*** *the applicant shall provide either declaration of non-use by polymer manufacturer supported by Safety Data Sheet for the plasticisers used in the formulation otherwise the test results according to ISO/TS 16181.* *<u>For products intended for children under 3 years old</u>: the applicant shall provide declaration of compliance supported by test results according to ISO/TS 16181 shall be provided.*

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<table>
<tr><th>Applicability</th><th>Scope of restriction</th><th>Limit values</th><th>Verification</th></tr>
<tr><td></td><td>– Benzyl butyl phthalate (BBP) CAS: 85-68-7
– Di-n-pentyl phthalate (DPP) CAS: 131-18-0
– 1–2 -Benzenedicarboxylic acid, dipentylester, branched and linear CAS: 84777-06-0
– Diisopentylphthalate (DIPP) CAS: 605-50-5
– Dihexyl phthalate (DnHP) CAS: 84-75-3
– N-pentyl-isopentylphthalate CAS: 607-426-00-1

<u>(iii) The following phthalates shall not be used in footwear for children below 3 years age.</u>
– Di-iso-nonylphtalate (DINP)* CAS: 28553-12-0; 68515-48-0
– Di-n-octylphthalat (DNOP)* CAS: 117-84-0
Diisodecylphthalate(DIDP)* CAS: 26761-40-0; 68515-49-1</td><td>children under 3 years old shall be lower than: 0,05% by weight.</td><td></td></tr>
<tr><td colspan="4">(e) Extractable metals</td></tr>
<tr><td>Final product</td><td>For footwear intended for children less than 3 years old, the below listed substances shall not be present in the final product above specified limit concentrations.
<table>
<tr><td>Antimony (Sb)</td><td>30.0 mg/kg</td></tr>
<tr><td>Arsenic (As)</td><td>0.2 mg/kg</td></tr>
<tr><td>Cadmium (Cd)</td><td>0.1 mg/kg</td></tr>
<tr><td>Chromium (Cr)</td><td>1.0 mg/kg (for textile)</td></tr>
<tr><td>Cobalt (Co)</td><td>1.0 mg/kg</td></tr>
<tr><td>Copper (Cu)</td><td>25.0 mg/kg</td></tr>
<tr><td>Lead (Pb)</td><td>0.2 mg/kg</td></tr>
<tr><td>Nickel (Ni)</td><td>1.0 mg/kg</td></tr>
<tr><td>Mercury (Hg)</td><td>0.02 mg/kg</td></tr>
</table>
The following limits value shall apply to footwear other than the footwear intended for children less than 3 years old.
<table>
<tr><td>Antimony (Sb)</td><td>30.0 mg/kg</td></tr>
<tr><td>Arsenic (As)</td><td>1.0 mg/kg</td></tr>
<tr><td>Cadmium (Cd)</td><td>0.1 mg/kg</td></tr>
<tr><td>Chromium (Cr)</td><td>2.0 mg/kg (for textile)</td></tr>
<tr><td>Cobalt (Co)</td><td>4.0 mg/kg</td></tr>
</table></td><td>limit values specified for each substance</td><td>Assessment and verification: the applicant and/or material supplier(s) shall provide a declaration of compliance supported by the test results in accordance with the following test methods: Extraction - EN ISO 105-E04-2013 (Acid sweat solution). Detection: EN ISO 17072-1 for leather, ICP-MS, ICP-OES (for textile and plastic).
Testing shall be carried out annually during the license period in order to demonstrate ongoing compliance with the criterion.</td></tr>
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DRAFT

Applicability	Scope of restriction	Limit values	Verification
	Copper (Cu): 50.0 mg/kg Lead (Pb): 1.0 mg/kg Nickel (Ni): 1.0 mg/kg Mercury (Hg): 0.02 mg/kg		
Metal components	The migration of nickel from nickel containing metal alloys which are in direct and prolonged contact with skin shall be lower than 0.5 µg/cm2/week	*0.5µg/cm2/week*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide declaration of no presence of nickel in footwear component supported by the certification from the manufacturer of metal parts, otherwise declaration of compliance supported by the results of test method EN 1811.*
Chromium tanned leather	For shoes containing chromium tanned leather, there shall be no Chromium (VI) in the final product.	*Not detectable*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a test report, using test method EN ISO 17075 (detection limit 3 ppm). The sample preparation must follow the indications of the EN ISO 4044.* ***Testing shall be carried out annually during the license period in order to demonstrate ongoing compliance with the criterion. Non-chromium tanned leather is exempt from the requirement.***
	For shoes containing chromium tanned leather extractable chromium content in the final product shall be lower than 200 mg/kg.	*200 mg/kg*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a test report, using test method EN ISO 17072-1.* ***Testing shall be carried out annually during the license period in order to demonstrate ongoing compliance with the criterion. Non-chromium tanned leather is exempt from the requirement.***
(f) TDA and MDA			
Final product/ PU foam, PU coatings	The following limits value shall apply to footwear that contain PU foam or PU coatings 2,4 Toluenediamine (2,4-TDA, 95-80-7) 4,4'-Diaminodiphenylmethane (4,4'-MDA, 101-77-9)	*Lower than 5 mg/kg each*	***Assessment and verification:*** *the applicant shall provide a declaration of compliance supported by the test results according to the following procedure: Extraction with 1% aqueous acetic acid solution. The sample must be a composite of 6 pieces to be taken*

DRAFT

Applicability	***Scope of restriction***	***Limit values***	***Verification***
			from beneath each samples face (to a maximum of 2 cm from the surface). Four repeat extractions of the same foam sample must be performed maintaining the sample weight to volume ratio of 1:5 in each case. The extracts are combined, made up to a known volume, filtered and analysed by HPLC-UV or HPLC-MS. If HPLC-UV is performed and interference is suspected, reanalysis with HPLC-MS shall be performed.
(g) Vinyl Chloride Monomer (VCM)			
Final product: PVC, PVC coatings	Where PVC components or PVC coatings are used in footwear the residual vinyl chloride monomer (VCM) content shall not exceed specified limit value.	*1 mg/kg*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a declaration of compliance supported by the results of test report according to test method ISO 6401.*
(h) Formaldehyde			
Final product/ leather, textile	The amount of free and hydrolysed formaldehyde of the components of the footwear shall not exceed the following limits: — textile: <n.d. (*20 mg/kg*), — leather: < n.d. (*20 mg/kg*) (children footwear), *75 mg/kg* (insole and socks), *150 mg/kg* for other parts of the product	*Specified limit values*	***Assessment and verification:*** *the applicant and/or material supplier(s) shall provide a declaration of compliance supported by the results of a test report, using the following test methods: Textiles: EN ISO 14184-1; Leather: EN ISO 17226-1.*
(i) Antimony			
Raw polyester fibres	The level of antimony present in the raw polyester fibres shall not exceed 260 ppm.	*260 mg/kg*	***Assessment and verification****: the applicant or fibre manufacturer shall either provide a declaration of non-use during manufacturing process or a test report using the following test methods: direct determination by Atomic Absorption Spectrometry or Inductively Coupled Plasma (ICP) Mass Spectrometry. The test shall be carried out on a composite sample of raw fibres prior to any wet processing.*

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