

European Ecolabel
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Ecolabel Criteria for Industrial and Institutional Laundry Detergents

Technical report

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1 Summary

This document supports the draft criteria for Industrial and Institutional Laundry Detergents. The draft criteria and background document version 3 and 4 have been the basis for discussions at the EUEB meetings in November 2011 and March 2012 respectively.

During the development of the criteria, their level of stringency has been questioned by some Member States. Since this is the first generation of criteria and due to the limited product formulations available this question has been difficult to answer. The producers represented by A.I.S.E have suggested that the proposed criteria as a whole (criteria version 2.1) will cover approximately 10- to 20% of the products on the market [A.I.S.E 2011]. This level has been confirmed when Ecolabelling Denmark made calculations solely based on the public DID-list and the available formulations. Some ingoing substances provided a high contribution to the aNBO and anNBO levels due to the fact that there is “no information” on the DID-list. Information is, however, available for some of these substances (this information is also available to producers) and when this is used in the calculations of the real aNBO and anNBO levels, their values decrease considerably. This indicates that the stringency of the criteria is even lower than the numbers suggested by A.I.S.E.

On the contrary, when comparing only the CDV parameter with the current criteria from the Nordic Ecolabel [Nordic Ecolabel 2009] the proposed levels of the EU Ecolabel are stricter.

The overall exact level of stringency is difficult to determine and it is not possible to tell a-priori which criterion will be decisive or whether a formulation will fulfil the criteria or not.

Criteria have in any case been developed in order for the products with the best environmental profile available on the European market to be able to fulfil them.

2 Product Group Definition

In this section the proposal for the product group definition is presented along with a description of justifications for the different choices made.

Proposed Product Group Definition

It is suggested that the product group “Industrial and Institutional Laundry Detergents” shall comprise:

Laundry detergent products for textile wash performed by professional users in the industrial and institutional sector.

Included in the product group are multi-component-systems constituting of more than one component used to build up a complete detergent or a laundering program for automatic dosing system.

This product group shall not comprise products for obtaining textile attributes such as water-repellent, waterproof or fireproof etc. Furthermore, the product group shall not comprise products

that are dosed by carriers such as sheets, cloths or other materials, as well as washing auxiliaries used without subsequent washing, such as stain removers for carpets and furniture upholstery.

Consumer laundry detergents are excluded from the scope of this product group.

Motivation

This definition is in line with the definitions of the Regulation 648/2004 on detergents. It is essential to exclude products for domestic use, since these are covered by a separate criteria document.

Industrial and Institutional Laundry Detergents can be significantly different from each other both in the form and in the formulation of the products. Therefore it is suggested to make it possible to award the Ecolabel both by liquid or powder, one-component systems, or multi-component systems. The latter is made of more than one product and is locally dosed at the laundry facility by an automatically and on-site calibrated dosing system.

It is suggested that products for obtaining textile attributes such as water-repellent, waterproof or fireproof etc. are excluded from the product group since the criteria are set entirely towards products that clean textiles in water. This is why the product group does not also include products that are dosed by carriers such as sheets, cloths or other materials, as well as washing auxiliaries used without subsequent washing, such as stain removers for carpets and furniture upholstery.

3 Assessment and Verification – in General

3.1 Measurement Thresholds

The following thresholds have been set:

Compliance with the ecological criteria is required for substances intentionally added, as well as for by-products and impurities from raw materials, the concentration of which equals or exceeds 0,010 % by weight of final formulation.

For biocides, colouring agents and fragrance compliance with the criteria is required regardless of their concentration.

Substances meeting the threshold limit as listed above are hereby referred to as “Ingoing substances”.

For all products: it is the highest total dosage recommended for the individual degree of soiling which must comply with the ecological criteria. If the dosage is stated in intervals the worst case dosage must be used when the criterions are assessed.

Motivation

The thresholds are set to ensure all intentionally added substances are taken into account in awarding an EU Ecolabel license. The threshold limits of 0,010 % by weight of final formulation are more comprehensive than threshold limits set for material safety data sheets due to the scope of EU Ecolabel – only products with the best environmental profile can be awarded an Ecolabel

license. The same measurement thresholds are also used in the EU Ecolabel product group Laundry Detergents.

Biocides, colouring agents and fragrance must comply with the criteria regardless of their concentration. This is a step further in respect to what requested in the criteria for household laundry products where the request for biocides, colouring agents and fragrances to comply with the criteria regardless of their concentration was valid for all the criteria except the one on Hazardous substances and mixtures.

The reasoning behind the sharpening of the criterion for this product group is that these ingoing substance often have a significant contribution to the overall environmental profile of the product (primarily the CDV), even at the low concentrations they are used. Biocides, colouring agents and fragrance are moreover part of the CDV-calculation regardless of the concentration.

Fragrances may be considered as mixtures for the calculation of the total chemicals, CDV and biodegradability of organics (using the data on the DID list).

In order to cover the whole range of dosages and the worst scenario, it is prescribed that the worst case dosage shall be used in the assessment of the criteria. This corresponds to the highest total dosage recommended for the individual degree of soiling and water hardness, and again if the dosage is stated in intervals, the worst case (highest) dosage shall be used when assessments of the criteria are made.

3.2 Functional Unit

The functional unit for this product group shall be expressed in g/kg laundry (grams per kilo laundry).

Motivation

The functional unit is an administrative unit used only for calculating the compliance with the ecological requirements. Expressing the functional unit in g/kg laundry (grams per kilo laundry) enables the setting of common limits for various product types, independently of the actual laundry batch size and makes it operational for both single batch washers and wash tunnels (continuous batch washers). Moreover, it allows flexibility in selecting dosages related to different wash loads.

4 Proposed Ecolabel Criteria

The proposed criteria set is based on the European stakeholders' answers to the questionnaire, as well as common practices, best available techniques, the outcome of the two AHWG meetings in 2011 and the EUEB meetings of November 2011 and March 2012.

4.1 Product and dosage Information

Proposed Criterion

The recommended total dosage for one kg of laundry according to the degree of soiling and water hardness must be given in g/kg laundry or ml/kg laundry. All products in a multi-component system have to be included with the worst case dosage when assessments of the criteria are made.

Examples of degree of soiling:

Light	Medium	Heavy
Hotel: bed-linen, bedclothes and towels etc. (towels may be considered heavily soiled) Cloth hand towel rolls.	Work clothes: institutions/retail/service etc Restaurants: table-cloths, napkins etc. Mops and mats	Work clothes: industry/kitchen/butche- ring etc. Kitchen textiles: clothes, dish towels etc. Institutions as hospitals: bed-linen, bedclothes, contour sheets, patient clothing, doctor's coat or coatdress etc.

The product name, or in case of a multi-component system, a list of all products part of that system, together with the recommended water hardness (soft, medium or hard) and the intended degree of soiling shall be provided.

The applicant must document compliance with criteria 2, 3 and 6 for all product names.

Motivation

A criterion for dosage information is set to ensure correct dosage according to the degree of soiling and water hardness as well as to ensure limits for CDV calculation. This criterion has been set because the environmental impact is highly related to the actual amount of product used.

In order to make sure that all the relevant limits in the criteria document are met it is now mandatory to include a list of all products together with the recommended water hardness and intended degree of soiling in the application. Example: SuperClean (hard water, heavy soiled). It is also explicitly mentioned that an applicant has to fulfil the limits in criteria 2, 3 and 6 for all recommended water hardness and soiling.

4.2 Toxicity to Aquatic Organisms: Critical Dilution Volume (CDV)

Proposed Criterion

The Critical Dilution Volume (CDV_{chronic}) of the product shall not exceed the following limits (CDV_{chronic}):

Soft water (0-6 °dH)	CDV_{chronic} (L/kg laundry)		
	Light	Medium	Heavy
Product type / Degree of soiling			
Powder	30 000	40 000	50 000
Liquid	50 000	60 000	70 000
Multi-component-system	50 000	70 000	90 000

Medium water (7-13 °dH)	CDV _{chronic} (L/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	40 000	60 000	80 000
Liquid	60 000	75 000	90 000
Multi-component-system	60 000	80 000	100 000

Hard water (> 14 °dH)	CDV _{chronic} (L/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	50 000	75 000	90 000
Liquid	75 000	90 000	120 000
Multi-component-system	75 000	100 000	120 000

The Critical Dilution Volume toxicity (CDV_{chronic}) is calculated for all ingoing substances (i) in the product using the following equation:

$$CDV_{\text{chronic}} = \sum CDV_{(i)} = \frac{\text{weight}_{(i)} \cdot DF_{(i)}}{TF_{\text{chronic}(i)}} \cdot 1000$$

where

weight = the weight of the ingredient per recommended dose

DF = the degradation factor

TF = the chronic toxicity factor of the substance as stated in the DID list.

Biocides, colouring agents and fragrances present in the product must also be included in the CDV calculation even if the concentration is lower than 0,010 % (100 ppm).

Because of the substances' degradation in the wash process, separate rules apply to the following two substances:

- Hydrogen Peroxide (H₂O₂) – not to be included in calculation of CDV.
- Peracetic acid – to be included in the calculation as acetic acid.

Motivation

Earlier criteria development for laundry detergents for domestic use shows that the CDV criterion is seen as one of the most important criteria regulating the environmental properties of products.

The criterion for CDV calculation is set with different limits for different degrees of soiling, of water hardness and different kinds of products: powder, liquid and multi-component systems. Different limits are set to ensure that the limits are neither too effortless for the powder and liquid products nor too strict for the multi-component systems. The present values for CDV limits are mainly suggested by industry stakeholders on the basis of their knowledge of the European products.

The CDV_{chronic} -levels for laundry detergents for domestic use are, compared to this, quite low, varying from 20000 to 35000 L/kg laundry. Thus the levels for professional products reflect that the textiles are expected to be dirtier, that shorter wash cycles are used and that more concentrated products can be used, since the employees using professional laundry detergents are trained to handle more concentrated products. The CDV-levels reflect that the criteria set are targeted towards truly professional products which are very distinguishable from domestic-like products.

The CDV requirement aims at setting a high standard for the Ecolabelled products based on all ingoing substances in the final product. For explanation of the calculation method and DID list parameter, reference is made to Detergents Ingredients Database Part A and B, available at the EU Ecolabel website.

Generally, the use of chronic toxicity data is preferred to acute toxicity data because long term toxicity data is considered of higher quality and as giving a more precise and reliable estimate of environmental effects. The CDV values are thus based on chronic toxicity factors.

Due to the lack of chronic data for certain substances (such as fragrances, silicates, and various surfactants) on the DID list, the “chronic” toxicity factors (TF) are then based on acute toxicity values and thereby have a higher weight in the CDV_{chronic} calculation than may be realistic. The proposed CDV values took this into account. However, it is important that new chronic data are presented and made available. For substances for which the chronic TF values on the DID list are based on acute toxicity data, chronic eco-toxicity values presented to the Competent Bodies should be considered in order to correctly estimate the chronic TF for the substance.

Separate rules apply to the calculation of the CDV for hydrogen peroxide and peracetic acid because these substances are reactive in the washing process and they are therefore treated in the calculation as their reaction products.

The difference in CDV levels for powders and liquids take into account that liquids typically contain higher levels of surfactants per functional unit compared to powders. Surfactants have a high contribution to the CDV, whereas powders often contain high amounts of relatively “inert” substances like zeolite, carbonates, sulphates which generally have a low contribution to the CDV. The CDV levels for multi-component products are set to ensure that more specifically designed and thus concentrated products can be awarded the Ecolabel.

The proposed CDV levels are based on the received product formulations, experience from the Nordic Ecolabel, comments from ad hoc working group meeting as well as written comments.

4.3 Biodegradability

a) Biodegradability of surfactants

Proposed Criterion

All surfactants must be biodegradable under aerobic conditions.

All non-ionic and cationic surfactants must also be biodegradable under anaerobic conditions.

Motivation

Substances that do not degrade or degrade very slowly can accumulate in the environment and present a potential risk in the future even they are not acute toxic. The knowledge of these persistent substances is often incomplete. Quick and complete degradation under both aerobic and anaerobic conditions is hence of high environmental importance. Surfactants in this respect are considered very relevant due to the fact that this group of organic substances is a major part of detergents.

For professional laundry processes, non-ionic, cationic and anionic surfactants are used. A requirement of aerobic biodegradability has been introduced for all surfactants because even if all surfactants used in European market shall comply with the aerobic biodegradability requirement as laid down in Regulation (EC) N° 648/2004 on detergents, industry can ask for derogations. The requirement on aerobic biodegradability is introduced here to prevent the utilization of surfactants derogated from this requirement in Ecolabelled products.

In the Nordic Ecolabel [Nordic Ecolabel, 2009] all surfactants have to be both aerobic and anaerobic degradable. As per march there 83 products from 8 license holders are on the marked on the Danish. 23 professional laundries have been licensed in Denmark where it is mandatory to use Ecolabeled detergents.

On the DIS List there are 19 anionic surfactants. 8 of them are anaerobic biodegradable , 8 are not anaerobic biodegradable and for 3 there are no data available.

As for non-ionic surfactants there are 34 listed on the DID list. 1 is not anaerobic biodegradable, 22 are and for 11 data is not available.

The reason why the biodegradability under anaerobic conditions is asked only for non-ionic and cationic surfactants is that information about the suitable anaerobically biodegradable surfactants seems not to exist for anionic surfactants.

Even if there are industrial and institutional laundry detergents ecolabelled with the Nordic Swan containing surfactants that are biodegradable under aerobic and anaerobic conditions, AISE has informed us that Industry is not to be able to reformulate certain products without some currently used anionic surfactants non anaerobically biodegradable (such as LAS) that are needed as key ingredients for cleaning in several professional laundry applications.

The choice of surfactants is highly dependent on the wash classification; so type of textile and type and level of dirt to be removed. Anionic surfactants are used in several specific wash applications. One of the key applications is to remove particulates stains by electrostatic repulsion. These not soluble particles could be dust, some proteins (as often found in hospital textiles), sand, rubber etc. These stains are most efficiently removed by charging the particles. In practice this is achieved by either using phosphates or anionic surfactants. In cases where phosphates are not allowed, anionic

surfactants are the only option. Different anionic surfactants behave differently in these cleaning processes so that is why it is very difficult to substitute them. Most effective and most used are linear alkyl benzene sulphonate (LAS) [A.I.S.E].

A study commissioned to the Fraunhofer Institute by the European Commission in 2003 on the phenomenon of anaerobic biodegradation in the context of the total environmental impact of detergent surfactants concludes that " [...] no accumulation of the measured surfactants (mainly LAS, NP and derivatives, AE, DTDMAC/DSDMAC) has been observed in the water bodies. With regard to LAS, available data suggest that there is no enrichment of LAS in the freshwater environment over a period of several decades even though this substance has been used in large amounts and is not biodegradable under anaerobic condition. The poor biodegradability of some surfactants (e.g. LAS) under anaerobic condition may sometimes result in a high surfactant sludge load, especially after treatment of sewage in WWTP employing an anaerobic sludge stabilisation process. Nevertheless, if the anaerobically treated sludge is used as fertiliser in agriculture, the surfactant concentration in sludge-amended soil is predicted to decrease rapidly because of the aerobic biodegradation process that occurs in soil. Overall, the data analysis confirms that all surfactants must be ultimately and readily biodegradable under aerobic condition in order to prevent major environmental impact. With regard to sediments, no accumulation of aerobically ready biodegradable surfactants has been observed, in particular for LAS even over a period of several decades. This seems to confirm that aerobic biodegradation plays the main role in elimination of organic compounds." [...] The study is available at:

http://ec.europa.eu/enterprise/sectors/chemicals/documents/competitiveness/anaerobic_en.htm

b) Biodegradability of organic substances

Proposed Criterion

The content of all organic substances in the product that are aerobically non-biodegradable (not readily biodegradable) (aNBO) and anaerobically non-biodegradable (anNBO) shall not exceed the following limits:

aNBO

Soft water (0-6 °dH)	aNBO (g/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	0,70	1,10	1,40
Liquid	0,50	0,60	0,70
Multi-component-system	1,25	1,75	2,50

Medium water (7-13 °dH)	aNBO (g/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	1,10	1,40	1,75

Liquid	0,60	0,70	0,90
Multi-component-system	1,75	2,50	3,75

Hard water (> 14 °dH)	anNBO (g/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	1,40	1,75	2,20
Liquid	0,70	0,90	1,20
Multi-component-system	2,50	3,75	4,80

anNBO

Soft water (0-6 °dH)	anNBO (g/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	0,70	1,10	1,40
Liquid	0,50	0,60	0,70
Multi-component-system	1,25	1,75	2,50

Medium water (7-13 °dH)	anNBO (g/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	1,10	1,40	1,75
Liquid	0,60	0,70	0,90
Multi-component-system	1,75	2,50	3,75

Hard water (> 14 °dH)	anNBO (g/kg laundry)		
Product type / Degree of soiling	Light	Medium	Heavy
Powder	1,40	1,75	2,20

Liquid	0,70	0,90	1,20
Multi-component-system	2,50	3,75	4,80

Motivation

This general requirement reduces the content of not biodegradable organic substances to a minimum, providing the Ecolabelled products an optimal biodegradation profile and minimising the possible accumulation of non-biodegradable substances in waste water sludge and other relevant environmental compartments.

The current thresholds are mainly suggested by industry stakeholders on basis of their knowledge of the products on the European market.

Substances commonly used in laundry detergents that are not anaerobically biodegradable (anNBO) are for instance surfactants (certain types), polycarboxylates, CMC, silicone, PVNO/PVPI, phosphonates, polymers, fragrance, colour, optical brighteners (fluorescent whitening agents), iminodisuccinate, EDDS, polyaspartic and polyaspartic acid. Furthermore, data for anaerobic biodegradability are not available (according to the DID list) for a range of other substances commonly used, such as MGDA, various organic acids and glycol ethers etc.

As a general requirement to the biodegradability of the organic substances, the aNBO/anNBO criterion combined with the CDV criterion ensures that the overall content of not readily biodegradable and/or toxic substances is limited, while at the same time allowing some flexibility in the product composition. With a general focus on biodegradability, the Ecolabel criteria allow a certain content of substances that do not degrade under aerobic/anaerobic conditions. There should be no distinction between which aNBO/anNBO substances that are used – provided that they comply with the overall criteria document and that the CDV value ensures that the overall content of acutely toxic substances is reduced.

The following exemption from the requirement for anaerobic degradability has been introduced, in accordance with the Nordic Ecolabel criteria [Nordic Ecolabel 2009].

In the absence of documentation in accordance with the above requirements, a substance other than a surfactant may be exempted from the requirement for anaerobic degradability if one of the following three alternatives is fulfilled:

1. Readily degradable and has low adsorption ($A < 25\%$) or
2. Readily degradable and has high desorption ($D > 75\%$) or
3. Readily degradable and non-bioaccumulating.

Testing for adsorption/desorption may be conducted in accordance with OECD guidelines 106.

The exemption will allow producers to use ingoing substances where no data is available but it has been documented by one of the three mentioned alternatives that it is very unlikely that the ingoing substances will be found in the anaerobic compartment and therefore it is not considered relevant whether or not the ingoing substances actually fulfil the anNBO criteria.

4.4 Excluded or Limited Substances and Mixtures

a) Specified Excluded Substances

Proposed Criterion

The following substances shall not be included in the product, either as part of the formulation or as part of any mixture included in the formulation:

- Phosphates (phosphonates is not excluded but limited by criterion 3)
- APEO (Alkyl phenol ethoxylates) and ADP (Alkylphenol and derivatives thereof)
- EDTA (ethylene-diamine-tetra-acetic-acid) and its salts

Motivation

Phosphates

The current debate on the possible regulation of *phosphorous* in detergents confirms that eutrophication caused by the use of phosphates is still a subject of high relevance.

Phosphate emission from agriculture is one of the major contributors of P to the aquatic environment (EEA 2005). Phosphates from detergents may only play a minor role in the overall phosphate emissions to the aquatic environment, especially in areas where phosphate is effectively removed in waste water. Generally the emissions of P via point sources (including waste water) have decreased during the last 30 years. This is mainly due to improved waste water treatment, especially in Northern and Western Europe, following the implementation of the EU Waste Water Treatment Directive (1991/271/EC) (EEA 2005). Eastern European countries also seem to follow this development, although Directive 1991/271/EC is not fully implemented in many Member States (EEA 2005, CEEP 2007). That is why a limitation of Phosphorus it is proposed for this product group.

Even if the the Proposal for a Regulation of the European Parliament and of the Council amending Regulation (EC) No 648/2004 as regards the use of phosphates and other phosphorous compounds in consumer detergents does not affect industrial and institutional detergents since technically and economically feasible alternatives seem to be not yet available throughout the EU, it has been decided to go a step further with the ban of phosphates in this criteria document as Ecolabel is a voluntary tool for environmental excellence.

The alternatives to phosphates is often phosphonates and phosphoric acid. Phosphonates are not biodegradable but have a low acute toxicity. The use of phosphonates are limited by criterion 3.

According to A.I.S.E the ban on phosphates will limit significantly the products that could fulfil the criteria. It is difficult to give a precise estimation, but it could be that about 50-70 % of the laundry products contain phosphate today, those are often the best performing products for the industrial laundry market could be excluded. However, many of these phosphate-containing products might not pass some of the other criteria and would be excluded from the possibility of getting the EU Ecolabel in any case.

Although challenging, industry representatives consider the ban of phosphates implementable if coupled to the proposed derogation for surfactants (R50) in criterion 4; otherwise almost no laundry product will be able to obtain an EU Ecolabel.

The benefits of moving from phosphate-free households detergents have been assessed for each of the EU-25 countries. The greatest benefits are estimated in countries with high phosphate detergent use, low provision of tertiary sewage treatment and severe problems with eutrophication. Based on this assessment, there are only few or some benefits to gain in Northern and Central Europe, whereas the most benefits from moving to phosphate free detergents are assumed to be gained in the Baltic, Eastern and Southern European countries (Czech Republic, Slovakia, Poland, Spain, Portugal, Latvia and Lithuania) [RPA, 2006].

The Ecolabel view on phosphates should be re-evaluated once the EU Water Framework Directive (WFD) 2000/60/EC has been implemented (by year 2015). The WFD requires that “all inland and coastal waters within defined river basin districts must reach at least good status by 2015 and defines how this should be achieved through the establishment of environmental objectives and ecological targets for surface waters”. This involves management of agriculture in relation to reducing the emissions of phosphate to surface water. By 2015 it is also anticipated that the implementation of the Waste Water Treatment Directive has moved forward in Eastern Europe/the newer Member States, and hence providing a more efficient removal of phosphate.

APEO and ADP

APEO (Alkyl phenol ethoxylates) and ADP (Alkylphenol and derivatives thereof) are a group of persistent surfactants that have displayed endocrine disruptive characteristics. The substances are being phased out from the majority of products through legislation. However, Nordic Ecolabelling has found them present in some ingredients and this is why it has decided to explicitly ban them.

EDTA

EDTA can re-mobilise metals from sediments and soils leading to contamination of surface and ground waters. The aerobic and anaerobic biodegradability of EDTA is furthermore limited. Risk assessment of EDTA has concluded a need for limitation of the risk in a range of applications, although not for domestic detergents as the use of EDTA in these products is limited (EU RAR 2004). Exclusion of EDTA in the Ecolabel criteria is thus a preventive measure. This also ensures that it can be communicated to the consumers that Ecolabelled products are EDTA free.

b) Hazardous Substances and Mixtures

Proposed Criterion

According to the Article 6(6) of Regulation (EC) No 66/2010 on the EU Ecolabel, the product or any component of it shall not contain substances meeting criteria for classification with the hazard statements or risk phrases specified below in accordance with Regulation (EC) No 1272/2008 or Directive 67/548/EC nor shall it contain substances referred to in Article 57 of Regulation (EC) No 1907/2006. The risk phrases below generally refer to substances. However where information on substances cannot be obtained, the classification rules for mixtures shall be applied.

List of hazard statements:

Hazard Statement¹	Risk Phrase²
H300 Fatal if swallowed	R28
H301 Toxic if swallowed	R25
H304 May be fatal if swallowed and enters airways	R65
H310 Fatal in contact with skin	R27
H311 Toxic in contact with skin	R24
H330 Fatal if inhaled	R23/26
H331 Toxic if inhaled	R23
H340 May cause genetic defects	R46
H341 Suspected of causing genetic defects	R68
H350 May cause cancer	R45
H350i May cause cancer by inhalation	R49
H351 Suspected of causing cancer	R40
H360F May damage fertility	R60
H360D May damage the unborn child	R61
H360FD May damage fertility. May damage the unborn child	R60/61/60-61
H360Fd May damage fertility. Suspected of damaging the unborn child	R60/63
H360Df May damage the unborn child. Suspected of damaging fertility	R61/62
H361f Suspected of damaging fertility	R62
H361d Suspected of damaging the unborn child	R63
H361fd Suspected of damaging fertility. Suspected of damaging the unborn child.	R62-63
H362 May cause harm to breast fed children	R64
H370 Causes damage to organs	R39/23/24/25/26/27/28
H371 May cause damage to organs	R68/20/21/22
H372 Causes damage to organs	R48/25/24/23
H373 May cause damage to organs	R48/20/21/22
H400 Very toxic to aquatic life	R50
H410 Very toxic to aquatic life with long-lasting effects	R50-53
H411 Toxic to aquatic life with long-lasting effects	R51-53
H412 Harmful to aquatic life with long-lasting effects	R52-53
H413 May cause long-lasting effects to aquatic life	R53
EUH059 Hazardous to the ozone layer	R59
EUH029 Contact with water liberates toxic gas	R29
EUH031 Contact with acids liberates toxic gas	R31
EUH032 Contact with acids liberates very toxic gas	R32
EUH070 Toxic by eye contact	R39-41
Sensitising substances	
H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled	R42
H317: May cause allergic skin reaction	R43

¹ Regulation (EC) No 1272/2008 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

² Directive 67/548/EEC with adjustment to REACH according to Directive 2006/121/EC and Directive 1999/45/EC as amended

Note that this criterion also applies to known degradation products such as formaldehyde from formaldehyde releasers.

The use of substances or mixtures which change their properties upon processing (e.g. become no longer bioavailable, or undergo chemical modification) so that the identified hazard no longer applies are exempted from the above requirement.

The final product must not be labelled according to the hazard statements above.

Derogations:

The following substances are specifically exempted from this requirement:

Surfactants <20%	H400 Very toxic to aquatic life	R50
Biocides for preservations purposes * (only for liquids with pH between 2 and 12 and maximum 0,10 % w/w of active material)	H331: Toxic if inhaled H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled H317: May cause allergic skin reaction H400: Very toxic to aquatic life	R23 R42 R43 R50
Enzymes**	H400: Very toxic to aquatic life H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled H317: May cause allergic skin reaction	R50 R42 R43
Bleach catalysts ***	H400: Very toxic to aquatic life	R50
NTA as an impurity in MGDA and GLDA***	H351: Suspected of causing cancer	R40

* Derogation is only for criterion 4b. Biocides shall comply with Criterion 4 e).

** Including stabilizers and other auxiliary substances in the preparations

*** In concentrations lower than 1,0% in the raw material as long as the total concentration in the final product is lower than 0,10%

Motivation

This requirement regarding CMR substances and environmentally hazardous substances is a standard requirement for Ecolabelled products. By this requirement, the most critical substances potentially affecting human health and the environment are excluded from the products. Substances fulfilling the PBT criteria as defined under REACH will be restricted through this criterion (i.e. by exclusion of substances classified as environmentally hazardous with R50/53 or R51/53).

The requirement has been expanded to include sensitizing substances. The purpose of the requirement is to limit the risk of allergic reactions from chemicals still presents in the laundry after washing. Allergy is an increasing problem. Some ingoing substances used in laundry detergents and auxiliary products are designed to stay in /leave traces in the textile (e.g. fragrances, cationic surfactants in fabric softeners) while other substances may be left in the textile due to incrustation of poorly soluble substances or poor / insufficient rinsing in the washing process. Thus, a limitation of the content of sensitizing substances will minimise the risk of allergic reactions.

The requirement on the final product not to be labelled according to the hazard statements listed is added as a precautionary measure, to limit the hazardous substances eventually derogated to an amount that would not lead to the labelling of the product.

The EU Ecolabel Regulation states that derogations to exclusion of certain hazardous substances can only be made if 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 [EU66, 2010].

Input to the suggested derogations has mainly been given by producers (see below). Also MSDS of typically used ingoing substances delivered from different sources have been used as background material.

Surfactants

Surfactants meeting the requirements for classification as *Toxic to aquatic life* (H400)/R50 are derogated because the most effective surfactants have this classification and due to the fact that otherwise a larger amount of less effective surfactants will be used.

Arguments for having a derogation for surfactants classified R50 in Industrial and Institutional Laundry Detergents has been made by A.I.S.E : a key point is that professional laundry machines apply much higher mechanical action than domestic machines. This allows them to reduce the washing time by a factor of more than 50 and consequently to reduce also water, energy and detergent consumption by 75%. These are therefore significant environmental savings in the overall LCA analysis which have to be taken into account. With the weaker non classified defoaming type of non-ionic surfactant, more surfactants would need to be added into the product. Foam formation, caused by these less effective defoamers, will also lead to reduced cleaning and so more rewash. Overall, this will have a negative effect on the Eco-profile of the wash process. In professional detergents combinations of different types of surfactants are often needed in order to cover different types of soiling and also different washing temperatures to which the detergents are applied. [A.I.S.E. 2011]. This makes it difficult to find alternatives to the effective surfactants classified R50.

It is estimated by A.I.S.E that the number of products fulfilling the criteria without this derogation is less than 3% and in case products are developed without these R50 surfactants they would not fulfill the performance standard at customers.

Arguments for not having a derogation has been made by EEB/BEUC and some Member States stating that by this derogation, the Ecolabel will not promote the development of efficient and less toxic surfactants. A lot of surfactants on the DID (Detergent Ingredient Database) list that are not very toxic can still be used in detergents. EEB/BEUC states that from 71 different surfactants listed on DID only 11 have toxicity values indicating that they would be classified as R50. Ecolabelling Denmark added a note on this statement saying that the information on the DID list is not suitable to classify substances since the toxicity values are expressed as a median value for several substances within the same substances group. They are not the real toxicity values of single substances.

Biocides for preservations purposes

Biocides meeting the requirements for classification as R50/H400: Very toxic to aquatic life H331: Toxic if inhaled, R42/H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled, R43/H317: May cause allergic skin reaction are exempted from exclusion. The reasoning is that no alternative biocides with the same efficiency but without these R-phrases seem to be available. Effective biocides are necessary to ensure that the products keep their performance and thereby ensure that they are not degraded and discarded.

Professional laundries use neutral pre-washes to remove blood stains in the first rinse. Microbial growth is increased with these products. To prevent growth at these pHs, non-classified biocides do not work effectively over a broad range of microbes. Furthermore, in factories producing professional laundry products, volumes are relatively low as compared to consumer products; therefore, there is a higher risk of contamination. The complex supply chain operation for the supply of I&I products require robust product conservation to ensure safe use by the end user. Especially products delivered via distributors have a long travel to the end user, which involves long storage times and exposure to many extremes temperature conditions. [A.I.S.E. 2011]

This derogation has been kept in order to allow some preservatives like Glutaraldehyde and CMIT/MIT (5-Chlor-2-methyl-2H-isothiazol-3-on, 2-Methyl-2H-isothiazol-3-on (1:3) CAS 55965-84-9) that, according to A.I.S.E, are used in a very significant part of the products on the market. If these biocides are banned, testing would be needed to find other suitable substances. These tests require very long periods (with many samples at different storage temperatures), significant resources and costs. Substitute will therefore not be available in the short term.

These biocides are only needed in liquid products, with a pH-value between 2 and 12. In case of automatic dishwashing that actually applies only to rinse aids. Furthermore as the need for preservation is very much dependent on the level of free water (more concentrated products generally require less or no preservation), it has been decided to limit the concentration of active material allowed in the final product to 0.1%. This will also guarantee that the final product does not have to be labelled “contains (name of substance) may cause an allergic reaction” according to the Classification Labelling and Packaging Regulation (CLP).

In the criteria for the Nordic Ecolabel for the same types of products [Nordic Ecolabel 2010] biocides meeting the requirement for classification as R42 or R43 are allowed as well.

Enzymes

Enzymes (including additives in the enzyme formulations such as stabilisers) meeting the requirements for classification as *R42/H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled*, *R43/H317: May cause allergic skin reaction* and *R50/H400: Very toxic to aquatic life* are derogated from criterion 4b;

From a cleaning performance as well as a sustainability point of view, enzymes are highly desirable ingoing substances of detergents. They cannot be substituted - but may substitute other, less desirable substances. Enzymes enable improved cleaning and at lower temperatures. They are renewable and readily biodegradable substances. Enzymes can substitute or reduce some of the oil and mineral based detergent ingoing substances such as surfactants and phosphates. They are specific and very active catalysts, enabling compaction of detergents. Enzymes (enzyme products)

are without any exception mixtures containing active enzyme protein and formulation ingoing substances including stabilizers. All active enzyme proteins are classified as respiratory sensitizers (*R42/H334: May cause allergy or asthma symptoms or breathing difficulties if inhaled*). Commercial enzyme products used for professional laundry detergents are formulated as low-dusting granulates or as liquids ensuring that exposure of active enzyme protein to users that are well below the safety concern level. In more than 40 years of use in laundry detergents, there is no evidence of or reason to suspect that enzyme products present a risk to the consumer or professional users.

Enzyme products may contain necessary stabilizers and other formulation components, some of which may also be classified as skin sensitizers (*R43/H317: may cause allergic skin reaction*). Therefore some enzyme products may also be classified as skin sensitizer. When enzyme products are used in the professional laundry products, such stabilizers are diluted so that concentration is well below safety concern level.

One of the most used protease in the detergent industry is a subtilisin (EINECS 232-752-2, CAS 9014-01-1). A REACH dossier was submitted in 2010 by Novozymes A/S as Lead Registrant. Subtilisin has a proteolytic activity leading to acute effect on aquatic organisms e.g. daphnia. It was concluded based on data that protease (subtilisin) should be classified as *R50H400: Very toxic to aquatic life due to acute toxicity to aquatic organisms*.

However, the acute effect disappears as soon as proteases are deactivated. In both industrial STP, where sewage from the production facility is treated, and municipal STP, where sewage from primarily private households is treated, it was found through measurement that more than 99.99% of subtilisin is deactivated/degraded in waste water treatment plants. In addition, use and transport in the sewer system can be assumed to be 80% based on monitoring data from STP's.

Based on the available information it is concluded that the use of protease (subtilisin) for professional laundry detergents is safe for the environment. This was already recognized through the Commission Decision of 26 January 2012 amending both Laundry detergents and Detergents for Dishwashers criteria to allow the use of subtilisin.

Bleach catalysts

In order for bleach to work efficiently at low temperatures they need to be activated by the use of bleach catalysts. Some catalysts, which make bleaches work at low temperatures below 40 °C are classified *R50/H400 Very toxic to aquatic life*, but because of their contribution to reducing the amount of energy needed to perform the wash they are allowed despite their classification.

A bleach-component like PAP (example Eureco WM1, risk phrases R8, R41 and R50/H400) enables washing at lower temperatures. It provides better bleaching than other typical bleaches at these low temperatures. Final products are less classified then typical bleaches and also have a less pungent smell. Furthermore, such low temperature bleaching systems leads to energy, linen and water savings.

NTA

NTA has been classified as *R40/H351: Suspected of causing cancer*. Carcinogenic substances are generally unwanted in Ecolabelled products, but NTA is unavoidable as an impurity in MGDA and GLDA and is therefore accepted regardless of its classification.

During the development of the criteria, it has been discussed whether to allow a derogation for some classified fragrances and optical brighteners. The final discussion has been focused on fragrances and optical brighteners meeting the requirements for classification as *R52-53/H412 Harmful to aquatic life with long-lasting effects*.

Industry representatives from AISE deemed these derogations necessary to ensure that a certain percentage of products already existing on the market could get the EU Ecolabel.

Regarding fragrances they stated that the mentioned derogation would be needed because the majority of products on the market contain this type of fragrances that are demanded by customers and expected by final consumers. Fragrances meeting the requirements for classification as R52/53 are allowed in consumer automatic dishwasher detergents (used in less controlled conditions than the professional detergents). According to AISE There is a greater need for long lasting and stronger perfumes in the professional market to resist the high temperatures of professional driers and to last on the linen until the customer uses them. Perfume suppliers confirmed to AISE that it is almost impossible to create effective fragrances without these R phrases. According to AISE, the possibility of marketing fragranced product variants is an important sales parameter, and the prevalence of Ecolabelled products would be heavily compromised if fragrances R52/53 are not allowed. Many trials at professional customers, representative for Europe, show that they don't accept products without fragrance and that they would dose significantly more product without fragrance, to compensate for the lack of perfume and to mask off-smells.

Although the above motivation provided by AISE seems strong, it does not fall into the ones foreseen for derogation by article 6 (7) of the EU Ecolabel Regulation. The reason why it has been decided not to derogate the fragrances meeting the requirement for classification specified above is to keep the EU Ecolabel as a tool of environmental excellence and give industry the signal of the need to move towards more environmentally friendly and non classified fragrances, that in fact are already available. Moreover the Nordic Ecolabel criteria explicitly exclude the use of fragrances and have eight licenses for professional laundry detergents, with more than 80 different products, showing that it is even possible to produce detergents for professional use without fragrances.

Regarding optical brighteners, AISE stated that optical brighteners meeting the requirement for classification mentioned above are needed for the following reasons:

- To improve the degree of whiteness, which leads to a longer life cycle of textiles, which is especially important for hotel linen.
- Some institutes (for instance the German RAL and the Dutch TNO) demand a certain level of whiteness before certificating laundries.
- New textiles already have optical brighteners attached. A wash process with optical brightener is needed to maintain the original level of optical brightener and whiteness of the textile.
- HERA report suggests little toxicological risk (for use of FWA-5 and FWA-1). See www.heraproject.com.
- Other non-classified optical brighteners are not soluble in liquids effectively leading to instability and specific optical brighteners are needed for stock solutions.

- Several non-classified optical brighteners have been tested. These trials show that these materials are not effective enough and do not provide the required properties for professional laundry applications.
- R53 optical brighteners are allowed by EU-Flower for household detergents that are used in less controlled conditions.
- Even if there are examples of optical brighteners on the market that can be used without derogations, such as Tinopal CBS SP Slurry, Tinopal CBS X, Tinopal DMA-X Slurry 36, industry representatives [A.I.S.E] believe that these non-classified optical brighteners they are not able to bring the appropriate level of whiteness, and generally they are used in a mix with other classified optical brighteners.

Although the above motivation provided by AISE seems valid, it has been decided not to derogate the optical brighteners meeting the requirement for classification specified above in order to keep the EU Ecolabel as a tool of environmental excellence and to give industry the signal of the need to move towards the use of more environmentally friendly and non classified substances, that in fact are already available. Moreover, The Nordic Ecolabel criteria explicitly exclude the use of optical brighteners and have eight licenses for professional laundry detergents, with more than 80 different products, showing that it is even possible to produce detergents for professional use without optical brighteners.

c) Substances Listed in Accordance with Article 59(1) of Regulation (EC) No. 1907/2006

Proposed Criterion

No derogation from the exclusion in Article 6(6) of the Regulation (EC) No. 66/2010 shall be given concerning substances identified as substances of very high concern and included in the list foreseen in Article 59 of Regulation (EC) No. 1907/2006, present in mixtures in concentrations > 0,010%.

Motivation

This requirement ensures that no derogation from the exclusion of Hazardous Substances and Mixtures is given to substances of very high concern. It is in line with the requirements of Regulation EC/66/2010. The limit is set at 0,010% similarly to the one for laundry detergents for consumers.

d) Specified limited ingoing substances – Fragrances

Proposed Criterion

The product shall not contain perfumes containing nitro-musk or polycyclic musk

Any ingoing substance added to the product as a fragrance shall be manufactured and handled following the code of practice of the International Fragrance Association (IFRA). The code can be found on IFRA website: <http://www.ifraorg.org>. The recommendations of the IFRA Standards concerning prohibition, restricted use and specified purity criteria for materials shall be followed by the manufacturer.

Fragrance substances subject to the declaration requirement provided for in Regulation 648/2004/EEC of the European Parliament and of the Council on detergents (Annex VII) and which

are not already excluded by criterion 4 b) shall not be present in quantities $\geq 0.010\%$ (≥ 100 ppm) per substance in the final product.

Motivation

Nitromusks and polycyclic musks generally have unwanted health and environmental properties. Some are already excluded through the exclusion of CMR substances. Communication with suppliers of fragrances [personal communication, 2009] has confirmed that many companies all over Europe still use polycyclic musks in consumer products. The use of nitromusks is apparently very limited, but manufacturers outside Europe still produce for example Musk Ambrette, which is prohibited by IFRA. Exclusion of nitro- and polycyclic musks is thus still considered relevant as a preventive measure. This requirement exclude substances like Musk xylene: 5-Tert-butyl-2,4,6-trinitro-m-xylene, Musk ambrette: 4-Tert-butyl-3-methoxy-2,6-dinitrotoluene, Moskene: 1,1,3,3,5-Pentamethyl-4,6-dinitroindan, Musk tibetine: 1-Tert-butyl-3,4,5-trimethyl-2,6-dinitrobenzene, Musk ketone: 4'-Tert-butyl-2',6'-dimethyl-3',5'-dinitroacetaphenone, HHCB (1,3,4,6,7,8-Hexahydro-4,6,6,7,8-hexamethylcyclopenta(g)-2-benzopyran), AHTN (6-Acetyl-1,1,2,4,4,7-hexamethyltetralin).

The requirement stating that fragrances shall be manufactured and/or handled following the code of practice of the International Fragrance Association (IFRA) ensures compliance with IFRA standards.

The limit implies that fragrances present in Ecolabelled products will not require declaration on the label according to the Detergents Regulation, as the limit for declaration is set at 0,010 % (100 ppm).

e) Biocides

Proposed Criterion

(i) The product may only include biocides in order to preserve the product, and in the appropriate dosage for this purpose alone. This does not refer to surfactants, which may also have biocidal properties.

(ii) It is prohibited to claim or suggest on the packaging or by any other communication that the product has an antimicrobial or disinfecting effect.

(iii) The product may contain biocides provided that they are not bioaccumulating. A biocide is not considered bioaccumulating if $BCF < 100$ or $\log Kow < 3,0$. If both BCF and $\log Kow$ values are available, the highest measured BCF value shall be used.

Motivation

These extra requirements for biocides are relevant since biocides may be necessary in some types of product but the nature of the biocides is to be environmentally harmful in some way. The requirements are meant to ensure that only the minimal amount of biocides is used and only for the most necessary reason.

It should be noted that the specification of requirement 4 b) to include known degradation substances like formaldehyde from formaldehyde releaser means that substances like 5-bromo-5-nitro-1,3-dioxane, 2-bromo-2-nitropropane-1,3-diol, diazolinidylurea and sodium hydroxy methyl glycinate are excluded from Ecolabelled products.

f) Enzymes

Proposed Criterion

Enzymes must be in liquid form or dust-free granulate. Enzymes must be free from micro-organism remnants from manufacture.

Motivation

Criteria on enzymes have been introduced because enzymes are typical ingredients of Industrial and Institutional Laundry Detergents. The wording is the same as in the proposal for Automatic Dishwasher detergents for professional use. The intention of the criteria is to a large extent to ensure the safe handling of enzymes in the production of the final detergents. The risk of inhaling the enzymes is prevented by using them in a liquid or in other dust free forms.

Enzymes are otherwise regarded as any other ingredient and shall fulfil the other listed criteria.

4.5 Packaging Requirements

a) Weight/Utility Ratio (WUR)

Proposed Criterion

The weight/utility ratio (WUR) of the product shall not exceed the following values:

Product type/water hardness	WUR (g/kg laundry)		
	Soft water	Medium water	Hard water
Powders	1,5	2,0	2,5
Liquids	2,0	2,5	3,0

WUR shall only be calculated for primary packaging and a calculation shall be made for every product within a multi-component system (including caps, stoppers and hand pumps/spraying devices) using the formula below:

$$WUR = \Sigma [(W_i + U_i)/(D_i * r_i)]$$

Where:

W_i = the weight (g) of the packaging component (i) including the label if applicable.

U_i = the weight (g) of non-recycled (virgin) material in the packaging component (i). If the proportion of recycled material in the packaging component is 0% then $U_i = W_i$.

D_i = the number of functional units contained in the packaging component (i). The functional unit = dosage in g/kg laundry. Note that the highest recommended dosage for each water hardness must be used in the WUR calculation.

r_i = recycling figure, i.e. the number of times the packaging component (i) is used for the same purpose through a return or refill system ($r=1$, if the packaging is not re-used for the same purpose).

If the packaging is reused r is set to 1 unless the applicant can document a higher number.

Exceptions:

Plastic/paper/cardboard packaging containing more than 80% recycled material or more than 80% plastic from renewable origin is exempted from this requirement.

Packaging is regarded as recycled if the raw material used to make the packaging has been collected from packaging manufacturers at the distribution stage or at the customer stage. If the raw material is industrial waste from the material manufacturer's own production process, then the material will not be regarded as recycled.

Motivation

In a life-cycle perspective, the packaging has a relatively low impact on the environment. However, it is still relevant to reduce the consumption of packaging material to a minimum in accordance with the aim of the packaging and packaging waste directive (Directive 94/62/EC). From a communication point of view, it is also an important signal to the customers that packaging is reduced to a minimum for Ecolabelled products.

Products other than powders generally have a higher proportion of packaging relative to the volume of product, and more resources are thus used for packaging of such products.

The requirement limiting the amount of packaging per wash has been adopted from the Ecolabel Criteria for laundry detergents for domestic use which in turn have been adopted with minor modifications from the Nordic Ecolabel Criteria for laundry detergents, version 6.0. More than 50 different Ecolabelled product formulations are already on the market in Scandinavia (powders, as well as liquids and tablets), all of which comply with the proposed levels. A re-calculation of some of the products in the Danish EU Ecolabel licences shows that the formulations (tablets and powders) currently holding the EU Ecolabel also comply with the proposed WUR ratio.

Exceptions are made to encourage the use of recycled material and plastic from renewable origin.

b) Plastic Packaging

Proposed Criterion

Only phthalates that at the time of application have been risk assessed and have not been classified according to criterion 4 b) (and combinations hereof) may be used in the plastic packaging.

In order to allow for identification of different parts of the packaging for recycling, plastic parts in the primary packaging must be marked in accordance with DIN 6120, Part 2 or the equivalent. Caps and pumps are exempted from this requirement.

Motivation

This requirement will prohibit the use of phthalates as plasticisers in plastic packaging. Some of the phthalates most frequently used in plastics are classified as being toxic to reproduction (DEHP, DBP, BBP). Several other phthalates are suspected of causing endocrine disrupting effects [DHI, 2007]. Due to these concerns, the phthalates DEHP, DBP, BBP, DINP, DIDP and DNOP have e.g. been prohibited / limited for use in toys and childcare articles (Directive 2005/84/EC). The possible risk associated with the use of phthalates in plastic packaging for laundry detergents is unknown, but the use of potentially endocrine disrupters in Ecolabelled laundry detergents and their packaging is generally unwanted. Since alternative plastics are available the above mentioned exclusion has been suggested.

Labelling of plastic packaging will ease the sorting of packaging waste in countries / regions where plastic packaging is recycled after use.

4.6 Washing Performance (Fitness for Use)

Proposed Criterion

The primary laundering effects of the detergent such as dirt removal and stain removal capacity must be documented by the producer/applicant with the aid of artificially soiled test clothes which are washed in the process.

The test may be conducted by an external or internal laboratory fulfilling the requirements in appendix II a). The test must be conducted with the recommended dosage and at the corresponding water hardness and the degree of soiling at the lowest recommended wash temperature. The measurements must be performed on unlaundered and laundered test clothes. Evaluation of the test results shall be made by the laboratory and it shall be clearly stated in the report.

The measurements of secondary effects such as bleaching effect, bleaching / damage factor, ash content, greying and fluidity increase can for instance be made with multi wash test clothes and analysed according to standard ISO 4312.

Examples of what may be used as wash test clothes included the following:

- WFK-PCMS-55 for industrial laundering processes, consisting of 13 different small dirt patches (WFK-Cleaning Technology Research Institute, Germany)
- EMPA 102, consisting of 15 different fresh spots (Swiss EMPA-Testmaterials)
- wash clothes of DTI (Danish Technology Institute) for industrial washing processes or equivalent

As an alternative to the above mentioned laboratory test, a user test may be used to document efficiency. The user test should then meet the requirements stated in appendix II b).

For both laboratory test and user test the following comply:

The test product must be tested against a reference product. The reference product may be a well-established product on the market or – in the case of a user test – the product normally used by the user. The test product must show efficiency equal to or better than the reference product.

Motivation

At any time the Ecolabelled products must have evident performance attributes which must be documented by performance test. Documentation of performance is crucial for the credibility of the Ecolabel. Fulfilling the requirement for performance ensures that the product is fit for use and fulfils the customers' expectation of a satisfactory functioning detergent.

There is no standardised test but several standardised wash clothes designed specifically for industrial laundering. It is suggested that these clothes are used for performance testing.

The performance test can be carried out as either a laboratory test or a user test. Appendix II provides guidelines for laboratory requirements and user test requirements.

Some specifications regarding the test are stated:

- The product must be tested against a reference product. The reference is a well-established product on the market (chosen by the laboratory or the product normally used by the customer in the user test).
- The dosage used must be the recommended dosage at the relevant water hardness and degree of soiling.
- The test must be performed at the lowest recommended wash temperature (may not exceed 60 °C).
- The test product must be equal to or better than the reference product.

4.7 Automatic Dosing Systems

Proposed Criterion

Multi-component systems must be offered to the customer together with an automatic and controlled dosing system.

In order to ensure correct dosage in the automatic dosing systems, customer visits must be incorporated as a normal routine for manufacturers/suppliers. These customer visits are performed at all premises at least once a year during the license period; as a minimum they must include calibration of the dosage equipment. A third party can perform customer visits as well.

Motivation

The environmental impact imposed by the automatic dishwasher detergent is strongly related to the dosage. Since the multi-component systems do not have dosage possibility, a criterion has been set to ensure correct dosing for automatic dosage. Furthermore, the criterion includes follow-up and calibration of the dosage equipment to ensure the correct dosage at any time.

4.8 User Information

a) Information on the Packaging / Product information Sheet

Proposed Criterion

The following washing recommendations (or equivalent) must appear on the packaging, and / or on a product information sheet. The washing recommendations must include examples of the classification of the textiles soiling degree and shall include the following text:

- *Wash at the lowest recommended temperature*
- *Always wash with the highest possible load, the textiles allow*
- *Dose according to the dosing instructions and use the dosage according to water hardness and degree of soiling*

Using this EU Ecolabelled product according to the dosage instructions will contribute to the reduction of water pollution, waste production and energy consumption.

Motivation

The environmental impact caused by a laundry detergent is strongly related to the dosage. In order to ensure the best environmental performance in the use phase, user information on how to act to reduce environmental impact is needed. The additional information related to 'good use practice' are not covered by Regulation 648/2004/EC neither is the information about recommended dosages for 'light', 'medium' and 'heavy' soiled textiles.

b) Claims on the Packaging

Proposed Criterion

In general, claims on the packaging must be documented through performance testing (e.g. claims of efficiency at low temperatures, claims of removal of certain stain types, claims of benefits for certain types or colours of textile, or other claims of specific properties / benefits of the product).

- E.g. if a product claims efficiency at 20 °C, the performance test must be performed at ≤ 20 °C (and correspondingly for other temperature claims below 40 °C).
- E.g. if a product claims to be efficient on certain stain types, this must be documented with performance test.

Motivation

In order to ensure that an Ecolabelled product fulfils the consumer's perception of high performance, the performance of any claim made must be documented to the competent body.

c) Information Appearing on the EU Ecolabel

Proposed Criterion

The logo should be visible and legible. The use of the EU Ecolabel logo is protected in primary EU law. The EU Ecolabel registration/licence number must appear on the product and it must be legible and clearly visible.

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

- *Reduced impact on aquatic ecosystems*
- *Limited hazardous substances*
- *Performance tested.*

The guidelines for the use of the optional label with text box can be found in the "Guidelines for use of the EU Ecolabel logo" on the website:

http://ec.europa.eu/environment/ecolabel/documents/logo_guidelines.pdf

Motivation

Ecolabel makes statements that show where the Ecolabel makes a difference by highlighting areas of focus in the criteria.

5 Ecolabel Criteria and Other Legislation

REACH

In the future regulatory situation dominated by REACH, the EU Ecolabel in particular may bring added value within the following areas:

Critical Dilution Volume

The Ecolabel aims at setting a high standard based on all ingredients in the final product, through requirements regarding substances not easily degradable in the product formulation, as well as the use of the Critical Dilution Volume (toxicity). These aspects are not covered by REACH and only partly covered by the Detergents Regulation. The Detergents Regulation requires all surfactants to be easily aerobic biodegradable, but derogation can be made for surfactants used in products for professional users. The Ecolabel limits substances that are not degradable aerobically and anaerobically and hence covers substances other than surfactants. The use of the CDV for limiting the amount of toxic substances in the product is in addition to the current legislation (both REACH and the Detergent Regulation).

Intrinsic properties

By defining criteria which imply that substances characterised by certain intrinsic properties shall not be used in products awarding the Ecolabel, the Ecolabel may respond to concerns in relation to the safe use of specific chemicals, and thereby address environmental or consumer concerns (e.g. substances that are classified with the risk phrase R50-53: "very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment"). Substances anticipated to enter the candidate list for authorisation under REACH are to be eliminated from Ecolabelled products through the current use of risk phrases as part of the criteria for dangerous substances.

Globally Harmonized System - GHS

The use of the GHS will impact the Ecolabel as the GHS is implemented in European legislation through the CLP Regulation. These criteria are valid during the transition period; from the classification directives for substances and mixtures to the classification regulation (CLP). The criteria have stated the classifications according to both the directives and the CLP Regulation.

6 Abbreviations and Definitions

A.I.S.E.	The International Association for Soaps, Detergents and Maintenance products
aNBO	Anaerobically not biodegradable substances
anNBO	Anaerobically not biodegradable substances
BCF	Bioconcentration Factor
Coldwater product	A coldwater product is in the Ecolabel criteria defined as products that have a documented washing performance at $\leq 20^{\circ}\text{C}$
CDV	Critical Dilution Volume
°dH	German degree of hardness
DID-list	Detergents Ingredients Database list
EDTA	Ethylenediamine tetraacetate
Functional unit	The quantity of detergent (in grams) used per kg textile during washing/treatment.
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
GLDA	Glutamic acid diacetic acid
GMM	Genetically modified micro-organisms
IFRA	International Fragrance Organisation
LogKow	Log Octanol-Water partition coefficient
Low-temperature product	A low-temperature product is in the Ecolabel criteria defined as products that have a documented washing performance at $> 20^{\circ}\text{C}$ to $\leq 30^{\circ}\text{C}$
MGDA	Methylglycinediacetic Acid
NTA	Nitrilotriacetic acid
PPM	Parts per million. Measuring unit (100 ppm = 0.010%)
TC	Total Chemicals
WUR	Weight Utility Ratio
WWTP	Waste water treatment plant
PBT	Persistent Bio accumulative Toxic
vPvB	Very persistent and very bioaccumulative

7 References

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