Standard No: ECSA-P06-2012
Issued: 29 August 2012
Last Revision: 25 August 2017
Validity: 5 years

The Eco -Choice Ecolabel Programme
Product Standard

Disinfectants and Disinfectant-Cleaners

ISSUED BY ECO-CHOICE AFRICA
PO BOX 7119, CENTURION 0046
PHONE: +27 (012) 667 6658 FAX: +27 (012) 086 610 7120
E-MAIL: info@eco-choicelabel.org

Use of This Standard

This voluntary environmental labeling standard may be used by competent environmental assessors to establish product compliance with the Eco-Choice Africa Ecolabel Programme. Products that are certified with the mark of conformity in terms of this standard have been independently assessed and demonstrate compliance to the environmental and social performance criteria detailed in this standard. The overall goal of environmental labels and declarations is the communication of verifiable and accurate information, which is not misleading, on environmental aspects of products and services. This encourages the demand for, and supply of, those products and services that cause less stress on the environment, thereby stimulating the potential for market-driven continuous environmental improvement.

This standard identifies environmental, quality, regulatory and social performance criteria that products sold on the South African market can meet in order to be considered as good "environment practice". Products that have been certified as complying to this standard may gain greater market recognition and a marketing advantage in government and business procurement programs, as well as broad consumer preference.

This standard can be used by South African producers to guide their designs for environment programs by using the environmental criteria as key performance benchmarks to reduce the environmental loads of their product. The standard is necessarily restricted in its identification of environmental loads from the product lifecycle. Producers should consider other environmental measures along the product cycle, which are not included in this standard, in their environment program designs for and aim for even higher levels of environmental performance where technically possible.

For further information please contact:

Eco-Choice Africa

Eco-Choice Ecolabel Programme

Telephone: 012 667 6658

e-mail: info@eco-choicelabel.com

Acknowledgement:
This standard has been reproduced with permission from **Good Environmental Choice Australia** and seeks to set the benchmark for Disinfectants and Disinfectant Products in southern Africa. Modifications to the source document have been made to maintain relevancy to the southern African environment. The principal difference between the source document and the modified adopted GECA standard is the replacement of GECA terminology with terminology relevant to southern Africa. A list of changes to the source document along with the justification can be seen, upon request to Eco-Choice Africa.

Eco-Choice Ecolabel Programme
All rights reserved. No part of this publication may be reproduced in any material form or transmitted to any other person without the prior written permission of Eco-Choice Africa except as permitted under the South African Copyright Act (Act 98; 1978) (as amended).

CONTENTS

ECO-CHOICE ECOLABEL PROGRAMME STANDARD FOR PRODUCTS

Disinfectants and Disinfectant-Cleaners

Current Status: Final Standard Version 1.0
Date Published: 29 August 2012
Document History: Last Revised 15 July 2017
Last Revised: 15 July 2017

Definitions

Anaerobically degradable means that, when measured as directed in ISO 11734 "Water quality - Evaluation of the "ultimate" anaerobic biodegradability of organic compounds in digested sludge - Method by measurement of the biogas production", the substance achieves at least 60 % degradation.

APEO means alkylphenol ethoxylate. APEO and other alkylphenol derivatives are prohibited under this standard due to aquatic toxicity.

Approved strain identification protocol means the method by which microbial strains have been identified by DNA sequencing (full length 1500+1 base pair analysis) and have been named following the naming conventions set in place by the International Code for Nomenclature of Bacteria (ICNB). This protocol shall use the program CLUSTALX (or any other suitable multiple alignment tool such as CLUSTALW, MEGA, PHYLIP) to align the sequence to other closely related species indicated by an initial Basic Local Alignment Search Tool (BLAST) analysis of the sequence. A BLAST search or analysis compares a query sequence with a library or database of sequences, and identifies library sequences that resemble the query sequence above a certain threshold.

Aromatic solvent means a hydrocarbon solvent comprised of 80%or greater aromatic hydrocarbon compounds by mass. An aromatic hydrocarbon as used here is defined as an unsaturated ring of carbon atoms; this includes compounds such as benzene, xylene and toluene and their derivatives.

ASTM means American Society for Testing and Materials.

Benzalkonium Chloride means a surfactant belonging to the quaternary ammonium compound group with a CAS # of 8001-54-5;

Carcinogenic means capable of causing cancer. The International Agency for Research on Cancer is the internationally accepted body for the classification of carcinogenic substances. See http://www.iarc.fr

Chlorinated Plastic Material means packaging materials made of polyvinyl chloride(PVC) or other chlorinated compounds.

Contact sensitiser: Any substance that induces a progressively amplified response following continuous or repeated doses of that substance.

EDTA means ethylene diamine-tetra-acetic acid or ethylene dinitrilo-tetra-acetic acid, or any of its salts or primary derivatives.

Flash Point means the minimum temperature of a liquid at which the vapours given off are sufficient to form a flammable mixture with air which will ignite when exposed to an open flame.

Food Grade Dyes means dyes safe for use in food as approved for use by the USFDA (FD&C dyes) or other recognised local authority.

Fragrance or **Colouring** means organic substances that are added primarily for aesthetic reasons to give colour or smell. Fragrance can also be for the purpose of concealing smells from other ingredients or from the item to be cleaned.

GMO means genetically modified organism

Halogen or Halogenated Salts means any halogen including chlorine or iodine and associated compounds including sodium hypochlorite (bleach).

IARC means International Agency for Research on Cancer, an organization which lists known and suspected carcinogens**.**

ISO means the International Organisation for Standardization.

Label means the Eco-Choice Label.

Lethal Concentration means the concentration of material that is estimated to prove lethal to test organisms , human, animal or aquatic life

Ozone depleting potential means the ratio of calculated ozone column change for each mass unit of a gas emitted into the atmosphere relative to the calculated depletion for a mass unit of the reference gas CFC-11;

ODP means ozone depleting potential

OECD means Organisation for Economic Co-operation and Development.

Peroxyacetic Acids means an organic compound containing a peroxide functional group with the CAS number 79-21-0.

pH is formally the negative log function of the activity of the hydrogen ion in solution. In practice, it is a scale indicating how acidic or alkaline a solution is. For water, a pH of 7 is neutral, higher pH values are progressively more alkaline and lower pH values are progressively more acidic. Each pH unit represents a ten-fold concentration change of the hydrogen ion.

Phenolics means a class of chemical compounds consisting of a hydroxyl group (-OH) attached to an aromatic hydrocarbon group.

Readily biodegradable mean those organic substances where the average level of biodegradation observed in an aerobic sewage treatment plant is at least 90% during a residence time of not more than 3 hours. In order to meet this requirement the surfactant must either meet the requirement for ready biodegradability when determined using any of the following test methods including the OECD Guidelines for Testing of Chemicals, Test Guidelines 301A-301E, ISO 7827 (2010) or achieve a biodegradability of at least 80% when tested by the OECD method or South African equivalent. The pass level of 80% recognises the inherent experimental variability of the OECD test.

Sealed Dilution Control System means a dilution system where the chemical container and dispenser are connected and sealed and the user is restricted in the amount of chemical that can be dispensed. These systems are separate and distinct from dip-tube dispensing.

Solvent is a general term for a chemically diverse range of liquid phase substances which dissolve other materials.

Volatile Organic Compound (VOC) is defined as any organic compound having a vapour pressure of 0.01 kPa or more, at 20 °C, or having a corresponding volatility under the particular conditions of use. For indoor environments, VOC means any carbon-containing compound that evaporates easily at room temperature, including exempt compounds because these have the potential to adversely impact the health of people that are exposed, despite their negligible photochemical reactivity.

1 INTRODUCTION

1.1.Purpose

This Standard seeks to define good environmental performance benchmarks for a range of disinfectants and disinfectant-cleaning products. The voluntary environmental labeling standard implemented by the Eco-Choice Africa Ecolabel Programme (ECA) specifies environmental performance criteria for both domestic and professional products including general purpose disinfectants and disinfectant-cleaners. This standard stipulates the environmental load of such products throughout the major aspects of their lifecycle.

1.2. Background

Disinfectants are used to remove microbes from hard surfaces (disinfect) or reduce microbial levels on hard surfaces. Disinfectant products sold for use in healthcare or food processing facilities fall into this category, as do products intended for use in the home, school, office or similar institutions. Disinfectant-cleaners are liquid one–step cleaning and disinfecting products used in offices, schools, hospitals and retail settings.

Disinfectant products covered under this document are also known as hard–surface disinfectants or low-level disinfectants and serve to kill pathogenic microorganisms (bacteria, fungi) on hard non- porous surfaces. They are for non-critical medical devices (those that contact only intact skin during routine use, e.g., floors, stethoscopes, bedpans, etc.). Sporocides and sterilisers or other products for use to sterilise critical medical instruments and equipment are not covered in the scope of this document.

The standard focuses on several issues – toxicity to aquatic life, toxicity to mammalian life, biodegradability /breakdown, performance in the presence of soil, low risk for promoting microbial resistance, restrict ingredients with negative impacts to air quality (VOCs), human health (e.g. carcinogens) and packaging.

Based on a review of currently available lifecycle information, the product category requirements should produce an environmental benefit through reduced water pollution, reduced indoor air impacts, and reduced solid waste

As information and technology change, product category requirements will be reviewed, updated and progressively amended.

This standard has been developed using international environmental and toxicological research. Toxicological requirements are generally consistent with European ecolabelling standards, with other criteria introduced for the South African market.

1.3 Notice

1.3.1 While every effort has been made to ensure that the relevant national or international codes, references or relevant documentation systems are used in this standard, where a local equivalent is not referred to, but does exist, the local standard or regulation will take precedence over any international reference.

1.3.2 Throughout this document, any reference to a standard or guideline refers to the latest version of this standard.

2 STANDARD CATEGORY SCOPE

This category includes all disinfectants and disinfectant cleaners as further defined in the subcategories in this section. The subcategories are:

2.1 Disinfectant

2.2 Disinfectant-cleaner

2.3 Use of the Eco-Choice Label

The Label must be used appropriately by certified organisations in line with the licensing agreement offered to successful applicants. This includes specification of the certified service and licence number alongside any display of the label. The Label must not be used to over-represent the extent and scope of certification under this Standard.

Certification under this Standard applies only to the administrative function of the retailer seeking certification. The Label must not be associated with goods or with other services excluded by this scope that are provided by the retailer, or as part of advertising material for those goods or services.

Physical goods may be certified by Eco-Choice under the relevant product category standard and may only then carry the Eco-Choice Label for goods. The Eco-Choice label for retail services does not in any way constitute endorsement of products provided by the retailer.

3 ENVIRONMENTAL PERFORMANCE CRITERIA

3.1 Fitness for Purpose

Certified products should be good performers in their intended application. Certain standards of quality and effectiveness are implicit in the Label. The manufacturer must ensure that the biologically-based cleaning or degreasing product is fit for its intended purpose and that:

3.1.1 Applicable Standards

The product meets or exceeds the requirements of the relevant South African Standard applicable to the product (e.g.: SANS 232; SANS 1044; SANS 1828), or the product meets the applicable and accepted standard in its target market if it is to be exported to any market in which a similar Eco label standard exists.

3.1.2 Demonstrated Performance

If there is no relevant local Standard, the product can demonstrate sufficient quality by providing testing reports from an independent organisation or case studies from cleaning trials conducted by an independent organisation demonstrating suitability and quality. In all independent testing practices, the ISO 17025 standard must be met.

2.1.3 Safety and Performance

The product must exceed and applicable national, regional and local industrial standards in respect of safety and performance.

2.1.4 Legally Compliant

The product must be provided in such manner as to ensure that all processes, including the disposal of waste products arising from its manufacture, will comply with all relevant national, provincial or local laws, regulations or by-laws.

3.2 General Requirements

All raw materials must be sourced from facilities that comply with Section 4 of this standard. Proof of compliance by the applicant must be provided with the application.

Details of all ingredients used in all certified products must be provided using the Ingredients List spreadsheet available with this standard.

All products under this category must:

(a) meet or exceed all applicable governmental and industrial safety and performance standards; and

(b) be provided in such a manner that all steps of the process, including the disposal of residues or waste products arising from the manufacturing process of the product, will meet the requirements of all applicable laws, bylaws and regulations including the South African National Environmental Management Act (NEMA) and the Consumer Protection Act (CPA).

3.2.1 Properties

Products certified under this standard must:

I. not be a skin irritant. The product shall be not be considered a skin irritant under any of the following scenarios:
   - test data shows that the whole-product is not a skin irritant when tested at the most concentrated at-use dilution. A substance is considered an irritant if it causes erythema or edema of the skin graded at 2 or more as defined by OECD 404;
   - test data shows that each ingredient present at or above a concentration of 5% is not a skin irritant, or
   - if test data shows that any known skin irritants are non-irritating when present at 5% or greater in the product as sold;

II. have a flash point > 61 degrees Celsius;

3.2.2 Prohibited Substances

The following substances are prohibited in all certified products under this standard.

(i) not be formulated or manufactured with solvents belonging to any of the following groups:
   a) aromatic solvents,
   b) halogenated solvents,
   c) the following ethylene glycol ethers or their acetates:
      ethylene glycol monomethyl ether/methoxyethanol,
      ethylene glycol monoethyl ether/ ethoxyethanol,
      ethylene glycol monobutyl ether/ butoxyethanol, and
      ethylene glycol monopropyl ether /propoxyethanol

(ii) not be formulated or manufactured with surfactants belonging to any of the following groups:
   (a) alkylphenol ethoxylates, (including nonylphenol, octylphenol and their ethoxylates);

(iii) not be formulated or manufactured with builders belonging to any of the following groups:
   a) phosphates, and
   b) ethylene diaminetetracetic acid, ethylene dinitrilotetracetic acid, nitrilotriacetic acid or the salts of these compounds;

(iv) not be formulated or manufactured with classes of active disinfecting ingredients that are not readily biodegradable, or highly toxic to aquatic or mammalian life or have been linked to occupational asthma. These ingredients include:
   a) halogens or halogen salts,
   b) benzalkonium chloride,
   c) phenolics,
   d) peroxyacetic acids,
   e) toxic metals, including but not limited to, arsenic, cadmium, chromium, lead, silver and mercury.

   Unless those active ingredients are deemed by the South African Department of Agriculture to be pesticides of minimum risk (40 CFR ' 152.25(f));

(v) not contain more than 1% by weight of volatile organic compounds as used (e.g., after dilution if applicable);

(vi) not be formulated or manufactured with any chemicals that are included in the International Agency for Research on Cancer (IARC) lists for proven (Group 1), probable (Group 2A), or possible (Group 2B) carcinogens;

(vii) not be formulated or manufactured with fragrances;

(viii) if formulated or manufactured with dyes, only contain food grade dyes that comprise no more than 0.1% by weight of the total, undiluted formulation;

3.2.3 Toxicity and Biodegradability Requirements

This section places limits on certain substances based on the concentration of the in-use solution or solid. For products sold as concentrates or solids for dissolution (e.g., laundry powder), the concentration will be measured when the solution is diluted as directed on the label. If multiple dilution options are given for various applications, the concentration will be measured for the most concentrated application rate.

3.2.3.1 Volatile Organic Compounds

For products for which the label specifies dilution prior to use, VOCs should be measured after the minimum recommended dilution has taken place. The minimum recommended dilution shall not include recommendations for the incidental use of a concentrated product to deal with limited special applications, such as hard to remove soils and stains.

3.2.3.2 Fragrances and Colourants

Fragrances and colourants are not permitted in certified products under this standard.

3.3 Other Claims

3.3.1 Suitable for Local Wastewater or Greywater Systems

Products that intend to claim suitability for local waste water systems or on-site grey water systems and to declare that environmental characteristic as part of the voluntary environmental labeling declaration.

3.3.2 Food Safe

Products that intend to declare "food safe", or similar, as part of the voluntary environmental labeling declaration must be able to provide evidence of formal recognition of this claim by applicable South African legislation/Standards (SANS 1828).

3.3.3 Organic

Products that intend to declare "Organic", or similar, as part of the voluntary environmental labeling declaration must be Certified Organic by a recognised authority or organisation or by a National Association for Sustainable Agriculture within South Africa.

3.3.4 Other Claims

Other environmental claims shall be verifiable by ECA citing, as a minimum, appropriate test results from an independent, accredited laboratory in accordance with an internationally recognised relevant test method.

3.4 Packaging and Labeling

3.4.1 Recyclability

(i) All plastic containers and plastic components must be made of a plastic type that is recycled in South Africa (or the country to which the product is exported and sold). If only one plastic type is used in the product packaging, major parts must be marked with the appropriate resin identification code promulgated by the Plastics and Chemical Industry Association or in accordance with ISO11469.

(ii) Packaging made from more than one type of material must be easily and quickly separable into component recyclable parts without the need for any tools, and each component must be marked with the appropriate resin identification code promulgated by the Plastics and Chemical Industry Association or in accordance with ISO 11469.

(iii) Packaging must not be impregnated, labeled, coated or otherwise treated in a manner, which would prevent recycling (e.g., reinforced sleeves, metallic labels).

(iv) Polystyrene, Chlorinated or halogenated plastics shall not be used in product packaging.

(v) Packaging shall be recyclable, refillable, represent a source-reduced package or contain a minimum of 25% post-consumer waste content.

(vi) Paper used in packaging must not be bleached with any compounds containing or giving rise to elemental chlorine.

(vii) Cardboard packaging must contain at least 70% recycled pulp by weight, or meet the requirements of ECA Standard for Recycled Paper Products (ECSA-P13-2010).

(viii) All used packaging must be recyclable by local recycling systems.

3.4.2 Product Information

The manufacturer must provide written information to the consumer clearly stating:

- Instructions for proper use so as to maximise product performance and minimise waste.
- A list of product ingredients which complies with the requirements of the EEC Commission Recommendation for Labelling of Detergents and Cleaning Products.
- The packaging and labeling of the product must meet the requirements of the South African National Consumer Protection Act.
- Contain environmentally responsible disposal instructions.
- If the product is to be exported, instructions for safe chemical use must be provided in all appropriate languages.

In addition, all biologically-based products must indicate the microbiological strains used.

3.4.2.1 Toxicity and Labeling

For all products, labeling shall indicate any element regarded as being harmful or an irritant as described in Group 1(Category A and/or B) and Group 2 f the Hazardous Substances Act (Act 15 of 1973) and the Hazardous Substances Amendment (Act 53 of 1992)

3.5 Manufacturing Facility

To be considered for registration as a biologically-based cleaning or degreasing product by Eco-Choice Africa, the manufacturer and manufacturing facility shall have a documented quality control and environmental management system.

3.6 Toxicity and Biodegradation

To be considered for registration as a biologically-based cleaning or degreasing product by Eco-Choice Africa, the product must:

i. demonstrate ingredients of product are readily biodegradable using procedures defined in Part 4 of the Globally Harmonized System for Classification and Labeling of Chemicals (GHS).

ii. be based on the recommended dose for typical use, the full formulation should demonstrate low potential for human toxicity (Category 4) using procedures defined in Part 3 of the Globally Harmonized System for Classification and Labeling of Chemicals (GHS);

iii. demonstrate a low potential to bioaccumulate in aquatic organisms (log kow ≥ 4 or BCF< 500), for all individual ingredients or the whole formulation, using procedures defined in the Globally Harmonized System for Classification and Labeling of Chemicals (GHS);

iv. ensure that based on the recommended dose for typical use, the full formulation should have low acute aquatic toxicity (Category 3 toxicity) using procedures defined in the Globally Harmonized System for Classification and Labeling of Chemicals (GHS);

v. ensure no individual ingredients are classified under Category 1 for acute toxicity using procedures defined in both Part 3 & Part 4 the Globally Harmonized System for Classification and Labeling of Chemicals (GHS);

3.7 Ethical Trading Practices

While some aspects of service provision are not covered under this standard, namely the ethical operation or indirect environmental or social impact of the service itself, it is expected that significant social impacts or environmental loads will be managed by the service provider. If an aspect of the service provision is grossly mismanaged or the service provision directly supports socially or environmentally damaging activities, which are not directly covered by the above environmental performance criteria, assessors may recommend against certification under this Standard.

4 COMPLIANCE TO ENVIRONMENTAL REGULATIONS

The applicant is required to comply with relevant environmental legislation and government regulations at the Local, National and Regional levels, if these have been issued. An applicant's compliance with these criteria may be established by undertaking a series of random checks; and/or by gathering samples of applicant operational procedures and documents from approved assessors as evidence to support compliance during the verification. Where an applicant is bound by foreign jurisdiction, that jurisdiction's environmental regulations will apply. Where the applicant is subject to a guilty verdict by a legally constituted court in the last 24 months on the basis of a breach of any environmental legislation or permits, there must be evidence of corrective action. Failure to provide such evidence shall disqualify the applicant.

5 COMPLIANCE TO LABOUR, ANTI-DISCRIMINATION AND SAFETY REGULATIONS

The applicant shall demonstrate that all employees are protected in terms of the Basic Conditions of Employment Act (Act 75; 1997) and Amendments (2002).

The applicant shall demonstrate general compliance to the terms of the Labour Relations Act (Act 66; 1995); the Occupational, Health and Safety Act (Act 85; 1993) and any other legislation related to anti-discrimination; sexism; child labour or applicable labour standards. Where the applicant is subject to a breach order by a government agency, or a guilty verdict by a South African Court within the last 24 months, there must be evidence of corrective action.

Where the applicant is from a foreign jurisdiction, the applicant shall demonstrate compliance to that jurisdiction's anti-discrimination, occupational health and safety, and workers' compensations regulations. Where the applicant is subject to a breach order by a government agency, or a guilty verdict by a legal court in their respective country within the last 24 months on the basis of a the breach of anti-discrimination, occupational health and safety, and workers' compensation regulations, there must be evidence of corrective action.

The applicant's compliance with these criteria may be established by undertaking a series of random checks; gathering samples of applicant operational procedures and documents from approved assessors; and/or by providing a self-declaration document signed by an executive officer of the applicant organisation as evidence to support compliance during verification.

6 EVIDENCE OF CONFORMANCE

6.1 Audit Methodology

Conformance with this standard shall be demonstrated by undertaking an assessment under the above criteria by an approved assessor, following the certification and verification procedures detailed in the Heritage Green Business Management System, which generally follows the environmental auditing requirements of ISO 14 001.

6.2 Assessor Competency

The Eco-Choice Ecolabel Program classifies approved assessors as:

a. Assessors registered by Heritage as environmental professionals that hold expertise relevant for an assessment, and who have undertaken training in the procedures of the Eco-Choice Ecolabel Program; or

b. Environmental auditors accredited with the SANAS.

6.3 Suitable Sources

Audit evidence should be of such a quality and quantity that competent environmental auditors, working independently of each other, will reach similar audit findings from evaluation of the same audit evidence against the same audit criteria.

Suitable sources of information to establish compliance may be, but are not limited to:

a. Technical specification of a product.
b. Obvious characteristics of the product under examination.
c. Scientific test results and reports.
d. Environmental management system and audit reports and results.
e. Life-cycle assessment of each stage of the product life-cycle via a physical audit and examination.
f. Life-cycle assessment via scientific testing.
g. A statement of confirmation by an executive officer.
h. An assessment of company or government records, including minutes of meetings, policy documents and receipts.
i. Other material that can be considered objective evidence.

6.4 Verification

To verify that any claims that a product meets the criteria prescribed in this standard, Eco-Choice Africa may require access to all relevant quality control and production records and right of access to production facilities on a scheduled basis. The applicant shall not unreasonably withhold such access.

A signed statement by the Chief Executive Officer or equivalent of the manufacturer shall confirm compliance to this standard. Should any change take place in the manufacturing process, or should any non-compliance with the prescribed standard take place, the applicant shall notify Eco-Choice Africa in writing immediately of such situation. Eco-Choice Africa may choose to suspend, withdraw or cancel the licence upon such instance in terms of the Licence Agreement.

6.5 Laboratory Testing

New testing shall be undertaken by a laboratory accredited by SANAS, or equivalent international accreditation agents who can conduct the relevant tests and/or provide documentation detailing environmental performance against the criteria of this standard. The test results should be presented in a prescribed manner or from a laboratory acceptable to Eco-Choice Ecolabel Programme.

If test results or environmental auditing results are not available, and/or there is insufficient data to establish full compliance with the criteria required by this standard, then certification cannot be awarded.

Appendix 1: VOCs Determined to be of Negligible Photochemical Reactivity

1) *acetone*
2) *ammonium carbonate*
3) *carbon monoxide*
4) *carbonic acid*
5) *ethane*
6) *metallic carbides or carbonates*
7) *methane*
8) *methylene chloride (dichloromethane)*
9) *methyl acetate*
10) *methyl formate*
11) *dimethyl carbonate*
12) *propylene carbonate*
13) *cyclic, branched, or linear completely methylated siloxanes*
14) *parachlorobenzotrifluoride (PCBTF)*
15) *perchloroethylene (tetrachloroethylene)*
16) *1,1,1-trichloroethane*
17) *trichlorofluoromethane(CFC-11)*
18) *dichlorodifluoromethane (CFC-12)*
19) *trichlorotrifluoroethane(CFC-113)*
20) *dichlorotetrafluoroethane (CFC-114) (u) chloropentafluoroethane (CFC-115) (v) chlorodifluoromethane(HCFC-22)*
21) *dichlorotrifluoroethane (HCFC-123)*
22) *dichlorofluoroethane (HCFC-141b) (y) chlorodifluoroethane (HCFC-142b) (z) 2-chloro-1,1,1,2-tertrafluoroethane (HCFC-124)*
23) *trifluoromethane (HFC-23)*
24) *1,1,1,2,3,4.4,5,5,5-decafluoropentane (HFC-43-10mee)*
25) *pentafluoroethane (HFC-125)*
26) *1,1,2,2-tetrafluoroethane (HFC-134)*
27) *1,1,1-trifluoroethane (HFC-143a)*
28) *1,1-difluoroethane (HFC-152a) (gg) 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)*
29) *1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)*
30) *perfluorocarbons (classes of):*
    - *(a) cyclic, branched, or linear, completely fluorinated alkanes*
    - *(b) cyclic, branched, or linear, completely fluorinated ethers with no unsaturations*
    - *(c) cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations*
    - *(d) sulfur-containing perfluorocarbons with no unsaturations with the sulfur bonds only to carbon and fluorine*
31) *difluoromethane (HFC-32) (kk)*
32) *ethylfluoride (HFC-161)*
33) *1,1,1,3,3,3-hexafluoropropane (HFC-236fa)*
34) *1,1,2,2,3-pentafluoropropane (HFC-245ca)*
35) *1,1,2,3,3-pentafluoropropane (HFC-245ea)*
36) *1,1,1,2,3-pentafluoropropane (HFC-245eb)*
37) *1,1,1,3,3-pentafluoropropane (HFC- 245fa)*
38) *1,1,1,2,3,3-hexafluoropropane (HFC-236ea)*
39) *1,1,1,3,3-pentafluorobutane (HFC-365mfc)*
40) *chlorofluoromethane (HCFC-31)*
41) *1-chloro-1-fluoroethane (HCFC-151a)*
42) *1,2-dichloro-1,1,2- trifluoroethane (HCFC-123a)*
43) *1,1,1,2,2,3,3,4,4-nonafluoro-4- methoxy-butane (C4F9OCH3 or HFE-7100)*
44) *2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-Heptafluoropropane ((CF3)2CFCF2OCH3)*
45) *1-ethoxy-1,1,2,2,3,3,4,4,4- nonafluorobutane (C4F9OC2H5 or HFE-7200)*
46) *2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane (CF3)2CFCF2OC2H5)*
47) *1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane (n-C3F7OCH3 or HFE-7000)*
48) *3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane (HFE-7500)*
49) *1,1,1,2,3,3,3-heptafluoropropane (HFC -227ea)*
50) *1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane (HFE-7300)*

Appendix 2: Interpretation Document: Definition of Aromatic Solvents

Interpretation:

Eco-Choice Africa standards may include requirements that address aromatic solvents. These standards generally define aromatic solvents as organic compounds containing at least one ring structure consisting of six carbon atoms joined by alternating single and double bonds. To further refine this definition for certification criteria documents for cleaning products, theECo-Choice Programme has added the following clause:

Aromatic solvents means those organic compounds containing:

- at least one ring structure consisting of six carbon atoms joined by alternating single and double bonds AND
- two or less simple substitutions (additional chemical groups) to the basic benzene ring.

Basis for Interpretation:

Once a certification criteria document has been published, Eco-Choice may be requested to clarify the intention behind a particular criterion, the relevance of a particular criterion to a particular market segment, and/or how an applicant product will be assessed for compliance against a particular criterion. Eco-Choice Africa reserves the right to determine what evidence is both appropriate and adequate to prove compliance.

The rationale for prohibiting aromatic solvents is to limit highly volatile solvents that are very close in chemical structure to aromatic carcinogens (e.g. benzene) or to those with reproductive effects (e.g. toluene, xylene). In general, the more substituted an aromatic compound is, the lower its volatility (or the more chemical group substitutions on the basic ring structure, the more likely the compound will not volatilize).

For example, the following compounds would be considered aromatic:

- Benzene (C6H6). This is the basic aromatic ring structure with zero substitutions. Therefore it would be considered aromatic.
- Toluene (C7H8). This compound has one substitution – methyl (CH3). Although methyl is considered a simple substitution, there is still only one. Therefore, the solvent is considered aromatic.
- Phenol (C6H6O). This compound has one substitution – alcohol (OH). Although alcohol is considered a simple substitution, there is still only one. Therefore, the solvent is considered aromatic.
- Xylenes (C8H10). This group of compounds includes o-Xylene, m-Xylene and p-Xylene. These compounds have two additional substitutions of methyl (CH3). Although methyl is considered a simple substitution, there are still only two. Therefore, the solvent is considered aromatic.
- Benzyl alcohol (C7H8O). This compound has two substitutions – one alcohol (OH) and one methyl (CH3). Although both are considered to be simple substitutions, there are still only two. Therefore, the solvent is considered aromatic.

The following compounds would not be considered aromatic:

- Phenyl ethyl alcohol (C8H10O). This compound has two substitutions - one ethyl (C2H6) and one alcohol (OH). Ethyl is not considered a simple substitution. Therefore, the solvent is not considered aromatic.
- Phenoxyethanol (C8H10O2). This compound has three substitutions - one ether (R–O–R), one alcohol (OH) and one methyl (CH3). Although all substitutions are simple, there are more than two. Therefore the solvent is not considered aromatic.