EcoLogo^{CM} Program
Certification Criteria Document

CCD-147
Hard Floor Care Products

Introduction

The EcoLogo^{CM} Program is designed to support a continuing effort to improve and/or maintain environmental quality by reducing energy and materials consumption and by minimizing the impacts of pollution generated by the production, use and disposal of goods and services.

Hard floor care products that fall under this criteria document include floor finishes, floor strippers, alkali neutralizing solutions, floor finish restorers and sealers. The product group includes solutions designed for use on ceramic, terrazzo, vinyl composite tile, concrete, linoleum, rubber, and marble surfaces. Products sold to the institutional market as well as products sold to the household market are covered under these criteria. It does not include products designed for unfinished wood floors, or products designed to cure concrete surfaces. These criteria do not apply to floor cleaners (other EcoLogo^{CM} criteria cover these products).

Floor care product technology is increasingly producing longer lasting finishes (e.g., high traffic glossy institutional finishes lasting for 18 months to 3 years before they need to be stripped), yet disposal of floor care products to sewage systems and eventually to aquatic ecosystems remains an important area for environmental leadership. During use, opportunities for environmental leadership include limits on volatile content and restrictions on recognized toxins. There are upstream impacts associated with manufacturing choices (e.g., use of toxic intermediates such as isocyanate to produce polymers or use of ethylene oxide to produce stripping agents). Packaging decisions can reduce emissions and waste.

Based on a review of currently available life cycle information, the product category requirements will produce an environmental benefit through limited toxicity for aquatic and other organisms; greater biodegradation; lower potential for bioaccumulation; reduction in eutrophication of water bodies; reduction in ground-level ozone-formation; reduction in the depletion of stratospheric ozone; limited waste creation; and reduction in resource use.

Life cycle review is an ongoing process. As information and technology change, the product category requirements will be reviewed and possibly amended.

Information on the Product Group

A typical maintenance program for institutional hard floors may include the use of a sealer, followed by several layers of finish, regular cleaning, buffing or burnishing, weekly use of a restorer to restore gloss and a thin coating to the floor, occasional refinishing, stripping of accumulated layers and finishing again. Depending on the type of facility, and the quality of the finish, the frequency of stripping and refinishing may range from 6 months to several years. During stripping layers of finish are removed and typically rinsed into the sewage systems.

Floor finish products may be formulated with zinc or other metals to improve bonding between polymers. These products have historically lasted longer and been easier to remove than alternatives, however, municipal bylaws may limit the amount of zinc permitted in the sewage system, and "metal free" finishes are increasingly common.

Typical household use of floor care products involves less stripping of finishes and waxes and more use of combination cleaners and restorers.

Most institutional products are formulated for use on floor surfaces of vinyl composite tile found in retail, school, entertainment and healthcare facilities. Other institutional surfaces include terrazzo (marble or granite set in concrete), wood and marble. Household surfaces may include wood, linoleum, and ceramic tiles. Household floor finishes are based on the same formulation as institutional finishes.

Typical active ingredients in hard floor care products differ from product type to product type. Finishes and sealers generally include polymers (stabilized in emulsion by surfactants/stabilizers), plasticizers, coalescents, waxes, preservatives, surfactants, ammonia / amines and water. Strippers generally contain solvents, amines, and bases. Neutralizers serve to neutralize the alkalinity of floor stripper and generally contain a mixture of acids. Restorers generally contain the same ingredients as finishes with a lower proportion of polymer and a higher proportion of surfactant.

Notice

Any reference to a standard means to the latest edition of that standard.

The EcoLogo[CM] Program reserves the right to accept equivalent test data for the test methods specified in this document.

Notice of Intent

It is the intent of the EcoLogo[CM] Program to re-evaluate from time to time the relevance of requirements in light of emerging scientific evidence of environmental impacts, manufacturing advances and other changes in the marketplace. Future revisions of this document may:

- include requirements for wood floor care products,
- prohibit styrene based polymers,
- prohibit fluorinated surfactants that are expected to break down into perfluorooctanoic acid,
- require a minimum post-consumer recycled content in packaging, and
- revisit aquatic and mammalian toxicity limits, as more data becomes available.

Interpretation

1. In this criteria document:

"ASTM" means American Society for Testing and Materials;

"aerosols" means a cloud or fine spray of particles of a liquid or a gas

"amines" means organic compounds derived from ammonia (NH3) by replacement of hydrogen with one or more alkyl groups e.g., monoethanolamine. Floor finishes and strippers often rely on chemical bonding between zinc and ammonia to strengthen finishes and increase the effectiveness of strippers;

"buffing" means applying rotary machine pressure to finishes typically at speeds of less than 1000 rpm;

"burnishing" means applying rotary machine pressure to finishes typically at speeds greater than 1000 rpm. Burnishing imparts a gloss to floor finishes and removes a layer of finish;

"CAN/CGSB" means Canadian General Standards Board;

"coefficient of friction" means the amount of horizontal force required to overcome vertical force and is measured in ASTM method D-2047-93 (Standard Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine). Note that this test method is identical to CGSB 25-GP-1 Method 30.1;

"Chemicals that are known to the State of California to cause reproductive or developmental toxicity" means an annually updated list of chemicals said to cause developmental toxicity published by the State of California under the Safe Drinking Water and Toxic Enforcement Act of 1986 (otherwise known as "Proposition 65");

"chlorinated plastic material" means packaging materials made of polyvinyl chloride (PVC) or other chlorinated compound;

"coalescents" also known as "fugitive plasticizers" means compounds found in a floor finish (typically glycol ethers) that soften polymers and help in proper drying of the finish;

"EC_{50} bacteria > X mg/l" means that the product must not have a toxic effect at a concentration lower than X mg/L when tested using one of the following methods:

- ASTM D5660-96(2004), "Standard Test Method for Assessing the Microbial Detoxification of Chemically Contaminated Water and Soil Using a Toxicity Test with a Luminescent Marine Bacterium", 2004, or
- ISO 11348-1:2007, "Water quality -- Determination of the inhibitory effect of water samples on the light emission of *Vibrio fischeri* (Luminescent bacteria test) -- Part 1: Method using freshly prepared bacteria", International Organization for Standardization, 2007, or

- Report EPS 1/RM/24,"Biological Test Method: Toxicity Test Using Luminescent Bacteria *Photobacterium phosphoreum*", Environment Canada, November 1992;

"endocrine disruptor" means an exogenous substance or mixture that alters function(s) of the endocrine system and consequently causes adverse health effects in an intact organism, or its progeny, or (sub)populations. Candidate endocrine disruptors are listed in Appendix 1 of "Towards the Establishment of a Priority List of Substances for Further Evaluation of Their Role in Endocrine Disruption" prepared for the European Union;

"finish" means a protective, often glossy, layer applied to floors. The term is synonymous with "**polish**." Waxes along with polymers are components of finishes;

"flexible flooring material" means asphalt, cork, linoleum, no-wax, rubber, seamless vinyl and vinyl composite flooring (definition taken from California Air Resources Board).

"food grade thickeners" means thickeners safe for use in food, as approved by the U.S. Food and Drug Administration;

"hard floor care products" means a set of products designed to seal, wax, polish, finish, restore, strip and maintain hard surfaces of floors;

"IARC" means International Agency for Research on Cancer, an organization that lists known and suspected carcinogens;

"institution" means office, school, hospital, retail store, and other commercial or public workplace setting where, generally, professional cleaning companies (e.g., janitorial services) provide floor care;

"LC_{50} invertebrate > X mg/l" means that the product must not have a toxic effect at a concentration lower than X mg/L when tested using <u>one</u> of the following methods:

- EPA-821-R02-013, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms" (*Ceriodaphnia dubia)*, US Environmental Protection Agency, 2002; <u>or</u>
- EPA-600-R95-136, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to West Coast Marine and Estuarine Organisms", US Environmental Protection Agency, 1995; <u>or</u>
- Report OECD/OCDE-211, "*Daphnia magna* Reproduction Test", Organization for Economic Cooperation and Development, September 1998; <u>or</u>
- Report EPS 1/RM/21, "Biological Test Method: Test of Reproduction and Survival Using the *Cladoceran Ceriodaphnia dubia*", Environment Canada, 1992; <u>**or**</u>
- Report EPS 1/RM/27, "Biological Test Method: Fertilization Assay Using Echinoids (Sea Urchins and Sand Dollars)", Environment Canada, 1992;

"metal cross-linking agents" means metals, typically zinc, that serve to connect the different polymer chains in the floor finish emulsion and aid in durability and removability of the finish;

"neutralizer" acidic solutions used to neutralize the alkalinity of strippers;

"nonresilient flooring" means flooring of a mineral content which is not flexible, it includes terrazzo, marble, slate, granite, brick, stone, ceramic tile and concrete (*definition taken from California Air Resources Board);*

"perfluorooctane sulfonates" or "PFOS" means a fluorinated surfactant with many uses (including stainguard and fire fighting) largely taken off the market because of evidence of bioaccumulation but still in use as a levelling aid to improve the application of floor finishes. The structural formula is F(CF2)8R SO3- Y+, where R is an alkyl radical, and Y is a counterion;

"perfluorooctanoic acid" or "PFOA" means an intermediate chemical used in the production of fluorinated telomers surfactants which are themselves replacements for PFOS. PFOA will bioaccumulate. The extent to which fluroinated telomers degrade in the environment to PFOA has not yet been established;

"plasticizers" means materials that reduce the temperature which a durable film is formed. Typical floor finish plasticizers include glycol ethers, phthalates, and tributoxy ethyl phosphate.

"polymer" means a macromolecule formed by the chemical union of five or more identical combining units. Floor care product polymers are typically based on acrylic acid and styrene monomers and are emulsified within the product by surfactants;

"phosphorous based detergent builders" means phosphorous containing chemicals (e.g., sodium tripolyphosphate and trisodium phosphate) used to maintain a high solution pH, bind metal ions and emulsify soil. *(Interpretation note: restriction in section 5 does not include the phosphate containing plasticizer Tributoxyethyl phosphate);*

"post-consumer" means material that has served its end-use at the consumer level, has been discarded by the consumer, and unless diverted, would enter the waste stream;

"readily biodegradable" for a component, is determined using any of the six test methods described in OECD Guidelines for Testing of Chemicals, 301A-301F; for a whole formulation, is determined using one of the methods described in OECD Guidelines for the Testing of Chemicals, provided that all measurements and calculations are based on the carbon content of the mixture and its degradation, i.e. dissolved organic carbon (DOC) removal (301A or 301E), CO_2 evolution (301-B) or oxygen consumption in the presence of an inhibitor of nitrogen metabolism (301C, 301D or 301F);

"restorers" means a solution of polymers and surfactants designed to be used on an approximate weekly basis that adds a thin coating to existing finish;

"sealer" means a solution of polymers that penetrates flooring material and fills and and seals pores;

"solvent" means a diverse range of liquid substances that dissolve other materials;

"spray buff" means a solution, in some cases simply a diluted floor finish, that is sprayed onto floor finish during machine buffing to clean and add a coating to the floor;

"stripper" means a product designed to break down and remove floor finish;

"surfactants" or "surface active agent" means an ampiphillic (dually water repelling and water attracting) substance that reduces the surface tension of water. In floor finish products anionic and nonionic surfactants (e.g., alkyl sulfonate) suspend the film forming polymers in the product;

"toxic" means the degree to which a substance or mixture of substances can harm humans or animals. Acute toxicity is the ability of a substance / mixture to cause harmful effects in an organism through a single or short-term exposure. Subchronic toxicity is the ability of the substance / mixture to cause effects for more than one year but less than the lifetime of the exposed organism. Chronic toxicity is the ability of a substance / mixture to cause harmful effects over an extended period, usually upon repeated or continuous exposure sometimes lasting for the entire life of the exposed organism;

"toxic metals" means metallic elements that have no known biological function and disrupt essential physiological processes (arsenic, cadmium, lead, silver, mercury, tin, nickel). For the purposes of this document, zinc, whose disposal to sewage is restricted by various municipalities, is also considered "toxic" and prohibited; and

"volatile organic compound" or "VOC" means any organic compound which participates in atmospheric photochemical reactions to create smog. It excludes those organic compounds which have been designated as having negligible photochemical reactivity found in Appendix 2. The methods to calculate VOC content are:

- EPA Method 24-24A, 40 C.F.R., Part 60, Appendix A (1991),
- Method 18,48 Federal Register 48, no. 202, October 18, 1983,
- Method 1400 NIOSH Manual of Analytical Methods, Volume 1, February 1984,
- Environmental Protection Agency Method 8240 GC/MS Method for Volatile Organics, September 1986,
- California Air Resources Board Method 310. Determination of Volatile Organic Compounds in Consumer Products and Reactive Organic Compounds in Aerosol Coating Products, or
- demonstrated through calculation from records of the amounts of constituents used to make the product where volatile means vapor pressure >0.01 KPa at 20°C.

Category Definition

2. This category includes all hard floor care products as further defined in the subcategories below:

   (a) floor finishes and sealers;
   (b) strippers and neutralizers; and
   (c) restorers.

   Note: Other subcategories may be added at a later date. The Program reserves the right to determine which subcategory will be assigned to a particular applicant.

General Requirements

3. To be authorized to carry the EcoLogo[CM], the ***Hard Floor Care Products*** must:

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

   (b) be manufactured in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations.

Product Specific Requirements

4. To be authorized to carry the EcoLogo[M], the hard floor care product must:

Efficient Use

   (a) demonstrate performance by following the standards and procedures as described in the table below;

Finishes and Restorers	Sealers	Strippers	Neutralizers
must perform as well as a functionally equivalent national brand product according to the procedure outlined in ASTM D3052-87(2003) Standard Practice for Rating Water-Emulsion Floor Polishes OR finishes must perform as well as the reference polish in CAN/CGSB-25.1, No. 50.1-96 "Methods of sampling and testing waxes and polishes: floor test". Note: Because of the lack of a recognised standard for "restorers," these products are to be compared using the above comparison procedures (e.g., relative rating) in, at minimum, the areas of gloss and soil resistance.	must demonstrate resistance to the solutions as outlined in CAN/CGSB-25.20-95 "Surface Sealer Floors" Note: Candidate sealer products should be tested on vinyl composite tile instead of the glass plate specified in the test method .	must remove the standard reference polish according to the procedure outlined in CAN/CGSB-2.60-92 "Remover for Water-Emulsion Floor Polish and Wax" Note: - If the stripper is explicitly sold to work best on a specific type of floor finish with a proviso that results on other finishes cannot be guaranteed, then the test should be done on the type of finish for which the stripper is advertised. - CGSB 2.60 specifies a 20% solution be used. The applicant may perform the test with a different concentration as long as it is the concentration indicated for normal stripping.	must demonstrate performance as outlined in Appendix 1.

(b) regardless of the results of efficacy tests, finishes, sealers and restorers must provide a surface with good slip resistance by demonstrating a coefficient of friction >0.5 according to ASTM D2047-93 or CGSB 25-GP-1 Method 30.1;

(c) if advertising a certain percent solids, provide percentage of the polymer as separate from other solids (e.g., plasticizers);

(d) be accompanied by detailed instructions on safe use and handling procedures;

(e) be accompanied by detailed instructions on maximizing product performance (e.g., dilution rate, expected lifespan of finish before stripping);

(f) be accompanied with indications for proper waste disposal of product with emphasis that unused left over product should be disposed of hazardous waste;

(g) be accompanied with instructions on the recyclability of the container and/or packaging materials;

(h) as demonstrated by the due diligence of the manufacturer,
(i) not be packaged in chlorinated plastic materials; and
(ii) efforts have been made to ensure packaging with post-consumer recycled content.

Prohibited and restricted components

(i) not be advertised or recommended for use as a spray-buff;

(j) not be formulated or manufactured with polymers containing metal cross-linking agents based on zinc or toxic metals;

(k) not be formulated or manufactured with isocyanate or polymers of urethane;

(l) not be formulated or manufactured with polymers with a residual content of free unpolymerized monomers of more than 50 ppm;

(m) if sold as a stripper, not be formulated or manufactured with ammonia;

(n) not be formulated or manufactured with halogenated solvents;

(o) not be formulated or manufactured with aromatic solvents;

(p) not be formulated or manufactured with plasticizers or coalescents belonging to any of the following groups:
(i) dibutyl phthalate,
(ii) ethylene glycol monomethyl ether or its acetate,
(iii) ethylene glycol monoethyl ether or its acetate,
(iv) ethylene glycol monobutyl ether or its acetate,
(v) ethylene glycol monopropyl ether or its acetate, or
(vi) diethylene glycol monomethyl ether;

(q) not be formulated or manufactured with ethylene diaminetetracetic acid;

(r) not be formulated or manufactured with phosphorous based detergent builders;

(s) not be formulated or manufactured with alkylphenol ethoxylate (APEOs) surfactants (including those surfactants or stabilizers found in polymer packages);

(t) not be formulated or manufactured with perfluorooctane sulfonates;

(u) not be formulated or manufactured with more than 150 ppm of fluorinated surfactants (noting that there is no restriction on short chain (C < 4) fluorosurfactants);

(v) when measured in the product it in its at-use dilution, be in accordance with the VOC levels set out in the table below;

Finishes and Sealers	Strippers and Neutralizers	Restorers
7% (flexible flooring) 10% (non-resilient flooring)	7% (least recommended dilution)	3%

(w) if sold as an acid containing neutralizer, then be formulated or manufactured with food grade acids;

(x) have a pH of not more than 12.5;

(y) as demonstrated by product tests, show that the lowest possible amount of preservative has been included in the product;

(z) 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. (Note that formulation of a product with non-carcinogenic polystyrene polymer based on polymerisation of the Group 2B chemical styrene does not violate this requirement);

(aa) not be formulated or manufactured with any chemicals that are known to the State of California to cause reproductive or developmental toxicity;

(bb) not be formulated or manufactured with any chemicals identified for priority for research as endocrine disruptors by the European Union.

Toxicity and Bioelimination

(cc) when tested at the at-use dilution, demonstrate low toxicity to aquatic and terrestrial life as described in the table below;

Finishes or combination Finish / Sealers	Sealers	Strippers	Neutralizers	Restorers
LC_{50} 48hr invertebrate > 10 mg/l And Calculated LD_{50} (oral rat) > 6,000 mg/kg	LC_{50} 48hr invertebrate > 4,500 mg/l And Calculated LD_{50} (oral rat) > 6,000 mg/kg	EC_{50} bacteria > 10 mg/l And Calculated LD_{50} (oral rat) > 4,000 mg/kg	EC_{50} bacteria > 20 mg/l And Calculated LD_{50} (oral rat) > 4,000 mg/kg	LC_{50} 48hr invertebrate > 5,000 mg/l And Calculated LD_{50} (oral rat) > 6,000 mg/kg

(dd) be biodegradable as described in the table below;

Finishes and Sealers	Strippers and Neutralizers	Restorers
All organic ingredients must be readily biodegradable. (Note: the polymer and wax / resin portions are excluded from this requirement, but the exception does not extend to the surfactants found in polymer packages).	All organic ingredients must be readily biodegradable.	All organic ingredients must be readily biodegradable. (Note: the polymer and wax / resin portions are excluded from this requirement, but the exception does not extend to the surfactants found in polymer packages).

Verification

5. To verify a claim that a product meets the criteria listed in the document, the EcoLogo[CM] Program will require access, as is its normal practice, to relevant quality control and production records and the right of access to production facilities on an announced basis.

6. Compliance with section 3(b) shall be attested to by a signed statement of the Chief Executive Officer or the equivalent officer of the manufacturer. The EcoLogo[CM] Program shall be advised in writing immediately by the licensee of any non-compliance which may occur during the term of the license. On the occurrence of any non-compliance, the license may be suspended or terminated as stipulated in the license agreement.

Conditions for EcoLogo Use

7. The EcoLogo[CM] may appear on wholesale or retail packaging, or on the product itself, provided that the product meets the requirements in this document.

8. It is recommended that a criteria statement appear with the EcoLogo[CM] whenever the EcoLogo[CM] is used in association with the hard floor care product. The intent of this statement is to provide clarification as to why the product was certified and to indicate constraints to which the certification is limited. This is to ensure no ambiguity over, or misrepresentation of, the reason(s) for certification.

The suggested criteria statement wording for this product type is "*Hard Floor Care Product*". The licensee may propose other wording for the criteria statement, but any such proposed wording must be approved by the EcoLogo[CM] Program.

9. All licensees and authorized users must comply with the Program's *Guide to Proper Use of the EcoLogo[CM]* regarding the format and usage of the EcoLogo[CM].

10. Any accompanying advertising must conform with the relevant requirements stipulated in this document, the license agreement and the Program's *Guide to Proper Use of the EcoLogo[CM]*.

For additional copies of this criteria document or for more information about the EcoLogo[CM] Program, please contact:
TerraChoice Environmental Marketing Inc.
Toll free: 1-800-478-0399, Telephone: (613) 247-1900, Email: ecoinfo@terrachoice.com

Appendix 1: Procedure to Demonstrate Product Efficacy When Recognized Standard Not Available

The EcoLogo[CM] Program may accept efficacy test data that indicate the product is able to perform as well as at least one nationally available functionally equivalent product.

At minimum any testing must provide performance information on all parameters identified in the conventional tests procedures. For example, floor finish performance parameters must include glossiness, traffic marking, slip resistance, levelling, discoloration, soil resistance and removability.

Whatever method is employed, efficacy testing must comply with the following general conditions:

1. Testing must be performed by a third party accredited laboratory.

2. Testing must be carried out under controlled, replicable conditions; anecdotal data is not acceptable for EcoLogo[CM] certification.

3. Generated test data must be objective and quantified in recognized metric units.

4. All control conditions must be specified.

5. The product must be tested at its maximum recommended dilution (i.e., minimum concentration).

6. Complete copy of the testing protocol and final report must be made available to the EcoLogo[CM] Program .

Appendix 2: Volatile Organic Compounds with Negligible Photochemical Reactivity

The list of volatile organic compounds (VOCs) designated by the EcoLogo[CM] Program as having negligible photochemical reactivity has been taken from the following two documents:

1. State of California Air Resources Board, Regulation for Reducing Volatile Organic Compound Emissions from Consumer Products, Appendix.
2. U.S. EPA VOC Definition, Federal Register, Volume 57, No. 22, 3 February 1992, Rules and Regulations, pg. 3945, sec.51.100.

This EcoLogo[CM] designated list includes the following compounds:

(a) acetone
(b) ammonium carbonate
(c) carbon monoxide
(d) carbonic acid
(e) ethane
(f) metallic carbides or carbonates
(g) methane
(h) methylene chloride (dichloromethane)
(i) cyclic, branched, or linear completely methylated siloxanes
(j) parachlorobenzotrifluoride (PCBTF)
(k) perchloroethylene (tetrachloroethylene)
(l) 1,1,1-trichloroethane
(m) trichlorofluoromethane (CFC-11)
(n) dichlorodifluoromethane (CFC-12)
(o) trichlorotrifluoroethane (CFC-113)
(p) dichlorotetrafluoroethane (CFC-114)
(q) chloropentafluoroethane (CFC-115)
(r) chlorodifluoromethane (HCFC-22)
(s) dichlorotrifluoroethane (HCFC-123)
(t) dichlorofluoroethane (HCFC-141b)
(u) chlorodifluoroethane (HCFC-142b)
(v) 2-chloro-1,1,1,2-tertrafluoroethane (HCFC-124)
(w) trifluoromethane (HFC-23)
(x) 1,1,1,2,3,4.4,5,5,5-decafluoropentane (HFC-43-10mee)
(y) pentafluoroethane (HFC-125)
(z) 1,1,2,2-tetrafluoroethane (HFC-134)
(aa) tetrafluoroethane (HFC-134a)
(bb) 1,1,1-trifluoroethane (HFC-143a)
(cc) 1,1-difluoroethane HFC-152a)
(dd) 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca)
(ee) 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb)
(ff) 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

EcoLogo[M] Program Interpretation Document

Definition of Aromatic Solvents
Certification Criteria Documents for Cleaning Products

Interpretation:

EcoLogo[M] certification criteria documents may include requirements that address aromatic solvents. These documents 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, the EcoLogo[M] Program has added a second 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, EcoLogo[M] 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. Furthermore, EcoLogo[M] 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 (C_6H_6). This is the basic aromatic ring structure with zero substitutions. Therefore it would be considered aromatic.
- Toluene (C_7H_8). This compound has one substitution – methyl (CH_3). Although methyl is considered a simple substitution, there is still only one. Therefore, the solvent is considered aromatic.
- Phenol (C_6H_6O). 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 (C_8H_{10}). This group of compounds includes *o*-Xylene, *m*-Xylene and *p*-Xylene. These compounds have two additional substitutions of methyl (CH_3). Although methyl is considered a simple substitution, there are still only two. Therefore, the solvent is considered aromatic.
- Benzyl alcohol (C_7H_8O). This compound has two substitutions – one alcohol (OH) and one methyl (CH_3). 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 ($C_8H_{10}O$). This compound has two substitutions - one ethyl (C_2H_6) and one alcohol (OH). Ethyl is not considered a simple substitution. Therefore, the solvent is not considered aromatic.
- Phenoxyethanol ($C_8H_{10}O_2$). This compound has three substitutions - one ether (R–O–R), one alcohol (OH) and one methyl (CH_3). Although all substitutions are simple, there are more than two. Therefore the solvent is not

considered aromatic.

Affected EcoLogo[M] Criteria Documents:

CCD-110 "Cleaning and De-greasing Compounds: Biologically-based,"
CCD-146 "Hard Surface Cleaners,"
CCD-147 "Hard Floor Care Products,"
CCD-148 "Carpet and Upholstery Products," and
CCD-166 "Disinfectant and Disinfectant Cleaners."

Additional Notes:

Copies of the above certification criteria documents can be found at www.ecologo.org

Direct inquiries or comments to TerraChoice Environmental Marketing Inc.
E-mail: ecoinfo@terrachoice.com, Toll free: 1-800-478-0399, Telephone: 1-613-247-1900