

EcoLogo^{CM} Program Certification Criteria Document

CCD-076
Paperboard



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.

Pulp and paper mills consume significant quantities of energy and resources and may release waterborne and airborne substances into the receiving environment and generate solid waste. Alternatives are available to manufacturers in the choice of pulp furnish and emission control to mitigate adverse environmental impacts.

This document was developed using a multi-parameter approach that identifies the most important environmental stressors from all stages of the product's life cycle. These environmental stressors have been translated into pulp and paper related criteria that will result in lower environmental impacts.

A requirement for a minimum content of recycled material is not specified in this document. This parameter has been incorporated into the calculation of resource consumption and solid waste production. Performance in these areas improves as the amount of recycled material increases.

Based on a review of currently available life cycle information, the product category requirements will produce an environmental benefit through reduction in air emissions; reduction in water emissions; reduction of waste; efficient use of fiber, preferably recycled fiber; and a reduction in energy use.

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

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.

Interpretation

1. In this criteria document:

“acidification potential” is a measure of the impact of emissions on acid rain formation. It is calculated using atmospheric emissions of sulphur dioxide (SO₂) and nitrogen oxide (NO_x) compounds. For purposes of this document, acidification potential is based on measured SO₂ emissions from the mill;

“agricultural fiber” means a solid residue arising from the harvesting and processing of agricultural crops (e.g. dried stalks of harvested grain) that would otherwise be incinerated or sent to landfill;

“biomass” means biological materials (e.g., hogfuel, black liquor organics) that are commonly used as an energy source; (Canadian Standards Association, final draft CAN/CSA-Z810-96, 1996);

“COD” (chemical oxygen demand) is a measure of the amount of oxygen required to oxidize organic and oxidizable inorganic compounds in water. It measures the fraction of organic substances present in mill effluent that the natural environment cannot readily degrade. COD is measured by ISO 6060 test method, or method 5220 C or D in “Standard Methods for the Examination of Water and Wastewater”, 17th Ed., American Public Health Association, American Water Works Association and Water Pollution Control Federation, 1989, Washington, DC;

“cogeneration” means generating electrical energy for production and using the waste heat in the form of steam from the generation in other areas of the manufacturing process. Cogeneration requires approximately one third of the fuel that is required by condensing power;

“consumer” means a household, commercial establishment or institutional facility;

“code of sustainable forest practices” means a statement of practices which has the objective of maintaining environmental, economic, and social values of the forest. A code must specify, at a minimum, harvesting practices, forest regeneration, biodiversity and wildlife protection, soil conservation, watershed protection, and the participation of communities in forest planning. A code could be included in certification under FSC, ISO 14001 or CAN/CSA Z809, ISO 14001, or could be an adaptation of the forestry indicators from the Canadian Council of Forest Ministers, the Montreal Process and/or the Helsinki Process;

“dry broke” means paper such as that spoiled in the process of drying, calendering, winding, rewinding and trimming, including butt rolls;

“effluent” means waste water from a mill, including process water, gas scrubbing water, boiler blow-down water, washdown water, cooling water and leachate from any site at the mill where solid residues generated by any mill are treated or disposed of or where wood chips or hogfuel is stored;

“fiber-only” means the actual amount of fiber that is fed into the pulp digester with a 10% moisture content less the mass of any additives;

“global warming potential” (GWP) means the time-integrated change in radiative forcing due to the instantaneous release of 1 kilogram of a gas expressed relative to the radiative forcing from the release of 1 kilogram of CO₂;

"Helsinki Process" refers to the Pan-European Criteria and Indicators for Sustainable Forest Management;

"IC₂₅" means inhibiting concentration that will affect 25% of the test organisms;

"ISO" refers to the International Organization for Standardization;

"incineration without energy recovery" means the combustion of a solid, liquid or gaseous waste with no power or chemical recovery;

"landfilled" a method of disposing of solid mill waste by transporting it to a designated land area, dumping it into excavations and then applying a covering;

"marginal fuels" means those fuels used by utilities to fulfill any marginal or incremental power demands. Many utilities supplying electricity to the grid do so by keeping either hydroelectric and/or nuclear facilities operating at the maximum required rate. When electricity requirements change or incrementally increase, the marginal change in power generation supplied by the utility is generally done with fossil fuels (i.e. oil, coal);

"market pulp" means pulp that is sold to paper producers on the open market;

"measurable concentration of 2,3,7,8-TCDD" means a concentration of 2,3,7,8-TCDD that is greater than the level of quantification (10 ppq) when tested using one of the following methods:

- Method 1613 Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS in "Guidelines Establishing Test Procedures for the Analysis of Pollutants"; US Environmental Protection Agency, October 1994, or
- Report EPS 1/RM/19, "Reference Method for the Determination of Polychlorinated Dibenzo-para-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) in Pulp Mill Effluents", Environment Canada, 1991;

"measurable concentration of 2,3,7,8-TCDF" means a concentration of 2,3,7,8-TCDF that is greater than the level of quantification (10 ppq) and that when multiplied by 0.1, exceeds 5 ppb, when tested using one of the following methods:

- Method 1613 Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS in "Guidelines Establishing Test Procedures for the Analysis of Pollutants"; US Environmental Protection Agency, October 1994, or
- Report EPS 1/RM/19, "Reference Method for the Determination of Polychlorinated Dibenzo-para-dioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) in Pulp Mill Effluents", Environment Canada, 1991;

"Montreal Process" refers to the Working Group on Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests;

“non-wood fiber” refers to alternative fiber sources and includes, but is not limited to, hemp, cotton, bamboo, straw, other plants cultivated specifically for use as a fiber source, and agricultural wastes;

“over the fence” refers to chemicals that are produced on-site, but where chemical and electricity metering is performed by the chemical supplier or organization that “leases” the equipment to the mill;

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

“pre-consumer material” means materials generated by an industrial process that would, unless diverted, enter the waste stream. This includes, but is not limited to, damaged or defective materials, overstock or obsolete inventories from manufacturers, distributors, wholesalers and trimmings from converting processes. It does not include wet or dry broke, except that proportion originating as pre-consumer materials;

“printed recovered material” means material which has been printed and/or coated and would, unless diverted, enter the waste stream;

“product unit” means a metric tonne of pulp or paper product that is produced;

“pulp” means fibrous material produced mechanically or chemically by reducing woody plants into their component parts from which paper or paperboard sheets are formed;

“raw wood fiber” means fiber from wood which has not previously been pulped (chips and roundwood);

“recovered fiber” means the fiber derived from planer shavings, sawdust, pre-consumer materials and post-consumer materials;

“recycled material” means post-consumer material and pre-consumer material. It does not include by-products of an industrial process that can be, and regularly are, used in either the same process, or in a different process, except that proportion which originated as post-consumer material and pre-consumer material. It may include sawdust or planer shavings from sawmill operations;

“sublethal toxicity” means the effects that a substance has on a test organism over a significant portion of the test organisms life (10% or more), such as growth, reproductive or metabolic inhibition;

“TEF_{sub}” means sublethal toxicity emission factor. It is calculated as $TEF_{sub} = [\log(100/IC_{25\text{ mean}})] \times [\text{annual mill effluent flow in m}^3] \div [\text{annual mill tonnage in ADMT}]$. Toxicity shall be measured using two different species of divergent taxonomic and ecological ranks. These species should be physiologically and ecologically similar to organisms that reside in North American ecosystems. Listed below are acceptable methods.

- Testing on an aquatic vertebrate species using one of the following:

- EPA-821-R02-012, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Estuarine and Marine Organisms" (*Menidia beryllina*), US Environmental Protection Agency, 2002; or
 - 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; or
 - Report EPS 1/RM/22, "Biological Test Method: Test of Larval Growth and Survival Using Fathead Minnows", Environment Canada, 1992.
- Testing on an aquatic invertebrates species using one of the following:
 - 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; or
 - 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; or
 - Report OECD/OCDE-211, "*Daphnia magna* Reproduction Test", Organization for Economic Cooperation and Development, September 1998; or
 - Report EPS 1/RM/2, "Biological Test Method: Test of Reproduction and Survival Using the Cladoceran *Ceriodaphnia dubia*", Environment Canada, 1992; or
 - Report EPS 1/RM/27, "Biological Test Method: Fertilization Assay Using Echinoids (Sea Urchins and Sand Dollars)", Environment Canada, 1992; and

"wet broke" means paper recovered from the wet press of a paper machine.

Category Definition

2. This category includes all paperboard.

General Requirements

3. To be authorized to carry the EcoLogo^{CM}, the pulp must:
 - (a) meet or exceed all applicable governmental and industrial safety and performance standards; and
 - (b) be manufactured and transported 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^{CM} paperboard must:
 - (a) be manufactured so that the total of load points assessed for Fiber-Use, COD, TEF_{sub7}, Energy-Use, Global Warming Potential Measure, Acidification Potential Measure, and Solid Waste does not exceed 28 (note that Appendix I contains the table for calculating Load Points, and Appendix II contains the methodology for collecting data);
 - (b) be manufactured so that the effluent from the mill, or any mill that supplies market pulp, does not contain a measurable concentration of 2,3,7,8-TCDD or a measurable concentration of 2,3,7,8-TCDF; and
 - (c) use only raw wood fiber that has been managed under a code of sustainable forestry practices.

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^{CM} 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 paperboard. 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 “paperboard”. 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:
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Appendix I: Load Point Determination

Load Points are assigned for each parameter listed in Table 1 below on a linear scale from a minimum value of zero to a threshold value of four. Products that result in values exceeding the threshold on any parameter are assigned additional Load Points on an extrapolated linear scale. The Load Points for each parameter are summed to calculate the total Load Point value for the product. **The data collection and calculation methodology provided in Appendix II must be done for each product that is to be certified.** Appendix II will be provided on request to those who wish to calculate Load Points for a given product.

Generally, the minimum end of the scale for a parameter corresponds to the best attained by any installation in the world with a proven record of operating commercially and reliably. A manufacturing process that generates a parameter equal to the minimum end of the scale would be assigned zero points for the parameter. If innovative or unusual technology is used to operate below the minima stated herein, then negative points would be assigned. A threshold value, corresponding to approximately the 80th percentile of commercially operating values for the parameter, has been set and would correspond to 4 Load Points. Intermediate values have been scaled linearly.

For example, a mill using 100% post-consumer fiber achieves a Load Point value of '0' for Resource Depletion because no primary fiber is used in the production of its pulp. The 80th percentile would be a mill using a mix of recycled content and other fiber sources that achieves a fiber-use efficiency of 1.3 tonnes input per tonne of pulp produced. This mill would receive a Load Point of '4'. Parameters above the threshold value would be assigned Load Points on the same linear scale. Values substantially above the threshold point would effectively disqualify a product. A product with one characteristic parameter that exceeds the threshold value would have to perform well in all other parameters to qualify.

Calculating Total Load Points

Category	Parameter	Units	Calculated Load Point (from Appendix II)
Resource depletion	Fiber Use	tonnes / ADMT product	
Liquid effluent	Chemical Oxygen Demand	kg / ADMT product	
Liquid effluent	Sublethal Toxicity	TEF _{sub}	
Energy consumption	Energy Use	GJ / ADMT product	
Global warming	Global Warming Potential Measure (estimated CO ₂ emissions)	GJ / ADMT product	
Acidification	Acidification Potential Measure (Estimated SO ₂ emissions)	kg SO ₂ / ADMT product	
Solid waste	Solid Waste	m ³ / ADMT product	
Total Calculated Load Points			