

Environmental Choice^M Program

CERTIFICATION CRITERIA DOCUMENT

CCD-150



Product: Steel for Use in Construction Products

Preamble

Environment Canada's Environmental Choice^M Program is pleased to publish the following certification criteria document on **steel for use in construction products**.

The Environmental Choice 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 available to Canadians.

The building construction industry is vital to modern civilization, but consumes significant resources. It has been estimated that over 3 billion tonnes of raw materials are consumed annually by this industry, worldwide; no less than 40% of the use of such resources. In addition, regardless of the source of these construction materials (metals, aggregates, fossil fuels or grown materials, such as wood), their extraction, transportation and conversion into final building products result in a variety of environmental impacts. Ecolabelling programs around the world have responded by placing an increased priority on the certification and recognition of lower-impact, sustainable construction products.

Construction products are manufactured from several different base materials. Depending upon the particular application, source materials may include, *inter alia*, wood, steel, concrete, asphalt and/or a variety of polymers. Many life-cycle analyses and other studies have been conducted in an attempt to identify the most preferable of these options. To date, the net result of these comparative studies has been inconclusive. Therefore, the Environmental Choice Program's strategic approach is to identify construction leadership in a more holistic sense, by recognizing the best available option(s) for each material. The purpose of this Certification Criteria Document is to address leadership for steel, as a basis for further certification criteria.

Many construction products (including, *inter alia*, studs and other framing items, decking, roofing, cladding and ductwork) are manufactured from steel. The basis for ECP certification of such products must logically begin with identification and recognition of particular steels that demonstrate environmental preferability. Therefore, this document sets appropriate certification criteria for steel used as the raw material for construction products. Certification of such steel will, in turn, serve as the basis for additional criteria relevant to specific construction products; to be set in subsequent Certification Criteria Documents for those product-types.

Steel production is generally acknowledged to impose environmental impacts, including the extraction and consumption of non-renewable resources (iron ore, coal, limestone, etc.), air emissions (carbon monoxide, sulfur and nitrogen oxides, particulates and dusts, acid fumes, etc.), water emissions (zinc, chromium, copper, lead, cadmium and other metals, suspended solids, oil and grease, COD, etc.), and the generation of slags, dusts and other solid wastes. ECP certification criteria recognize significantly reduced energy and material inputs, promotion of the inherent potential for repeated recycling of steel and efforts made to reduce overall air, water and land emissions of toxic materials associated with steel production and use.

Based on a review of currently available life cycle information, the product category requirements will produce an environmental benefit through:

- a reduction in the use of resources;
- a reduction in energy use; and
- a reduction in toxic emissions to the environment.

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

It is anticipated that producers of **steel for use in construction products** conforming to this certification criteria document will apply to the Environmental Choice Program for verification and subsequent authority to label the qualifying services with the EcoLogo^M.

Notice

Throughout this document, any reference to a standard or guideline means to its latest edition.

The Environmental Choice Program (ECP) reserves the right to accept equivalent test data for the test methods specified in this document.

Notice of Intent

Future revisions of this guideline may require higher total and post-consumer recycled contents, reduced embodied energy limits and possible upstream impacts.

Interpretation

1. In this set of requirements, please note the following definitions:

“Basic Oxygen Furnace” or “BOF”, also known as the “integrated process” means a steel-making furnace that refines molten iron into steel by injecting hot oxygen to drive off impurities;

“Electric Arc Furnace” or “EAF” means a steel-making furnace that utilizes high-energy electric arc to melt ferrous scrap, for refining into new steel;

“embodied energy” means a determination of the energy required to produce a unit of (shipped) output. For steel-making operations, embodied energy is generally measured in either GJ/tonne shipped or MJ/kg, and must include an accounting of, *inter alia*, coke-making, iron-making, furnace operations (BOF and/or EAF), hot mill rolling, finishing operations (e.g., cold-rolling, galvanizing, painting), as applicable and other plant operations that contribute directly or indirectly to the production of the steel. For the purposes of this Certification Criteria Document, lifecycle analysis utilized to calculate embodied energy is limited to a “gate-to-gate” system boundary;

“furnace charge” means material input to a steel-making furnace (BOF or EAF). Depending upon the desired output properties and/or availability of materials, furnace charge may include, *inter alia*, molten iron, pig iron, scrap steel and trace amounts of other metals;

“galvanized” generally means steel (roll or coil) which has have a thin layer of zinc deposited on its surface, though a hot-dip or electrolytic process, for the purpose of increasing the steel's corrosion resistance. For the

purposes of this Certification Criteria Document, “galvanizing” also includes treatments with zinc-iron, zinc-aluminum or other similar zinc-based mixtures;

“**gate-to-gate**” means that the system boundary employed in lifecycle analyses to determine the steel’s embodied energy extends only to process at the steel manufacturing site. Thus energy consumed in the extraction and transportation of raw materials (e.g., ores, externally-sourced scrap, etc.) and transportation, use and final disposal of subsequent construction products is not included in calculations;

“**hazardous heavy metals**” means mercury, lead, cadmium, hexavalent chromium and their compounds;

“**home scrap**” means iron and steel scrap recovered from processes within the steel production facility, including, *inter alia*, millscrap, metal-based slags, steel roll scrap and other excess ferrous materials. As per *ISO/DIS 14021*, home scrap is not considered to be recycled content;

“**hot-band**” means an intermediate steel which consists of a strip of hot rolled steel output by the hot rolling process. While hot band may be considered a useable product, as is, it must be further processed (by pickling, annealing, cold-rolling and galvanizing) in order to make **steel for use in construction products**;

“**ISO/DIS 14021**” means the *International Standards Organization* standard *ISO 14021: Environmental labels and declarations: Self-declared environmental claims*;

“**NPRI**” means Environment Canada’s *National Pollution Release Inventory*;

“**post-consumer material**”, as consistent with *ISO/DIS 14021*, means material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose; this includes returns of material from the distribution chain. For the specific purposes of this Certification Criteria Document, post-consumer material includes steel scrap recovered from end-of-life consumer/commercial products, including, *inter alia*, appliances, automobiles, steel cans and construction materials;

“**pre-consumer material**”, consistent with *ISO/DIS 14021*, means material diverted from the waste stream during a manufacturing process; excluded is reutilization of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it. For the specific purposes of this Certification Criteria Document, pre-consumer material includes steel scrap recovered from manufacturing processes of consumer/commercial/industrial products, including, *inter alia*, turnings, stampings, borings and trimmings;

“**recycled content**” means the proportion of recycled (ferrous) material present in the raw material used in steel production. As per *ISO/DIS 14021*, only pre- and post-consumer material shall be considered as recycled content., and for the purposes of this Certification Criteria Document, recycled content is expressed as a percentage of furnace charge (vs. amount produced);

“**recycled material**”, consistent with *ISO/DIS 14021*, means material which would have otherwise been disposed of as waste, but has instead been collected and reclaimed as a material input, in lieu of new primary material, for a manufacturing process. As per *ISO/DIS 14021*, recycled material used in steel-making includes both pre- and post-consumer material, but excludes ferrous material recovered from operations at the steel production facility (i.e., “home-scrap”);

“**rolling 12-month average**” means that recycled content must be determined from the average recycled content taken over *any* continuous twelve-month period of steel production. This average must also be determined specifically from the production of **steel for use in construction products**, and not from the steel production facility’s overall steel output;

“slabs” means an intermediate steel which is produced by casting the output of the furnace/ladle into solid slabs. Slabs must be further processed in hot-rolling mills to produce usable steel products.

“sound environmental management practices” means those practices and goals used in the production of iron and steel within a sound environmental management system, as defined in the definitions section of this criteria document, that have the objectives of maintaining environmental values of the surrounding ecosystem. At a minimum, these practices must address *inter alia*:

- (a) extraction of raw resources (iron ore, coal, limestone/dolomite, etc.) ;
- (b) incorporation of recovered/recycled scrap and other material into production;
- (c) hauling distance from the raw material mine site(s) to the production site;
- (d) production site construction and maintenance;
- (e) water quality and quantity;
- (f) air quality;
- (g) solid waste reduction and management;
- (h) recovery, treatment and disposal of hazardous wastes; and
- (i) protection of biodiversity, wildlife and rare, threatened and endangered species;

“sound environmental management system” means a system, including *inter alia* the ISO 14000 series of standards, used to manage the production of industrial materials and products, that incorporates sound environmental management practices. At a minimum, system elements must include:

- (a) planning elements such as: identifying metallurgical resources; identifying environmental aspects; assessing environmental impacts; identifying environmental legislative and regulatory requirements; and defining and committing to environmental policies, objectives and targets;
- (b) operational elements such as: defining roles and assigning responsibilities; providing adequate staff training; communicating environmental aspects and policies both internally and externally; implementing an environmental management program based on identified environmental aspects and impacts; documenting all policies, goals and procedures; periodically reviewing and, where necessary, revising the system; performing public consultation and/or outreach; and establishing an environmental emergency preparedness and response plan; and
- (c) monitoring and measurement elements such as: monitoring and measuring key aspects of the system; evaluating and mitigating negative environmental impacts; correcting non-conformance with the management system; performing internal reviews; and having third party audits performed;

“steel for use in construction products” means light-gauge steel that has been specifically designed for use in building construction products, including, *inter alia*, studs, framing, cladding, decking and ventilation ducts. While this grade of steel is either galvanized or otherwise surface treated with a corrosion-resistant zinc-based process, this definition specifically excludes steels that have been painted with high-VOC coatings in their finishing process; and

“volatile organic compound” or **“VOC”** means any organic compound which participates in atmospheric photochemical reactions. It excludes those organic compounds which the ECP designates as having negligible photochemical reactivity.

Category Definition

2. This category includes all **steel for use in construction products**.

General Requirements

3. To be authorized to carry the EcoLogo^M, **steel for use in construction 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 including, for facilities located in Canada, the *Fisheries Act* and the *Canadian Environmental Protection Act (CEPA)*.

Product Specific Requirements

4. To be authorized to carry the EcoLogo^M, **steel for use in construction products** must:
 - (a) be derived from steel feedstocks with the following requirements:
 - i) must include a minimum total recycled content of 50%, based on a rolling 12-month average;
 - ii) must include a minimum total post-consumer content of 15%, based on a rolling 12-month average;
 - iii) procedures must be implemented to exclude feedstocks containing greater than a total combined 0.025% of hazardous heavy metals, and

Note: Determination of recycled content is expressed as a percentage of furnace charge, not final production. If the hot-band precursor to **steel for use in construction products** is produced from more than one type of furnace (i.e., EAF and BOF), the overall determination of recycled content average will be based on the weighted average recycled content of hot band derived from each furnace-type. Determination will be based on collection of data for preceding 12-month period.

- (b) be wholly produced from slabs manufactured on-site and not from slabs imported from other facilities;
- (c) in its hot band state, possess a total “gate-to-gate” embodied energy lesser or equal to 7.5 MJ/kg, based on a rolling 12-month average;
- (d) in its final, finished steel roll state, possess a total “gate-to-gate” embodied energy lesser or equal to of 11.5 MJ/kg, based on a rolling 12-month average;

Note: If the hot-band precursor to **steel for use in construction products** is produced from more than one type of furnace (i.e., EAF and BOF), the overall determination of

embodied energy average will be based on the weighted average embodied energy of hot band/finished steel derived from each furnace-type.

5. To be authorized to carry the EcoLogo^M, the producer of **steel for use in construction products** must:
 - (a) have implemented a sound environmental management system and are adhering to sound environmental management practices at the steel production facility;
 - (b) where the steel producer and feedstock source share common ownership, use only feedstocks that have been sourced from operations that have implemented a sound environmental management system and are adhering to sound environmental management practices;
 - (c) where the steel producer and feedstock source **do not** share common ownership, make a concerted effort to source from operations that have implemented a sound environmental management system and are adhering to sound environmental management practices
 - (d) ensure that all hazardous by-products are segregated and adequate arrangements made for their recycling/reuse (where applicable) or proper disposal; and
 - (e) ensure that at least 50% of the total of all NPRI-designated releases at the steel production facility are being diverted from landfill for recycling or reuse in other products.

Verification

6. To verify a claim that a product meets the criteria listed in this document, the ECP will require access, as is its normal practice, to relevant purchasing records, quality control and production records and the right of access to production facilities on an announced basis.
7. Compliance with requirement 3(b) shall be attested to by a signed statement of the Chief Executive Officer or the equivalent officer of the licensee. The ECP shall be advised in writing immediately by the licensee of any noncompliance which may occur during the term of the license. On the occurrence of any noncompliance, the license may be suspended or terminated as stipulated in the license agreement.

Conditions for EcoLogo Use

8. The EcoLogo may appear on the product packaging, sign boards and any accompanying advertising or corporate literature, provided the product meets the requirements in this document, provided that the product meets the requirements in this document.
9. All licensees and authorized users must comply with the ECP's *Guide to Proper Use of the EcoLogo^M* regarding the format and usage of the EcoLogo.

10. Any accompanying advertising must conform with the relevant requirements stipulated in this guideline, the license agreement and the ECP's *Guide to Proper Use of the EcoLogo^M*.
11. A criteria statement must appear with the EcoLogo whenever the EcoLogo is used in association with ***steel for use in construction products***. 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 ECP recommended criteria statement wording for this product-type is "*Steel for Use in Construction Products*". The licensee may propose other wording for the criteria statement, but any such proposed wording must be approved by the Environmental Choice Program.

***For additional copies of this guideline or for more information about the Environmental Choice Program, please contact: TerraChoice Environmental Services Inc.,
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