

ENVIRONMENTAL CERTIFICATION OF BUILDING MATERIALS IN SLOVAK REPUBLIC

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Кожна будівля і будівельні матеріали так чи інакше взаємодіють з навколишнім середовищем і є причиною забруднення та погіршення природного середовища. Екологічне маркування є ефективним механізмом забезпечення спорудження будівель, що матимуть найменший негативний вплив на природу. У цій роботі подано огляд будівельних матеріалів для сертифікації у Словаччині.

Each building and building material directly or indirectly interact with the environment and may cause pollution or deplete our natural resources. The eco-labelling process seems to be a very effective mechanism to promote building products that have a lesser impact on the environment. The review of building materials environmental certification in Slovak republic is presented in this paper.

Introduction. Many consumer products in the market whether directly or indirectly, through their manufacturing processes, usage, or disposal, have an impact on our environment. They may cause pollution or deplete our natural resources. Since the late 1980s, there has been a growing demand from consumers for products that do less harm to the environment. This is reflected in the emergence of products such as non-toxic household cleaning agents, chlorine-free paper, recycled oil, and mercury-free batteries. Labelling the environment-friendly products helps consumers identify and select them from those which are less so when they make their purchases. Green labelling (or eco-labelling) refers to a scheme which awards environment-friendly products with eco-labels.

This paper is oriented to the review of eco-labelling in field of building industry in Slovak republic. The building product groups and materials as well as requirements necessary to the national environmental certification are presented in this paper.

Characterization of eco-labelling process. Public willingness to use buying power as a tool to protect the environment provides manufacturers with an opportunity to develop new products. Eco labelling offers consumers a choice, and growers a potential marketplace advantage for using environmentally sound growing practices. Both governments and the private sector have become involved in eco-labelling programs. Government involvement in eco-labelling schemes can:

- Improve the programme's economic stability, legal protection and credibility in the eyes of manufacturers and consumers;

- Provide more dependable, long-term resources;
- Overcome high start-up and compliance monitoring costs, thus allowing for greater participation;
- Allow for the incorporation of international standards;
- Provide better accountability and technical expertise;
- Ensure public involvement in setting new standards.

But corporate involvement in eco-labelling schemes is also important. In particular, private-sector programmes:

- May be less vulnerable to shifting political priorities and budget constraints;
- May be able to set more stringent standards than government agencies in some product sectors, since they do not have to take into account employment impacts;
- Are an effective means of pressurizing overseas companies to comply with environmental regulations.

The need for rules governing eco-labelling has led to concerted efforts to develop labelling protocols, or standards worthy of public trust.

The ISO 14020 family covers three types of labelling schemes:

- Type I is a multi-attribute label developed by a third party; realised primarily by national governmental initiatives,
- Type II is a single-attribute label developed by the producer;
- Type III is an eco-label whose awarding is based on a full life-cycle assessment.

The family of standards is as follows in table 1:

Table 1

The review of the labelling standards within ISO 14020

Standard	Description	Application
ISO 14020	Environmental Labelling: General Principles	Sets out nine general principles that apply not only to labelling schemes but to all environmental claims, designed to promote accurate, verifiable and relevant information
ISO 14021	Environmental Labels and Declarations: Self-Declaration Environmental Claims, Terms and Definitions	Sets out requirements for Type II labels, i.e. environmental claims made for goods and services by the producer
ISO 14022	Environmental Labels and Declarations: Self-Declaration Environmental Claims, Symbols	Promotes the standardization of terms and symbols used in environmental claims, e.g. 'recycled content'
ISO 14023	Environmental Labels and Declarations: Self-Declaration Environmental Claims, Testing and Verification	(Currently under review)
ISO 14024	Environmental Labels and Declarations: Environmental Labelling Type I, Guiding Principles and Procedures	Provides guidance on developing programmes that verify the environmental attributes of a product via a seal of approval

Type I eco-labelling scheme in Slovakia. Type I eco-labelling scheme is a voluntary market mechanism to promote products that have a lesser impact on the environment, and relates to consumer product groups. The eco-labelling is realised in Slovakia within the frame of the National program of environmental assessment and eco-labelling, approved by government of Slovak republic in 1996 and amended in 2004. The national eco-labelling program is based on the Regulation No. 880/92/EEC On a Community eco-label award scheme and on the Regulation No 1980/2000 of the European parliament and of the council of 17 July 2000 On a revised Community eco-label award scheme.

The Slovak national eco-label award scheme is designed to:

- promote products which have a reduced environmental impact compared with other products in the same product group;
- provide consumers with accurate and scientifically based information and guidance on products.

The following goods are excluded from the labelling scope: foodstuffs; drinks; pharmaceutical products; medical devices, products manufactured by processes likely to significantly harm human beings and/or the environment and substances or preparations classed as dangerous within the meaning of Slovak legislative.

The eco-label may be awarded to products which meet certain environmental requirements and specific eco-label criteria. The label may be awarded to products which contribute significantly to

improvements in relation to key environmental aspects. Eco-label criteria must be established by product group and be based on:

- the product's prospects of market penetration;
- the technical and economic feasibility of the necessary adaptations;
- the potential for environmental improvement.

The criteria in form of the environmental requirements are set and reviewed by the Slovak Ministry of the Environment, which is also responsible for the assessment and verification requirements relating to them. They are published in the Edict of Slovak Ministry of the Environment. Product groups must fulfil the following conditions:

- they must represent a significant volume of sales and trade in the internal market;
- they must have a significant environmental impact;
- they must present a significant potential for effecting environmental improvements through consumer choice;
- a significant part of the sales volume must be sold for final consumption or use.

The methodology of environmental assessment and eco-labelling in Slovakia is stated by law No. 217/2007 and No.469/2002 On environmental assessment and eco-labelling and Notice No. 258/2003. To qualify for the Slovak eco-label, the product's related environmental impacts have been assessed and the product concerned must meet specific ecological criteria on certain areas including raw materials extraction, waste management and consumer information.

Two type I eco-labels are established in Slovak republic: national environmental label "Environmentálne vhodný produkt"(fig. 1) and European eco-label "The Flower".



Figure 1. National eco-label "Environmentálne vhodný produkt"

Building materials with Slovak national eco-label. Building materials product groups where criteria have been approved in Slovak republic are listed in table 2. Since 1997 the 37 building products were awarded, the current amount of building products labelled by Slovak national eco-label is included for each product group in table 2.

Table 2

Building materials with Slovak eco-label "Environmentálne vhodný produkt" [2].

Product group	Number of building materials
Unburned brick products	26
Wire-stone constructions	1
Wood boards	-
Paintings	4
Earth moving machines	-
Milled lime stones	6
Adhesives	-
Cements	-

The main specific requirements stated for environmental certification process for each building materials product group are listed below.

Unburned brick products included brick materials based on the sand-ash mixture or cement without another treatment. The specific environmental criteria are focused primarily on the energy consumption in production phase (to the limit 300 kWh/m³) and equivalent radium activity (180 Bq/kg) [3].

Wire-stone constructions must fulfil the stated conditions of elasticity, permeability, resistibility or landscape aesthetics and noise absorption [4].

No tropical wood, no PVC materials and glues without phenol content as well as no arsenic and mercury content are the basic requirements for **wood boards** environmental certification. The limits for formaldehyde and volatile organic compounds emissions and the maximum content of metals and biocides are stated too for this product group. The other criteria included: minimum 50% of recycled materials usage for production of wood particle board, full recycled materials usage for fibre-board production [5].

Special criteria are established for **painting colours** eco-labelling process. The maximum amount of formaldehyde, organic solvents, aromatic hydrocarbon and volatile organic compounds in product are stated. No alkylphenoxyethoxylates, methoxyethoxyethanols and heavy metals (Cd, Pb, Cr^{VI+}, Hg, As) may be used in production process. The limited values of selected elements in dry product water extract are inscribed [6]. The special dangerous additives usage is limited up to 5% of product weight.

Milled lime-stones used in building industry must contain at least of 80% of calcium carbonate and the size of 90% of particles must be under 0,5 mm. The mass radium ²²⁶Ra activity value (60 Bq/kg) and equivalent radium activity (185 Bq/kg) is stated as a limit [7].

The requirements for **adhesives** include the limited values of formaldehyde, organic solvents, aromatic hydrocarbon and volatile organic compounds contents as well as the limited values of metals and formaldehyde in dry product water extract. All packaging materials must be recyclable and the PVC packaging materials are not allowed to use [8].

Cements environmental certification criteria include the energy consumption limitation for burning process (3500 MJ/t_{sinter}), at which the alternative fuels portion is required to be at least of 30 %. Carbon monoxide CO emissions must not exceed the value of 2000 mg/m³. The mass radium ²²⁶Ra activity value (100 Bq/kg) and equivalent radium activity (250 Bq/kg) is stated as a limit. The others requirements are concerned to phosphorous (less than 3 % of P₂O₅) and chromium content (1,8 mg Cr^{VI} to 1 kg of cement) [9].

There is no building product in Slovakia awarded by European eco-label "The Flower" yet.

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