Ecolabelling of Building Materials in Russian Federation: current state and trends

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Ecolabelling systems trends

Construction production ecolabelling types	Sustainable construction evaluation systems
Ecolabelling type I	Russian Green Building Council (RuGBC)
Ecolabelling type II	
Ecolabelling type III	The center of ecological certification Green Standards
	The Non-Profit Partnership “Russian Sustainable Architecture and Building Council”

Backbone of the Russian Federation national standard GOST R 54954–2012 «Compliance assessment. Environmental requirements for property items»

- Environmental management
- Infrastructure and environment quality
- Quality of object architecture and planning
- Internal environment comfort and ecology
- Quality of sanitary protection and waste disposal
- Water conservation and storm-water management
- Energy conservation and energy performance
- Protection of the environment during construction, management and utilization of object
- Organization of safety

Requirements of the Russian Federation national standard GOST R 54954–2012 «Compliance assessment. Environmental requirements for property items» for construction materials

8 Protection of the environment during construction, management and utilization of object				
Parameter	Indicator	Minimal environmental requirements	Recommended values	Methodic for definition of minimal environmental requirements (recommended values)
8.1 Minimization of construction materials influence on the environment	Share of environmentally certified (labelled) construction materials and structures	Under GOST R ISO 14031	30 % - 50 %	Evaluation of percentage ratio for: a) certified; b) vegetable origin; c) local materials to general material balance
	Utilization of local materials		50 % - 70 %	
	Implementation of recyclable materials and vegetable origin materials	None	Availability	Project documentation analysis, developer data
	Utilization of finish materials, paints, coatings based on natural materials		Availability	
	Utilization of thermal covering based on natural materials (basalt, sand, wood)		Availability	
	Prohibition on utilization of materials of wood species listed in the Red Book of the Russian Federation in building construction and decoration		Availability	

Main type I ecolabellings of construction materials in Russia

«Vitality Leaf» — the first and the only Russian system of voluntary ecolabelling for production, works and services through their lifecycle (type I ecolabelling), acknowledged by the international expert community. Today the ecolabelling program includes main product categories, is respected and trusted by the market. The program was founded in **2001**. The developer and operator of the program is one of the leading non-profit organizations in Russia – **Ecological Union** (before 2010 – Saint-Petersburg Ecological Union). Starting from 2007 the program is included in **The Global Ecolabelling Network** (GEN). From **2011** — is certified in the **Global Ecolabelling Network's Internationally Coordinated Ecolabelling System** for leading ecolabels of the world (GENICES).

The «Vitality Leaf» certification can be achieved by producers of food and other products as well as companies providing services. More than 100 brands of goods and services provided by well-known foreign and Russian companies have already been labeled by the «Vitality leaf».

The «EcoMaterial» project is implemented from 2010 as a **voluntary certification system for construction and finish materials**. At the moment more that one hundred materials from 14 manufacturers have been certified. Certification is performed in accordance with the EcoMaterial 1.3 standard. Developer – EcoStandard Group

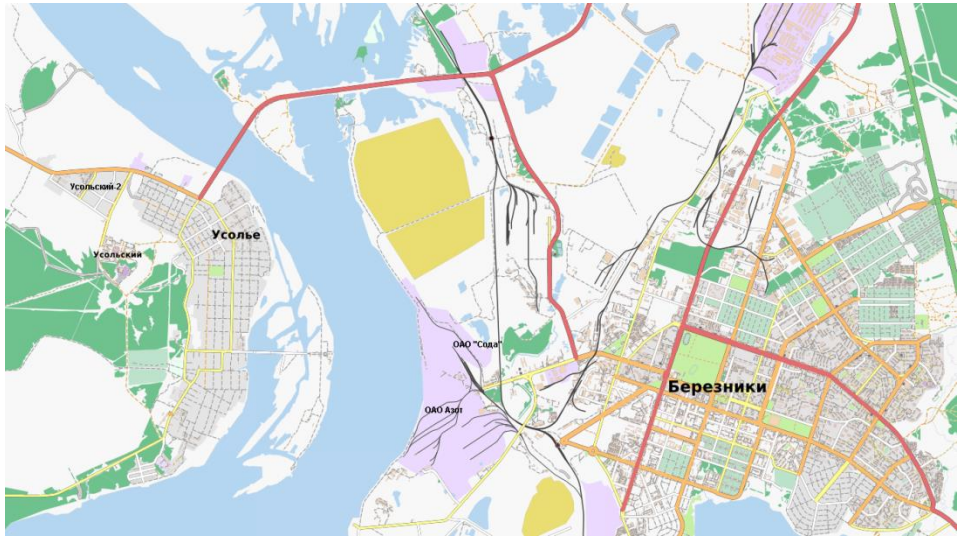
The standard includes requirements which must be fulfilled in order to be certified, and additional items, by fulfilling those the certified material receives points. **There are several levels of certification, based on accumulated points and materials features:** EcoMaterial Basic – material is safe for human, EcoMaterial Green - material is safe both for human and environment, EcoMaterial Absolut – environmentally-friendly material , EcoMaterial Natural – absolutely natural material – highest in rating, accumulated maximum points.

Environmental safety problems as a factor of certification systems development

Almost 90 buildings (4 series)

Investment costs near 1,37 mlrd. rur.

Goal: relocation of people from the area with difficult geotechnical conditions




Провал в Березниках, случившийся в 2007 г.

Problem:

Concentrations of formaldehyde in residence buildings are 20 times more than limit

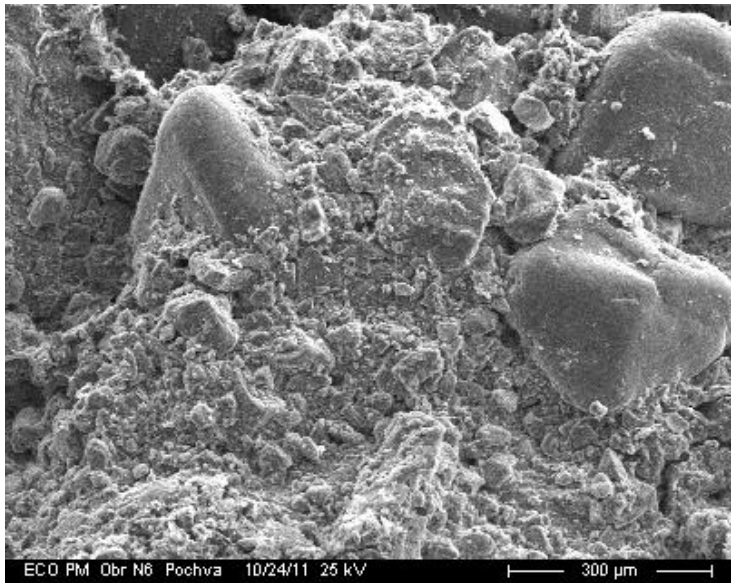
Investigations of soil, air, water and construction materials

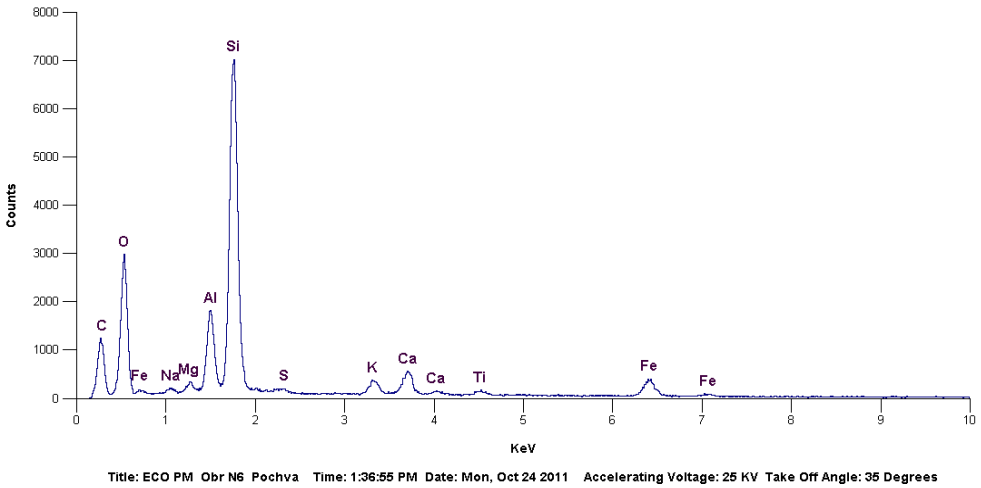
air	Fluorometry methods	Single concentration of formaldehyde 0,02 - 0,05 mg/ m3 (extraction of 4 dm3). (limit is 0,035 mg/ m3)
water	colorimetry	0,05 - 0,2 mg/l
soil	colorimetry	3,0 - 12,0 mg/ kg (limit – 7,0 mg/ kg).
Construction materials	For instance, oriented strand boards 30 mg/ 1 kg of board dry weight (for E1 class the maximum value is 8 mg/ 1 kg)	

Reasons of the problem

- Inappropriate choice of construction site due to lack of environmental engineering survey
- Mistakes during construction works, which led to formaldehyde adsorption
- Inappropriate tendance for building (for example, lack of heating during winter)
- Large amount of construction materials containing formaldehyde

Environmental issues of materials production

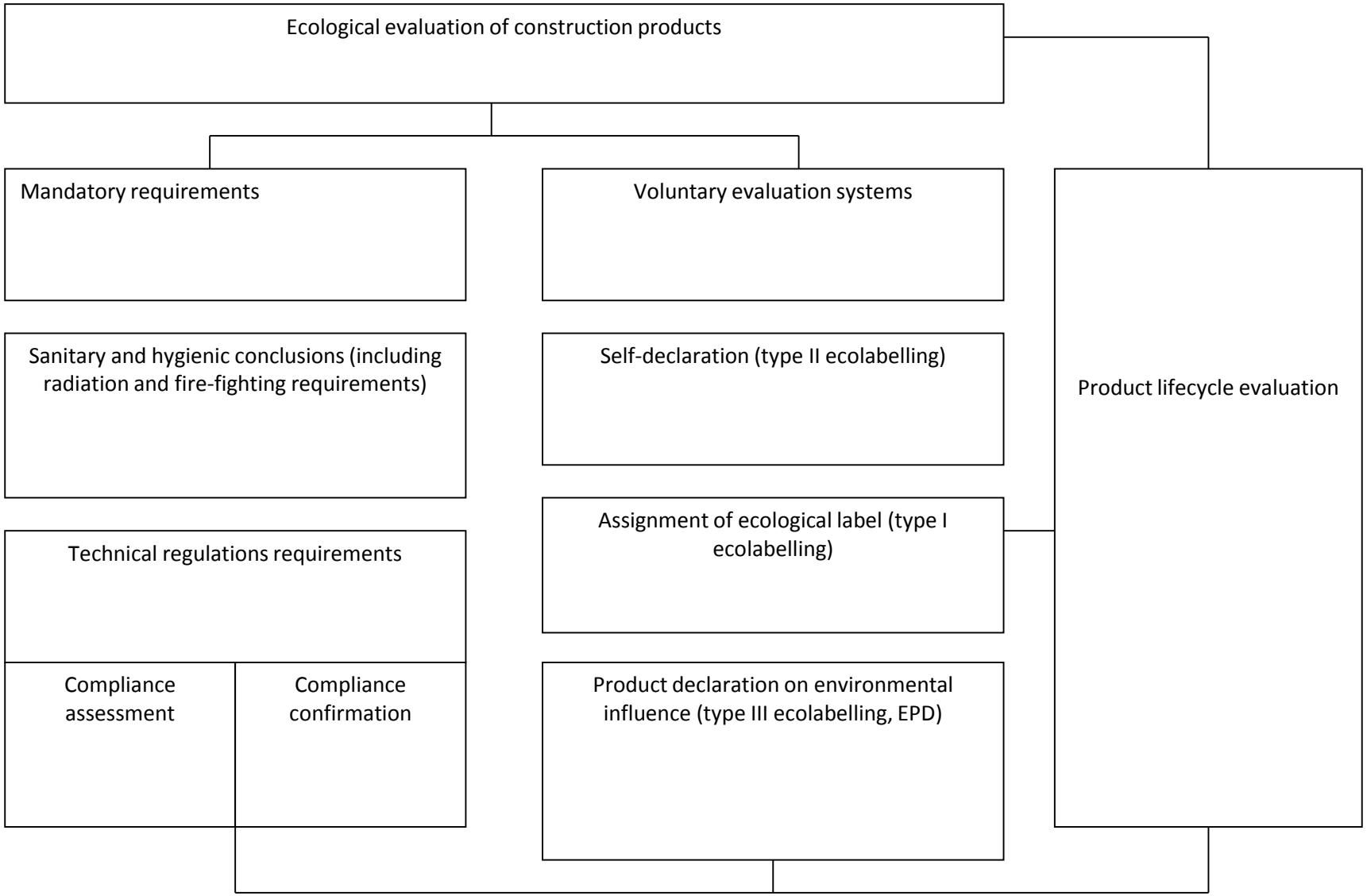




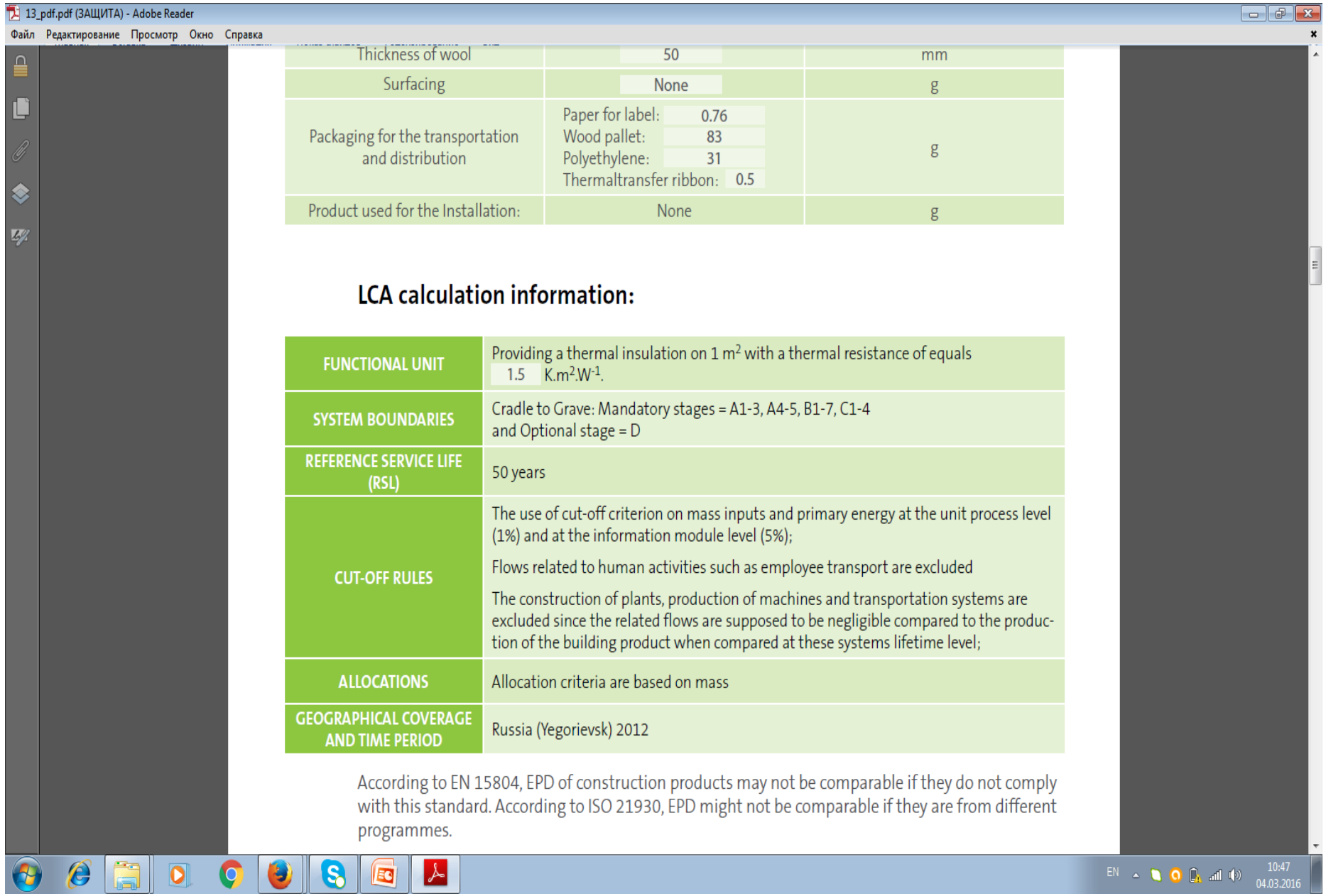
Microscopic picture and the X-ray diffraction analysis of a sample of the soil from the enterprise of fibrous heat-insulating materials (at finished goods warehouse)

It is unable to identify microorganisms in soil, it is almost sterile

Integral system for ecological evaluation of construction products



First examples of type III ecolabelling for materials produced in Russia



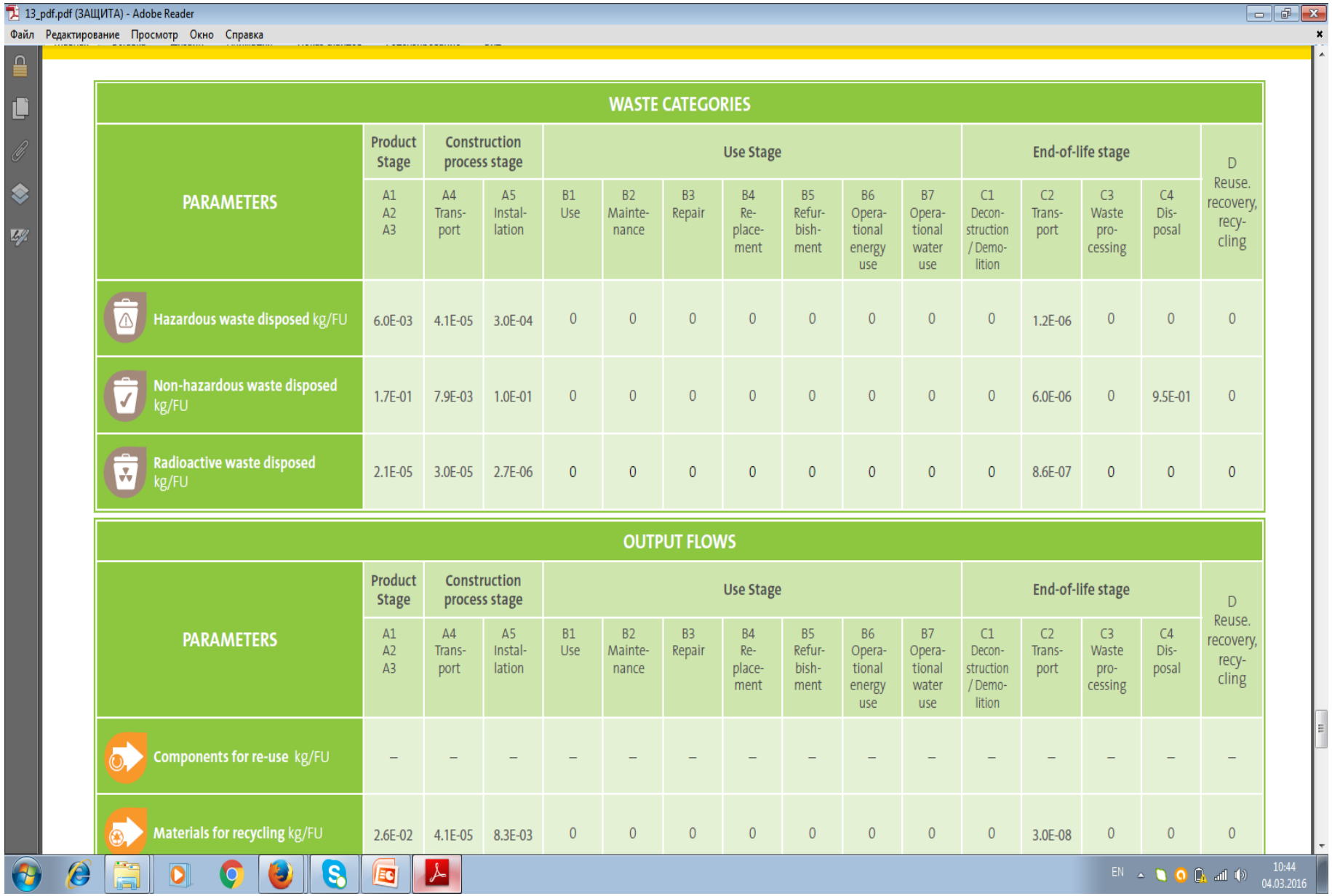
Thickness of wool	50	mm
Surfacing	None	g
Packaging for the transportation and distribution	Paper for label: 0.76 Wood pallet: 83 Polyethylene: 31 Thermaltransfer ribbon: 0.5	g
Product used for the Installation:	None	g

LCA calculation information:

FUNCTIONAL UNIT	Providing a thermal insulation on 1 m^2 with a thermal resistance of equals 1.5 $K.m^2.W^{-1}$.
SYSTEM BOUNDARIES	Cradle to Grave: Mandatory stages = A1-3, A4-5, B1-7, C1-4 and Optional stage = D
REFERENCE SERVICE LIFE (RSL)	50 years
CUT-OFF RULES	The use of cut-off criterion on mass inputs and primary energy at the unit process level (1%) and at the information module level (5%); Flows related to human activities such as employee transport are excluded The construction of plants, production of machines and transportation systems are excluded since the related flows are supposed to be negligible compared to the production of the building product when compared at these systems lifetime level;
ALLOCATIONS	Allocation criteria are based on mass
GEOGRAPHICAL COVERAGE AND TIME PERIOD	Russia (Yegorievsk) 2012

According to EN 15804, EPD of construction products may not be comparable if they do not comply with this standard. According to ISO 21930, EPD might not be comparable if they are from different programmes.

Features of waste categories for productions in Russia



WASTE CATEGORIES

PARAMETERS	Product Stage	Construction process stage		Use Stage							End-of-life stage				D
	A1 A2 A3	A4 Trans-port	A5 Instal-lation	B1 Use	B2 Mainte-nance	B3 Repair	B4 Re-place-ment	B5 Refur-bish-ment	B6 Opera-tional energy use	B7 Opera-tional water use	C1 Decon-struction / Demo-lition	C2 Trans-port	C3 Waste pro-cessing	C4 Dis-posal	Reuse. recovery, recy-cling
Hazardous waste disposed kg/FU	6.0E-03	4.1E-05	3.0E-04	0	0	0	0	0	0	0	0	1.2E-06	0	0	0
Non-hazardous waste disposed kg/FU	1.7E-01	7.9E-03	1.0E-01	0	0	0	0	0	0	0	0	6.0E-06	0	9.5E-01	0
Radioactive waste disposed kg/FU	2.1E-05	3.0E-05	2.7E-06	0	0	0	0	0	0	0	0	8.6E-07	0	0	0

OUTPUT FLOWS

PARAMETERS	Product Stage	Construction process stage		Use Stage							End-of-life stage				D
	A1 A2 A3	A4 Trans-port	A5 Instal-lation	B1 Use	B2 Mainte-nance	B3 Repair	B4 Re-place-ment	B5 Refur-bish-ment	B6 Opera-tional energy use	B7 Opera-tional water use	C1 Decon-struction / Demo-lition	C2 Trans-port	C3 Waste pro-cessing	C4 Dis-posal	Reuse. recovery, recy-cling
Components for re-use kg/FU	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Materials for recycling kg/FU	2.6E-02	4.1E-05	8.3E-03	0	0	0	0	0	0	0	0	3.0E-08	0	0	0

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Файл Редактирование Просмотр Окно Справка

	Product (A1-A3)	Transport (A4)	Installation (A5)	Use (B)	End-of-Life (C)	Total Environmental impacts of the product	Recycling Positive benefits of recycling (D)
Global Warming	1.53	0.20	0.09	0.00	0.00	**1.83** kg CO_2equiv/FU	0.00
Non-renewable resources consumption [1]	23.63	2.68	1.38	0.00	0.05	**27.74** MJ/FU	0.00
Energy consumption [2]	29.06	2.95	1.67	0.00	0.05	**33.73** MJ/FU	0.00
Water consumption [3]	0.01	0.00	0.00	0.00	0.00	**0.01** m^3/FU	0.00
Waste production [4]	0.17	0.01	0.10	0.00	0.95	**1.23** kg/FU	0.00

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Comparison of influence on the environment

Parameter	Unit on kg of basalt wool	Rock wool (www.bau-umwelt.com)	Rock wool manufactured in Russia
Primary energy consumption (nonrenewable)	MJ	18,8	24,5
Primary energy consumption (renewable)	MJ	0,1	0,4
Greenhouse effect	kg CO_2 – Eq.	1,4	2,2
Ozone destruction potential	kg CFC-Eq.	1,3 x 10-7	1,7 x 10-7
Acidification	kg SO_2 – Eq.	8 x 10-3	9,8 x 10-3
Excessive fertilization	Kg Phosphat -Eq.	8,9 x 10-4	9,7 x 10-4
Photochemical smog	Kr Ethen – Eq.	8,9 x 10-4	9,3x 10-4

Plasma-based melting allows to reduce energy costs

The first Russian environmentally-friendly materials catalogue
GREEN BOOK

Basis for development

• Russian Government list of instructions following the results of presidium meeting of Presidential Council for economy modernization and innovative development on May 17, 2013.
• Instruction by Ministry of Natural Resources and Environment of the Russian Federation from 16.10.2013 № 23-r on creating a Workgroup for preparation of draft on development of national standards and rulebooks
• Letter by Ministry of Natural Resources and Environment of the Russian Federation from December 16, 2013 г. № 02-12-07/25502 «On approval of plan on development of national standards and rulebooks. Point 3 of the Russian Government list of instructions from 23.05.2013 № DM-P9-3439»
• Letter by FSBI «Central bureau for informatics of Ministry of Natural Resources and Environment of the Russian Federation» from March 27, 2014 г. № 132 on work coordinator EcoStandard Group

GREEN BOOK project developers
Ministry of Natural Resources and Environment of the Russian Federation, Ministry of Construction, Housing and Utilities of the Russian Federation, EcoStandard Group, the center of ecological certification Green Standards.

GREEN BOOK project goals

- **GREEN BOOK project goal** — providing all the parties concerned with information on construction materials safe for human and environment.

- **CATALOGUE GOALS:**

— exercise of every Russian Federation citizen for favorable environment, reliable information on its condition and recovery of damages caused to his health or property by an environmental violation (art.42, Constitution of the Russian Federation);

— providing of professional community with information on environmental aspects of construction materials, presented on market in the Russian Federation;

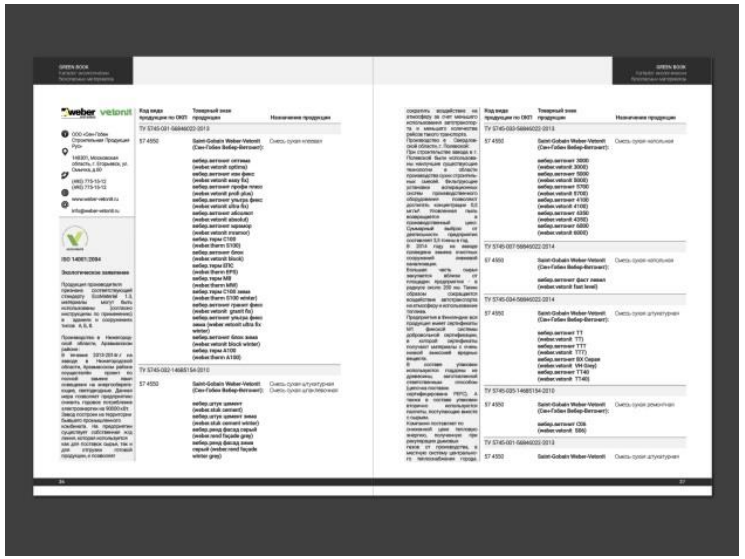
— facilitation lowering harmful environmental impact related to production, by identification or production which complies to environmental preference criteria;

— setting priority towards environmental-friendly materials during procurements under the 223-FL in respect to building of socially important structures.

GREEN BOOK catalogue format

Informational resource in the Internet. At the http://greenbook.pro website an electronic version of the catalogue is available for anyone, it is updated as new construction materials manufacturers' submissions are being examined.

Printed version. Printed version of the catalogue will be re-issued once in a year with update on the included manufacturers and materials.

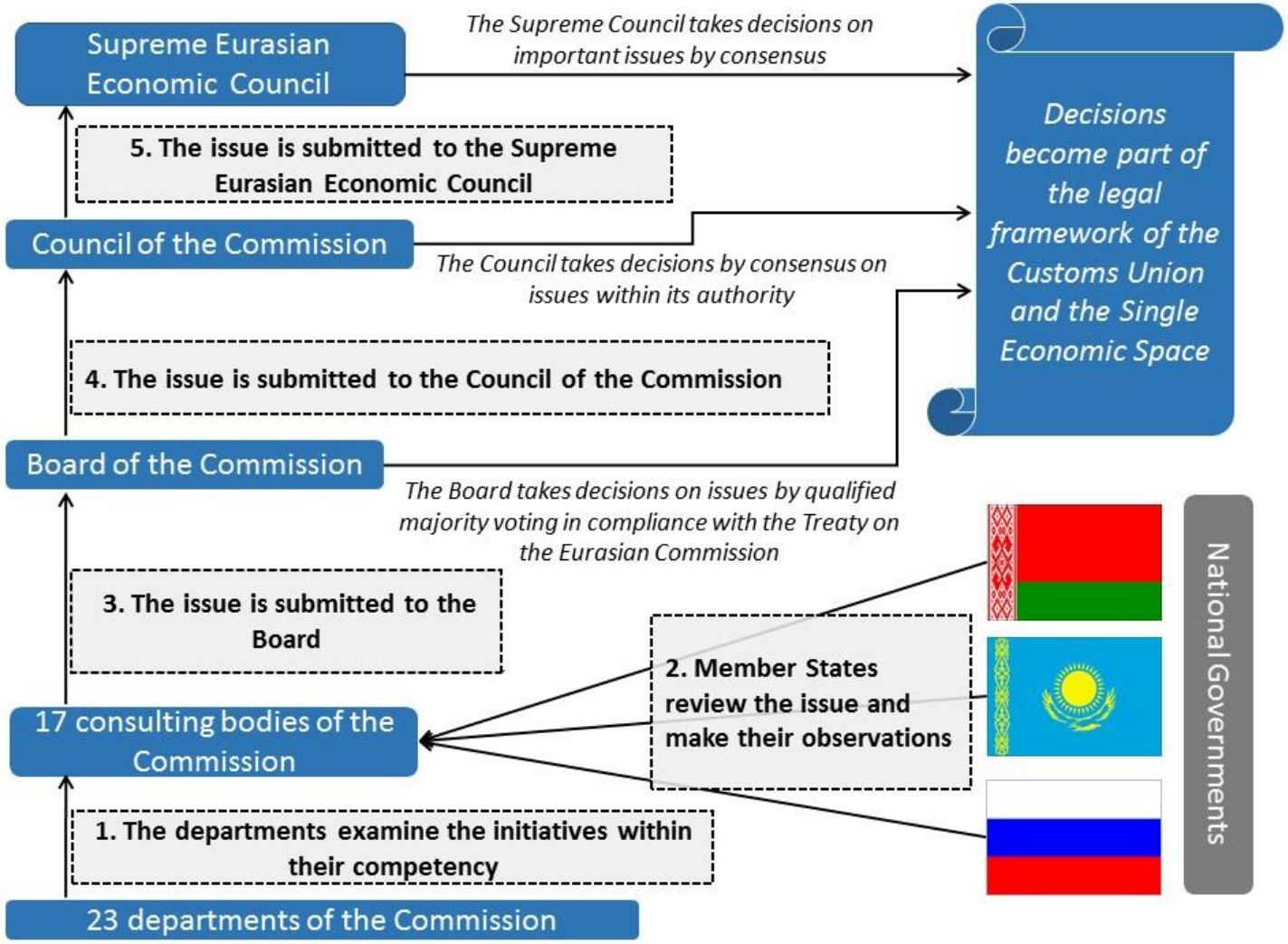


Materials, included in the GREEN BOOK catalogue

Group 1 – materials of manufacturers who have ecological labelling which was approved by third independent party, in accordance with ISO14024 «Environmental labels and declarations. Type I environmental labelling. Principles and procedures»	Group 2 - materials without ecological labelling, which have higher ecological features
Having a lable means that the product and its manufacture where thoroughly evaluated for compliance with certification system requirements, and the evaluation was conducted by and independent and competent certification unit. This allows to consider the product environmentally-friendly, if criteria of the given certification system standard are based on principles of ecological safety and sustainable development. Recognized certification systems are defined for selection of products in group 1. The list of recognized certification systems is defined basing on systems and labelling analysis for compliance with general principles and criteria of this project; such analysis is being performed by an expert committee of developers.	The second group includes materials of manufacturers, who do not have a type I labelling but have declared environmental aspects of their production and passed a filter in accordance with generated criteria. Submissions of those participants along with accompanying documentation were examined by an expert committee. Materials without ecolabelling which have not undergone a detailed and independent evaluation of their ecological features, as during independent audition by certification unit representatives, are, obviously, must be gathered in another group, just like it is made in the GREEN BOOK. Manufacturers of construction materials in this group must prove self-declared ecological qualities of their products by official documentation and receive a positive conclusion of the GREEN BOOK experts.

Regulation of safety issues under Eurasian Economic Union

Евразийский экономический союз



Regulatory documents

Under EEU:

- Agreement on basics of EEU member-states technical regulations harmonization from March 24, 2005
- Agreement on adopting a coordinated policy on technical regulations, sanitary and phytosanitary measures from January 25, 2008

Under Customs Union:

- Agreement on circulation of products subject to mandatory compliance assessment(confirmation) on customs territory of the Customs union from December 11, 2009 (+ Consolidated list, app. CCU № 319 from 18.06.10)
- Agreement on mutual acknowledgement of accreditation of certification (compliance assessment(confirmation)) units and testing laboratories (centers) performing studies on compliance assessment(confirmation) from December 11, 2009
- Agreement on consolidated principles and rules for technical regulation in Belarus, Kazakhstan and Russian Federation from 18.11.2010
- Provision on rules of procedure for development, acceptance, amending and cancelation of CU technical regulation (Decision of CTU from November 18, 2010 № 453)
- Development schedule for first and foremost technical regulations of TU (Decision of CTU from December 8, 2010 № 492)
- Consolidated list of products subject to mandatory requirements under TU (decision № 526 from 28.01.11)

A document containing general principles of construction products safety must be developed, based on General Product Safety Directive GPSD 2001/95/EU as a template

Conclusions

Lack of the single for all country, formalized in legislation, definition of environmentally appropriate products;	Definition of the best available technologies
Lack of single for all Russia criteria distinguishing environmentally appropriate products from regular ones;	Enhancement of type I ecolabelling systems
Lack of customer awareness and, accordingly, interest and readiness to pay more for environmentally appropriate products;	Government stimulation of projects at a regional level
Appearance of products with different «ecoslogans», not confirmed with certifications results;	Introduction of punishment system for unfair providers
Lack of manufacturers' interest in receiving an ecolabel especially when product is sold only on domestic market.	Awareness-raising activity among customers and architects