

Collective Quality Certification System for Healthy Building Materials

(HEALTHY BUILDING MATERIALS)



1. Overview

■ What 'HB Mark' is,



HB is a Mark standing for Healthy Building which is qualified by Korea Air Cleaning Association(KACA) according to released intensity of Building materials manufactured in Domestic and Foreign industries.

KACA certifies Building materials on the ground of Green Building Assessment System established autonomously itself, and qualifies Building Material Grades after the Deliberating Committee.

■ How 'Green Building Certification' is needed and starts,

In order to study Pollutants emitted from Building materials, KACA organized 「Indoor VOCs Research Society」 in relating with the Industry-University-Institute in 2000. Through its several meetings discussing over Indoor Air Quality industry and a study on directions in research, there was the necessity for 'Green Building Certification'. That is how 「Indoor VOCs Research Society」 sets up "Green Building Deliberating Committee"

From October 2001 to the late 2003, Committee was held 15 times and Council organized with experts was also held over 5 times. KACA started to draft a statement regarding Testing Methods and Grade Standards according to opinions gathered from domestic building material companies and overseas affiliates

So as to gathering more helpful opinions, KACA held Public Hearing, intended Building Material Companies and consumers, twice in May 29th 2002 and September 24th 2003. There were numerous times of supplement and modification to make the better certification system and KACA finally enforced "Green Building Certification" in February 16th 2004.

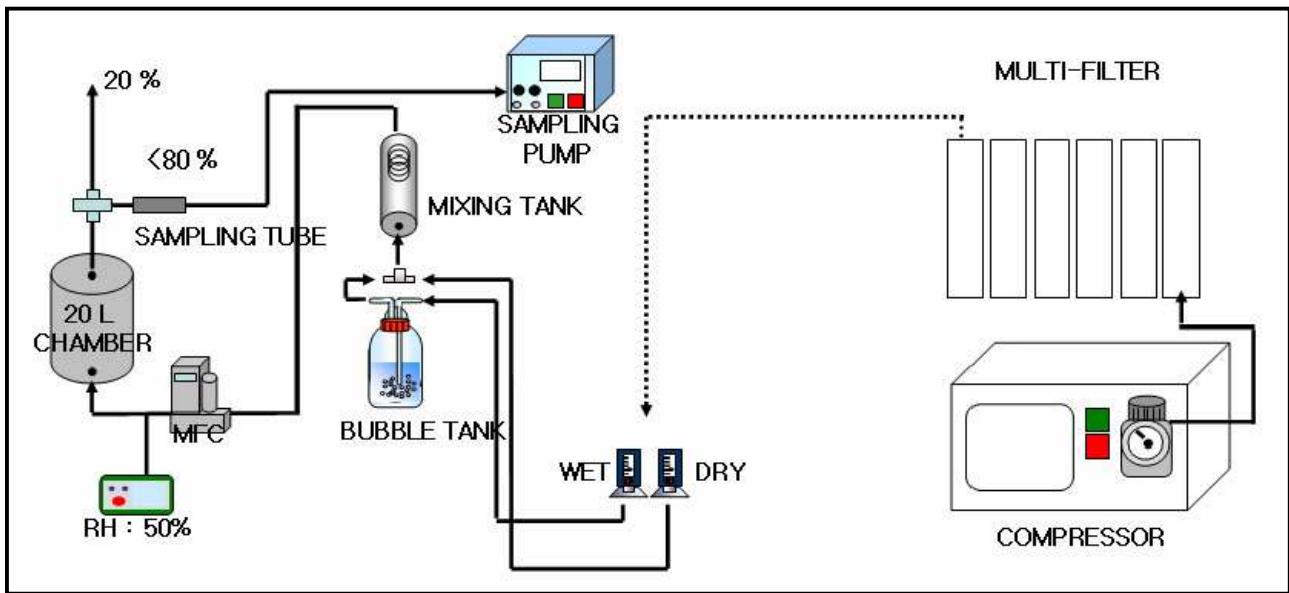
■ Certification Procedure

Certification Procedure	Contents
Application reception	→ Complete application after review based on regulations
Taking factory samples	→ Certificate inspector in the KS certification agency visits the factory, randomly takes samples after factory inspection and seal the samples
Test request to consigned certification test agency	→ Request sealed sample test to KOLAS and submit test report to the association after the test completed
Hold review committee	→ The review committee with independent experts (10) reviews and evaluates the test report
Send Test Report	→ The committee sends test reports for approved products with the attachment that the test is done by KOLAS
Agreement on Certification Use	→ The association and the approved company sign an agreement on certification use to guide the company to use the mark well.
Issue Certificate	→ Issue the certificate and mark for the grade and list the company name on the association's website
Post-management of certified products	→ Perform regular post-management on distributed products after certification

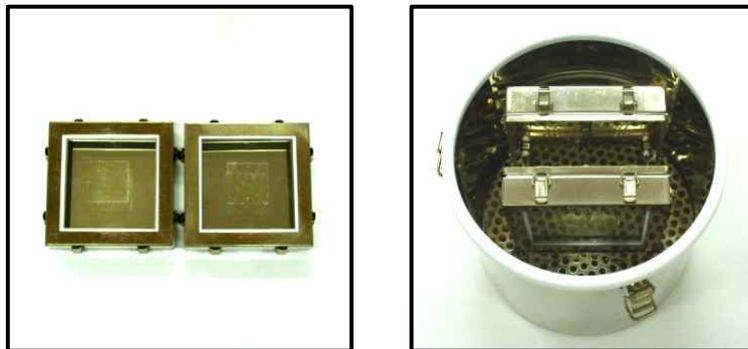
2. Test Method and Certificate Grade Standards

■ The Method of Examination

- Green Building Certification Collective Standard (SPS-KACA008-138) – Small Chamber Method



<Small Chamber Method Mimetic Diagram >



<Small Chamber Sample>

- A method which determines emission amount of volatile organic compound and formaldehyde per unit area is applied by calculating air concentration, accumulated air flow passage and surface area of specimen in the emission test chamber. Completely mix air inside the emission test chamber with constant temperature, relative humidity and ventilation and check air concentration, blank concentration and ventilation volume inside the emission test chamber for air trapped in the exit to calculate emission amount of volatile organic compound and formaldehyde per unit area at a certain time t .

■ Standard for Certificate Grade

Guide companies to select materials with low emission strength as a classification method of construction materials which generate indoor pollutants including TVOC and HCHO and configure certificate grade of TVOC and HCHO concentration from the construction materials to improve indoor air quality to set up a guideline for construction material selection from selecting proper construction materials.

Unit : mg/m³·h

Section		General Material, Pait, Putty	Adhesive	Sealant
Outstanding ★★★★	TVOC	under 0.10	under 0.10	under 0.25
	5VOC	under 0.03	under 0.03	under 0.075
	HCHO	under 0.015	under 0.015	under 0.015
	CH3CHO	under 0.015	under 0.015	under 0.015
Excellent ★★★★	TVOC	over 0.10 ~ under 0.20	over 0.10 ~ under 0.30	over 0.25 ~ under 0.75
	5VOC	under 0.06	under 0.09	under 0.22
	HCHO	over 0.015 ~ under 0.05	over 0.015 ~ under 0.05	over 0.015 ~ under 0.05
	CH3CHO	over 0.015 ~ under 0.05	over 0.015 ~ under 0.05	over 0.015 ~ under 0.05
Very good ★★★	TVOC	over 0.20 ~ under 0.40	over 0.30 ~ under 0.60	over 0.75 ~ under 2.5
	5VOC	under 0.12	under 0.18	under 0.75
	HCHO	over 0.05 ~ under 0.12	over 0.05 ~ under 0.12	over 0.05 ~ under 0.12
	CH3CHO	over 0.05 ~ under 0.12	over 0.05 ~ under 0.12	over 0.05 ~ under 0.12

※ 5VOC : toluene, benzene, ethylbenzene, xylene, styrene

<Standard of Heavy metal>

The sum of lead, cadmium, mercury and Cr⁶⁺ in the product is less than 0.1% against the mass fraction.

<How to experiment>

Section		Content
Wallpaper, Flooring, Wooden material, Panel	Measurement time	in Seven days
	Measurement number	3
	Comparison on Results	Mean value(in three)
Paint, Putty, Adhesive, Sealant	Measurement time	in Seven days
	Measurement number	3
	Comparison on Results	Mean value(in three)

3. List of Review Board Members

No	Organization	Name	Title	Department
1	Hanyang University (Chairperson)	Jang Ryul Shon	Professor	Architectural Engineering
2	Research Institute of Public Health & Environment, Seoul Metropolitan Government	Minyoung Kim	Executive Director	-
3	Dankook University	HwaySuh kim	Professor	Architectural Engineering
4	Konkuk University	Jocheon Kim	Professor	Environmental Engineering
5	Kangwon National University	Mankoo Kim	Professor	Environmental Sciences
6	Korea Institute of Science & Technology	Kangbong Lee	Executive Director	Characteristic Analysis Center
7	Korea Institute of Science & Technology	Kwinam Bae	Senior Researcher	Earth Environment Center
8	Soongsil University	SooMin Kim	Professor	Architectural Engineering
9	Seoil College	YongGyu Back	Professor	Architecture
10	Kyonggi University	Seungwoon Myung	Professor	Chemistry

4. Certification Test Agency

■ Certification Test Agency

No	Name	Scope
1	Korea Testing Laboratory	Small Chamber Method
2	Korea Environment & Merchandise Testing Institute	Small Chamber Method
3	Korea Testing and Research Institute for Chemical Industry	Small Chamber Method
4	Dong-il Shimadzu, Research Institute	Small Chamber Method
5	ARAM Technology ENG	Small Chamber Method
6	Tae Sung Environment Institute	Small Chamber Method



It is designated and operated as a test agency certified by KOLAS in the Korean Agency for Technology and Standards

■ Management Program for Certificate Test Agencies

Proficiency tests on tasks are performed more than once a year to proof that a designated agency is capable of performing its tasks as a certificate test agency in accordance with the Article 6 (Securing proficiency of certificate test agency) of the management rule on the agency for Healthy Building Material and agencies which pass the test extend the designation.

External management: (among certificate agencies)

- Perform the RRT once a year
- Site inspection once a year (on QA management)

Internal management: (each certificate agencies)

- Write the SOP
- Sampling QA (sampling, delivery, storage)
- Sample analysis QA
 - Standard material
 - Manage instrument performance (linearity, stability)
 - Manage measurement sensitivity (sensitivity, detection limit)
- Manage measurement blank
- Data management and evaluation
- QA management report

5. Current Status of Certification

Current Status of Certification (2004, April ~ 2012, May)

(The number of companies with certification : 281,

The number of certificated items : 603)

◦ Categorization

Categorization	Flooring	Wall paper	Panel	Adhesive	Sealant	Paint	etc	Sum
Number	63	49	44	169	49	83	146	603
%	10	8	7	28	8	14	24	100

◦ Grades

Categorization	Outstanding	Excellent	Very Good	Good	Fair	Sum
Number	478	51	33	30	11	603
%	79	8	5	5	2	100