HJ

INDUSTRY STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

HJ 571-2010

Replacing HBC 17-2003

Technical requirement for environmental labeling products - Wood based panels and finishing products

环境标志产品技术要求 人造板及其制品

Issued on: May 04, 2010 **Implemented on: July 1, 2010**

Issued by: Ministry of Environmental Protection of the People's Republic of China

Ministry of Environmental Protection of the People's Republic of China

Announcement

2010 No.41

In order to implement "Environmental Protection Law of the People's Republic of China", protect environment, and promote technology advancement, "Technical requirement for environmental labeling products - Cases and bags" and other 4 standards are hereby approved and released as national environmental protection standards. Standard names and numbers are as follows:

I. Technical requirement for environmental labeling products - Cases and bags (HJ 569-2010)

II. Technical requirement for environmental labeling products - Toner cartridge (HJ 570-2010)

III. Technical requirement for environmental labeling products - Wood based panels and finishing products (HJ 571-2010)

IV. Technical requirement for environmental labeling products - Stationery (HJ 572-2010)

V. Technical requirement for environmental labeling products - Ink-jet cartridge (HJ 573-2010)

Above standards shall be implemented from July 1, 2010; and published by China Environmental Science Press. The contents of standards can be found at the website of Ministry of Environmental Protection (bz.mep.gov.cn).

Announcement is hereby given.

May 4, 2010

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Foreword

In order to implement “Environmental Protection Law of the People’s Republic of China”, reduce the impact of wood based panels and finishing products on environment and human health during production and use process, and protect environment, this Standard is formulated.

This Standard sets forth requirements for raw materials used in wood based panels and finishing products, banned substances during timber processing, adhesives, coatings, total volatile organic compounds (TVOC) emission rate and formaldehyde emission.

This Standard revises “Technical requirement for environmental labeling products - Wood based panels and finishing products” (HBC 17—2003); the main changes are as follows:

— Add the requirements for the sources of raw materials and processing;

— Add the requirements for total volatile organic compounds (TVOC) in products; strengthen the requirements for formaldehyde emission;

— Modify the requirements for coatings; partially allow the use of waterborne coating and solvent-based wood coatings that meet requirements.

HBC 17-2003 “Technical requirement for environmental labeling products - Wood based panels and finishing products” shall be abolished, from the date of implementation of this Standard.

This Standard is applicable to product certification for Chinese environmental mark.

This Standard was organized and drafted by Department of Science, Technology and Standards of Ministry of Environmental Protection.

Main drafters of this Standard: Environmental Development Center of Ministry of Environmental Protection, and Shenzhen Academy of Metrology & Quality Inspection.

This Standard was approved by Ministry of Environmental Protection on May 4, 2010.

This Standard shall be implemented from July 1, 2010.

This Standard shall be interpreted by Ministry of Environmental Protection.

Previous versions replaced by this Standard are as follows:

— HJBZ 37-1999, HBC 17-2003.

Annex A

(Normative)
Emission Rate Determination of Total Volatile Organic Compounds (TVOC) in Wood Based Panels and Finishing Products - Climate Chamber Test Method

A.1 Scope

This Annex specifies a test method of determining the emission rate of total volatile organic compounds (TVOC) in wood based panels and finishing products under specific environmental conditions of climate chamber.

This Annex applies to emission rate determination of total volatile organic compounds (TVOC) in wood based panels and finishing products.

A.2 Method principles

Put samples with 1 m^2 surface area into climate chamber of which the temperature, relative humidity, air velocity and air exchange rate are controlled under predetermined conditions. Volatile organic compounds (VOC) are emitted from samples and mixed with the air inside chamber; collect the air in chamber to determine VOC concentration in air. Calculate the total VOC to obtain TVOC emission rate of samples.

A.3 Equipment and reagents

A.3.1 Climate chamber

A.3.1.1 Volume of climate chamber

Volume of climate chamber in this Standard is 1 m^3.

A.3.1.2 Materials of climate chamber

Climate chamber's inner wall, pipeline and test related devices shall be made of materials with low sporadic and low absorbent materials. The inert against VOC shall be as large as possible, and shall not absorb VOC to the greatest extent. Chamber's inner wall shall have a smooth surface; it may be effectively cleaned with water before testing.

A.3.1.3 Air tightness of climate chamber

To avoid intrusion of surrounding air into cabinet that results in out-of-control over air exchanger, all binding sites except the joints of door for putting test piece into and taking them out shall be sealed (door has self-tightness). Climate chamber shall operate under a slight overpressure condition.

re-treatment is required if it is not used within 4 weeks.

A.3.6 Injectors

10 μl liquid injector, 10 μl gas injector, 1 ml gas injector.

A.3.7 Volatile organic compounds for gas chromatography calibration

A.3.7.1 Standard gas: Prepare the standard gas of which the concentration of compounds to be tested is known, through determined method. It is recommended that concentration of compounds of standard gas is about 100 μg/m^3.

A.3.7.2 Liquid standard substance: Solvents to be tested are chromatographically pure; and are not affected by the compounds that flow out together with the compounds to be tested.

A.3.7.3 Calibration mixed solution: Use liquid standard substance in A.3.7.2 to prepare; it may also purchase the certified standard mixed solution.

A.3.8 Injection device for preparation of liquid standard series

Conventional gas chromatography inlet: It may be used on-line or assembled separately; retain carrier gas connections at inlet; the lower end of inlet may be connected to adsorption tube.

A.4 Sample-taking and pre-treatment

A.4.1 Sampling

Samples shall be drawn from qualified products that manufacturing enterprise produces recently. For plywood and other large-sized products, after the sample is drawn, remove 50 cm from the surrounding of products, then conduct sample-taking as the test specimen; for end-product that may be used directly, such as floor boards, it may take draw samples directly. Sampling area size is based on sample load factor; sample load factor in this Standard is 1 m^2/m^3. Protruded part of tenon shall be removed before treatment. For raw material products such as particle board and plywood, and decorative double-faced products that may be used directly after coating and veneering, the area is calculated based on two faces. For single decorative-faced products that may be used directly after coating and veneering, the area is calculated based on one face. For products of which the sample testing surface is composed of several pieces, such as flooring products, it shall take the sample from the middle-part of packaging bag; put the products together without adhesive; then treat it according to single decorative-faced products. During single decorative-faced sample treatment, test sample may be treated back to back; the area that is not counted in calculation may also be treated through above closing method.

Drawn samples shall be wrapped in aluminum foil in accordance with the provisions in A.4.2, and placed in unprinted airtight sealed polyethylene bags, one for each bag. Flooring products can use original package. It shall not exceed 1 h from sampling to

Minimum temperature of cold trap: ≤−30°C (based on cold trap type adopted)

Adsorbent in cold trap: Tenax TA, 40~100 mg

Transmission line temperature: 220°C

Split ratio: Split ratios of sample tube to secondary cold trap AND secondary cold trap to chromatographic column are selected in accordance with gas concentration.

A.5.5.2 Gas chromatographic analysis reference conditions

Column temperature program shall be set for compounds of which the analysis boiling point and polarity difference are large, so as to obtain test results in the shortest time. Such as, dimethyl siloxane capillary column of which the length is 50 m, inner diameter is 0.25 mm, and tube wall is 0.32 μm shall be adopted. The column operating conditions are programmed temperature rising; initial temperature maintains at 50°C for 10 min; programmed temperature rises to 250°C at a speed of 5°C/min, until all target constituents flow out.

A.5.5.3 Standard curve drawing

A.5.5.3.1 Gas standard method

Use constant gas sampler to respectively draw 100 ml, 400 ml, 1 L, 4 L and 10 L of 100 μg/m^3 standard gas to go through sampling tube as standard series.

A.5.5.3.2 Liquid standard method

Use sampling device in A.3.8 to respectively take 1μl ~ 5 μl of 100 μg/ml and 10 μg/ml standard mixed solution (A.3.7.3) that contains liquid constituent, inject into adsorption tube. Meanwhile, use 100 ml/min inert gas to pass through adsorption tube. Take down adsorption tube's sealing after 5 min. This is acted as the standard series.

A.5.5.3.3 Drawing standard curve

Use thermal desorption gas chromatographic method to analyze adsorption tube standard series. Take the peak area after deducting blank as the ordinate; the mass of substance to be tested as abscissa; draw the standard curve.

A.5.5.4 Sample analysis

Analyze each sample adsorption tube in accordance with operation steps of drawing standard curve (i.e. same analytical and concentrating conditions, and same chromatographic analysis conditions). Use retention time (when flame ionization detector is adopted) for qualitative determination; or mass spectrum (when mass detector is adopted) for qualitative determination; and peak area for quantitative determination.

A.6 Results calculation

accordance with single calibration curve; at least it shall conduct the quantitative determination for 25 peaks.

c) If calculating the determination value of volatile constituent that has no single calibration curve or is not qualitative, select response coefficient of methylbenzene to calculate.

A.6.2 Mass concentration calculation of total volatile organic compounds

Total mass concentration of organic compounds in standard state calculated in A.6.1 shall be served as the mass concentration of total volatile organic compounds (ρ_X).

A.6.3 Calculation of emission rate of total volatile organic compounds in sample

Calculate the emission rate of total volatile organic compounds in sample in accordance with Formula (3)

$$q_A = \rho_\chi (N / L_v) \qquad (3)$$

Where,

q_A — Emission rate of total volatile organic compounds of sample, mg/ (m^2·h);

ρ_X — Mass concentration of total volatile organic compounds obtained in A.6.2, mg/m^3;

N — Air exchange rate during testing, h^{-1};

L_v — Sample load factor, m^2/m^3.

The results are rounded to 0.01 mg/ (m^2·h).

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