

Technical Requirement for Environmental Products
The Certifiable Technical Requirement for Environmental Labelling Products
Energy Saving Doors and Windows **HBC 14-2002**

1 Scope

This technical requirement specifies classification, definition, basic requirements, technical contents and test method of environmental labelling for energy saving doors and windows.

This technical requirement shall apply to various plastic doors and windows which using qualified section materials and installed/assembled according to uniform specification.

2 Standards cited

Provisions in the following standards are cited in this technical requirement, and therefore form the provisions of the standard. When this technical requirement is published, all of the versions of these standards are valid. All of these standards shall be revised, and parties use this technical requirement should take into consideration the possibility of using the latest edition of the following standards.

GB/T 7106 - 86 Graduation of resisting wind pressure capacity and the test method for windows

GB/T 7107 - 86 Graduation of air permeability and their test method for windows

GB/T 7108 - 86 Graduation of water penetration and the test method for windows

GB/T 8484 - 86 Graduation and test method for thermal insulating properties of windows

GB/T 8485 - 86 The graduation of air-borne-sound insulating properties and test method for windows

GB/T 16422.2 - 1999 Plastics--Methods of exposure to laboratory light sources--Part 2: Xenon--arc sources

JGJ 103 - 96 Installation and acceptance regulations for plastic doors and windows

JGJ 134 - 2001 Standard of energy conservation design for domestic architecture in region where summer is hot and winter is cold.

JG/T 3017 - 94 PVC plastic doors

JG/T 3018 - 94 PVC plastic windows

3 Definition

3.1 "Performance of wind resistance" refers to capability of nonoccurrence of breakage and dysfunction by wind pressure when exterior door and windows are closed.

3.2 "Water tightness" refers to capability of preventing rainwater from leaking by the action of rain and wind simultaneously when exterior doors and windows are closed.

3.3 "Air tightness" refers to the capability of preventing air penetration when exterior doors and window are closed.

3.4 "Air infiltration volume per unit of slot length" refers to air quantity passed through unit of slot length in unit of time when exterior doors and windows are in standard conditions. It is expressed in unit of m³/m.h.

3.5 "Heat-insulating property" refers to capability of resisting heat transferring from high temperature side to low temperature side by doors and windows in the cases that air temperature difference exists between both sides of doors and windows. Heat-insulating property of doors and windows is expressed in coefficient of thermal transmission or heat transfer resistance.

3.6 "Coefficient of thermal transmission K₀" means capacity of heat transmission passed through unit area in unit time while temperature difference between both sides of door or window is 1K (absolute temperature) in steady heat transfer conditions. It is expressed in W/m².K.

4 Basic requirements

4.1 Quality of products should fit into requirement of JG/T 3017 - 94 or JG/T 3018 - 94.

4.2 Pollutant emission of the company should conform with pollutant emission standards nationally or locally.

5 Technical contents

5.1 Requirements for plastic door and windows section materials

5.1.1 No cadmiferous stabilizer is allowed to be used in production procedure of section material.

5.1.2 Rate of artificial ageing strength change of section materials should fit into requirement in table 1.

Table 1

Climatic region	Ageing time, h	Rate of impact strength change after artificial ageing
Warm region	4000	40%
Bad climate region	6000	

Warm region: total quantity of solar energy on surface ground in a year is $< 5\text{GJ}/\text{m}^2$, while the average maximum temperature in the most warm months per year should be < 22 ;
 Bad climate region: total quantity of solar energy on surface ground in a year is $\geq 5\text{GJ}/\text{m}^2$, while the average maximum temperature in the most warm months per year should be ≥ 22 ;

5.2 Requirements for doors and windows

5.2.1 Requirements for wind resistance performance, air tightness, air sound weighted sound insulation performance, rainwater leaking performance should meet table 2.

5.2.2 Heat-insulating property of doors and windows should conform to requirement of table 3 (If special requirement for heat-insulating property is demanded in local place, local requirements should be met).

Table 2

Physical property	Limitation
Wind resistance performance (Pa)	3000
Air tightness ($\text{m}^3/\text{h} \cdot \text{m}$)	0.5
Rainwater tightness (Pa)	350
Air sound weighted sound insulation performance (dB)	30

5.2.3 Hollow glass should be used for doors and windows.

5.3 Requirements for installation and assemble of doors and windows

Company should conduct overall process quality monitoring for installation and assemble of doors and windows, and meanwhile the installation should conform with requirement in JGJ 103-96.

6 Test

6.1 Requirements in 5.1.1 and 5.2.3 of the technical contents should be verified through field inspection.

6.2 Requirements in 5.1.2 of the technical contents should be verified according to the method specified in annex A.

Table 3

Orientation	Environmental conditions outside window	Coefficient of thermal transmission of exterior window $K[\text{W}/(\text{m}^2 \cdot \text{K})]$				
		Area ratio of window to wall 0.25	Area ratio of window to wall > 0.25 and 0.30	Area ratio of window to wall > 0.30 and 0.35	Area ratio of window to wall > 0.35 and 0.45	Area ratio of window to wall > 0.45 and 0.50

North (60 ° to east to 60 ° to west)	Outdoor average air temperature in coldest month in winter >5o	4.7	4.7	3.2	2.5	—
	Outdoor average air temperature in coldest month in winter ≤ 5o	4.7	3.2	3.2	2.5	—
East, west (east or west by north 30 ° to 60 ° by south)	No external shading	4.7	3.2	—	—	—
	External shading (solar radiation transmittance 20%)	4.7	3.2	3.2	2.5	2.5
South (east by north 30 ° to 30 ° by west)		4.7	4.7	3.2	2.5	2.5

6.3 Requirement of 5.2.1 in the technical contents should be verified according to the methods specified in GB/T 7106—86, GB/T 7107—86, GB/T 7108—86, GB/T84845—87, respectively.

6.4 Requirement in 5.2.2 of the technical contents should be verified according to method specified in GB/T 8484-87.

6.5 Requirement in 5.3 of the technical contents should be verified through documentation review.

6.5.1 Company producing plastic door and windows section material should set assemble and installation department that is effectively controlled, which conducting assemble and installation according to uniform specification. The company should provide specification of assemble door and window, quality assurance documentation; installation specification for door and windows, quality assurance documentation; acceptance of energy-saving.

6.5.2 Company assembling plastic door and windows section material should use section material produced by companies with environmental labelling certification, and meanwhile should set effectively controlled installation department, which assemble and install plastic door and window according to uniform specification. The company should provide certificate of company's environmental labelling certification on section materials, specification of assembling door and window, quality assurance documentation; installation specification for door and windows, quality assurance documentation; acceptance of energy-saving.

6.5.3 Company assembling plastic door and windows product should use product produced by manufacturing companies or assembling companies with environmental labelling certification, and meanwhile should set effectively controlled installation department, which assemble and install plastic door and window according to uniform specification. The companies should provide certificate of environmental labelling certification on section materials of the manufacturing or assembling companies, specification of assembling door and window, quality assurance documentation; installation specification for door and windows, quality assurance documentation; acceptance of energy-saving.

Annotations :

This technical requirement has been prepared by Department of science and technology, standards of State Environment Protection Administration.

The State Environment Protection Administration keeps the right of interpretation for

this technical requirement.

Annex A Experimental method of impact strength after aging the section material of plastic doors and windows

A.1 Aing test should be conducted according to A method in GB/T 16422.2;

A.2 Experimental method of impact strength after aging

A.1 Instruments

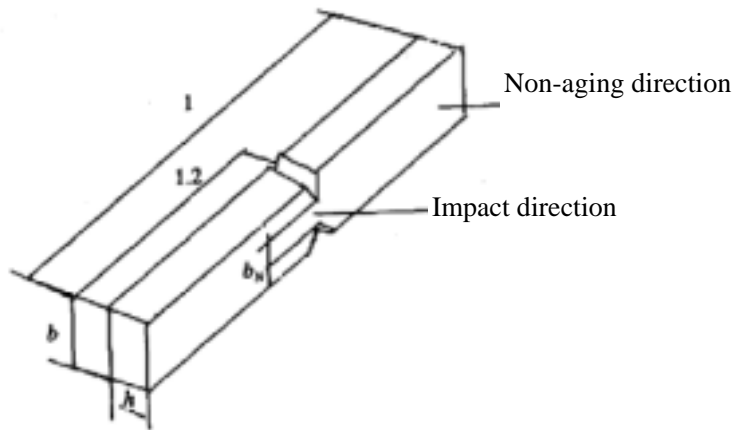
Instruments should conform to the requirement of ISO 179:1993, span $L=40\text{mm}$, impact force of pendulum is 1J or 2J.

A2.2 Sample

As for double-V notched specimen used for testing impact strength after aging, its length $l = (50 \pm 1)\text{ mm}$, width $b = (6.0 \pm 0.2)\text{ mm}$, thickness h equals to original thickness of the section material, radius of notch bottom $r_N = (0.25 \pm 0.05)\text{ mm}$, notch surplus width $b_N = (3.0 \pm 0.1)\text{ mm}$. Sample quntity should be at least 6.

A.2.3 Procedure of test

Figure below shows the impact direction of sample after aging:



A.2.4 Calculation

Impact strength, in kJ/m^2 , calculates according to the following equation:

$$a_N = \frac{W}{h \times b_N}$$

Where : W —Calibrated absorbed energy of sample cracking , J;

H —Thickness of sample , mm;

b_N —Notch bottom surplus width of sample , mm.