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National Standard of the People's Republic of China

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Supersedes GB/T 5826.1-1986, GB/T 5826.3-1986, GB/T 5827.1-1986, GB/T 5827.2-1986, GB/T 9155-1988, GB/T 9156-1988 and GB/T 13684-1992

铁门窗

Steel doors and windows

Promulgated April 27 2007 Effective as of November 1, 2007

Promulgated by China State Administration of Quality Supervision, Inspection and Quarantine and China National Standardization Administration Committee

Preface

The standard supersedes GB/T 5826.1-1986 Basic Dimension Series of Slide-Hung Doors (32, 40 mm Solid-Webbed), GB/T 5826.3-1986 Basic Dimension Series of Steel Slide-Hung Windows (32 mm Solid-Webbed), GB/T 5827.1-1986 Rules for Inspection of Solid-Webbed Steel Windows, GB/T 5827.2-1986 Rules for Inspection of Hollow-Webbed Steel Windows, GB/T 9155-1988 Hollow-Webbed Steel Doors, GB/T 9156-1988 Solid-Webbed Steel Doors and GB/T 13684-1992 Classification of Physical Properties of Steel Window Buildings.

Major differences between the standard and said 7 standards are as follows:

--Said 7 national standards are combined into a single standard, which is a unified standard for various steel doors and windows, named Steel Doors and Windows.

--Missed contents about product standard requirements are supplemented; requirements for glass selection and installation are newly added.

--Requirement for repetitive opening and closing is added.

--Performance indexes such as wind pressure resistant, water-tight, hermetic, heat-insulation，air noise isolation and lighting of the latest edition are adopted.

--Some contents related to production process are deleted.

--Requirements for some non-quantified inspection figures are deleted.

Annex A to the standard is an informative annex.

The standard is presented by Ministry of Construction, China.

The standard is centrally administered by Standardization Technology Committee of Building Products and Member and Fittings Products under Ministry of Construction, China.

The standard is drafted by China Building Metal Structure Association, Physical Institute of China Building Science Academy, China Building Standard Design and Research Institute, Beijing Mante Door Industrial Co., Ltd, Beijing Rishang Industrial and Trade Co., Ltd, China Buyang Group Co., Ltd, Huoman （Beijing）Door Industrial Co., Ltd, Beijing Tianing Xingye S&T Development Co., Ltd, Beijing Tianhai Door Industrial Co., Ltd, Beijing Yanshi Huarui Metal Frame Co., Ltd, Shanghai Yibeida Color Steel Products Co., Ltd, Chongqing Huaxia Doors and Windows Liability Co., Ltd and Swiss Yanshi Share Co., Ltd.

The standard is mainly drafted by Liu Damin, Liu Jingtao, Wang Hongtao, Cao Yingqi, Zhu Lianhong, Zhang Jinghe, Feng Zhong, Xu Buyun, Zhang Dapeng, Wang Baojun, Yang Jianjun, Zhang Rongxi, Guo Liyang, Ji Yitao and Liu Shuyan.

Historical Editions of standards superseded by the standard:

- GB/T 5826.1-1986, GB/T 5826.3-1986, GB/T 5827.1-1986, GB/T 5827.2-1986, GB/T 9155-1988, GB/T 9156-1988 and GB/T 13684-1992.

Contents

Steel Doors and Windows

1 Scope

The standard specifies Terminology and definition, code and marking, material, requirements, inspection methods, rules for inspection as well as marking, packing, transportation and storage of steel doors and windows.

The standard applies to steel doors and windows used in industrial and civil buildings.

The standard does not apply to special doors and windows, such as revolution door, garage door, curtain door, retractable door, industrial gate, curtain window and fence window.

2 Normative Reference Documents

Clauses contained in the following documents are referred by the standard and become clauses of the standard. Any reference document with date indicated and their subsequent modification sheets (excluding error corrections) or revised editions do not apply to the standard, however, all parties who enter into an agreement based on the standard are encouraged to probe into possibility of use of the latest editions of such documents. For any reference document without date indicated, their latest editions are applicable to the standard.

GB191 Graphic Marks for Packing，Storage and Transportation (GB 191-2000, eqv. ISO 780:1997)

GB/T 716 Cold Rolled Strips of Carbon Structure Steel

GB/T 1720-1979 Method for Determining Paint Film Adhesion

GB/T 1732-1993 Method for Determining Paint Film Impact Resistance

GB/T 2518 Continuous Hot-Dip Galvanized Thin Steel Plates and Strips

GB/T 5823 Terminology of Building Doors and Windows

GB/T 5824 Dimension Series of Building Door and Window Openings

GB/T 6388 Marks of Goods Transportation, Packing, Shipment and Delivery

GB/T 6807 Specification for Phosphorizing Treatment of Iron and Steel Work Pieces Before Painting

GB/T 7106 Classification and Test Method for Wind Pressure Withstand Performance of Building Exterior Windows

GB/T 7107 Classification and Test Method for Hermetic Performance of Building Exterior Windows

GB/T 7108 Classification and Test Method for Water-Tight Performance of Building Exterior Windows

GB/T 7633 Method for Test of Door and Curtain Fire-Proofness

GB/T 8484 Classification and Test Method for Heat Insulation Performance of Building Exterior Windows

GB/T 8485 Classification and Test Method for Air Noise Isolation Performance of Building Exterior Windows

GB/T 9158-1988 Method for Testing Building Window Borne Mechanical Force

GB/T 11976 Classification and Test Method for Lighting Performance of Building Exterior Windows

GB/T 12513 Method for Testing Fire Proofness of Glazing Members

GB/T 12754 Color Coated Steel Plates and Strips

GB 12955 General Specification for Steel Fire-proof Doors

GB/T 13306 Placards

GB/T 14155 Plastic Doors Method for Soft Heavy Object Impact Test

GB/T Industrial Product Assurance Document General Principles

GB 16809 Steel Fire-Proof Windows

GB 17565 General Specifications for Burglary Resistant Doors

JG/T 73 Stainless Steel Profiles for Buildings

JG/T 115 Colors Coated Steel Plate Profiles for Doors and Windows

JG/T 187 Sealing Strips for Building Doors and Windows

JG/T 192-2006 Method for Testing Repetitive Opening and Closing Performance of Building Doors and Windows

JGJ 113 Technical Procedures for Building Glass Application

3 Terminologies and Definition

Terms defined in GB/T 5823 and GB/T 5824 and listed below applies to the standard.

3.1 Steel Doors

Doors whose frame, leaf or leaf skeleton structure is made of steel profile and board

3.2 Steel Windows

Windows whose frame, leaf structure is made of steel profile and board (or steel profile and board mainly).

4 Codes and Marking

4.1 Door and Window Codes

Door and window codes shall be specified as per Table 1.

Table 1 Door and Window Codes

Door	Window	Door & Window Combination
M	C	MC

4.2 Classification Codes

4.2.1 Codes for Opening Types

Opening types and codes of doors and windows shall be specified as per Table 2.

Table 2 Opening Types and Codes

Opening Type		Fixed	Top-Hung	Mid-Hung	Bottom-Hung	Vertical Revolving	Slide-Hung	Push-Pull	Spring	Vertical Sliding
Code	Door	G	--	--	--	--	P	T	H	--
	window	G	S	C	X	L	P	T	--	TL
Notes: 1 Louver door and louver window are coded as A, window screen sash coded as A. 2 Fixed doors, fixed windows and all other openable door and window combinations shall use codes for opening types.										

4.2.2 Material Codes

Materials and codes of doors and windows shall be as per Table 3.

Table 3 Materials and Codes

Material	Code	Material	Code
Hot rolled steel profile	SG	Color coated Steel Plate	CG
Cold rolled plain carbon steel	KG	Stainless Steel	BG
Cold rolled galvanized steel plate	ZG	Other Composite Material	FG

4.3 Performance Codes

Performances and codes of doors and windows shall be as per Table 4.

Table 4 Performances and Codes

Performance	Code	Performance	Code
Wind Pressure Resistant	p_3	Air Noise Isolation	R_w
Water-Tight	ΔP	Lighting	T_t
Hermetic	q_1、q_2	Burglary Resistant	H
Heat Insulation	K	Fire-Proof	F

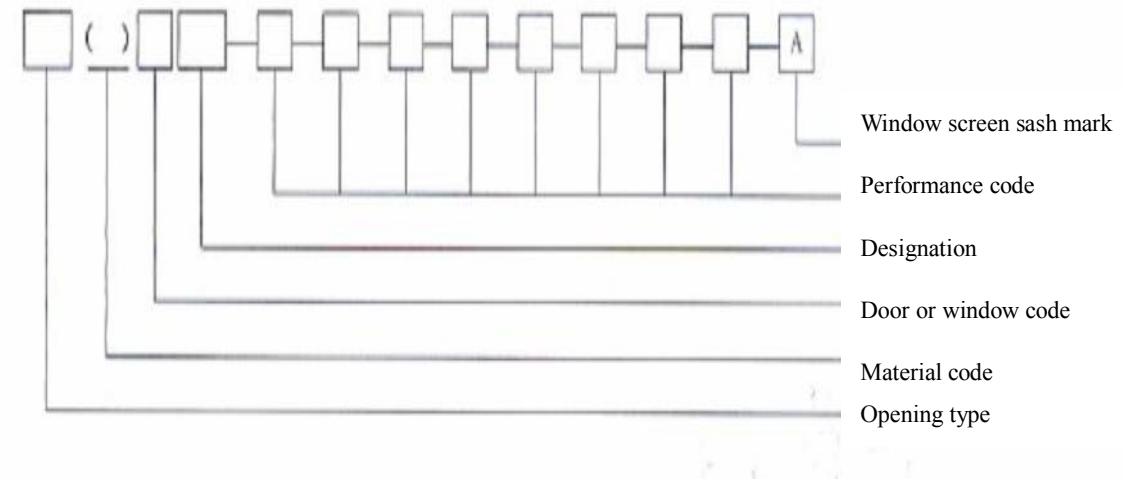
4.4 Designation

Designation of steel doors and windows shall be represented by their opening dimensions, which shall meet regulations in GB/T 5824.

4.5 Labels

4.5.1 Composition of Label

Label of steel door and window shall be composed of opening type code, material code, door and window code, designation, performance code and window screen sash mark A.



Code of performance not required shall be left blank; without window screen sash, window screen sash mark shall be left blank.

4.5.2 Example for Labeling

Example 1:

P(ZG)M1020-K2.5-R_w30-FA0.50 stands for:

Slide hung steel door made of cold rolled galvanized steel board, designation 1020, heat insulation 2.5W/(m^3.K), noise isolation level 30 dB, fire-proof class AO.50,with no requirement for wind pressure withstand, air-tight, water-tight and lighting, without window screen sash.

Example 2:

Color coated board bottom-hung window, designation 1518, wind withstand 2.0 kPa, water-tight performance 150 Pa, air-tightness 1.5 m^3/(m.h), heat insulation 3.5W/(m^3.K), noise isolation level 30 dB, lighting factor 0.40, with screen leaf, which shall be labeled as :

PX(CG)C1518-$P_3$2.0-ΔP150-$q_1$1.5-K3.5-R_w30-T_r0.40-A

5 Materials

5.1 General Regulations

Various materials for doors and windows shall meet related specifications put forward in current national standards and industrial standards. Refer to Annex A.

5.2 Profiles and Plates

5.2.1 Steel door and window profiles shall comply with following regulations:

a) Color coated steel board door and window profiles shall comply with regulations given in GB/T 12754 and JG/T 115.

b) Profiles for steel doors and windows made of cold rolled strip of carbon structure steel shall meet regulations given in GB/T 716, profile wall thickness shall be no less than 1.2 mm.

c) Profiles made of galvanized steel strip for steel doors and windows shall meet regulations given in GB/T 2518, profile wall thickness shall be no less than 1.2 mm.

d) Stainless steel profiles for steel doors and windows shall meet regulations given in JG/T 73.

5.2.2 For doors made of boards, thickness of door frame board shall be no less than 1.5 mm, thickness of door leaf face board shall be no less than 0.6 mm, burglary resistance and fire-proofness shall, if required, meet regulations given in related standards.

5.3 Glass

Glass shall be selected as per function requirements. Glass thickness and area shall be determined as per calculation, and calculating method shall follow regulations in JGJ 113.

5.4 Sealing Material

Sealing material shall be selected as per function requirements and meet JG/T 187 and regulations in related standards.

5.5 Hardware, Accessories and fasteners

Hardware for opening and closing, connectors, fasteners and stiffener panel of doors and windows shall be selected as per function requirements. Material properties of said fittings shall correspond to door and window requirements.

6 Requirements

6.1 Apparent Requirements

6.1.1 For doors and windows made of carbon steel material, proper types of surface coating shall be selected as per function requirements, and surface of doors and windows shall be treated by using paint brushing, baking or spraying process.

6.1.2 Surface of doors and windows (including stainless steel doors and windows) shall have no obvious color difference.

6.1.3 Coating shall be secure, endurable. Adhesion shall be no lower than Class 2, drop hammer height for impact test shall be no lower than 50 cm.

6.1.4 There shall be no quality defects, such as obvious scotch and scratch on finish surface. Scotch and scratch shall comply with regulations in Table 5.

Table 5 Requirements for Scotch and Scratch

Item	Requirement	Remarks
Scotch and Scratch Depth	<Coating Thickness	Defects shall be repaired and patched
Total Scotch Area	≤500 mm^2/Frame	
Scotch Area at Each Place	≤100 mm^2/Frame	
Total Length of Scratch	≤100 mm/Frame	

6.1.5 Surface of doors and windows shall be clean, smooth and neat, without quality defects, such as bur, welding slag, hamming dent or ripple.

6.1.6 Sealing strips shall be jointed tightly, with neat surface, without over-masking. Sealing glue line shall be straightforward and even.

6.2 Requirements for Structure and Dimensions

6.2.1 Frame and Leaf Assembly

6.2.1.1 Allowable tolerance of door and window frame and leaf dimensions shall meet regulations in Table 6.

Table 6 Allowable Dimensional Tolerance, in mm

Item	Dimension Range	Allowable Tolerance
Width and Height Dimension Tolerance of Door Frame and Leaf	≤2000	±2.0
	>2000	±3.0
Width and Height Dimension Tolerance of Window Frame	≤1500	±1.5
	>1500	±2.0
Dimensional Difference between Two Opposite Sides of Door Frame and Leaf	≤2000	≤2.0
	>2000	≤3.0
Dimensional Difference between Two Opposite Sides of Window Frame	≤1500	≤2.0
	>1500	≤3.0
Dimensional Difference between Two Diagonal Lines of Door Frame and Leaf	≤3000	≤3.0
	>3000	≤4.0
Dimensional Difference between Two Diagonal Lines of Window Frame	≤2000	≤2.5
	>2000	≤3.5
Dividing Dimension	--	±2.0
Difference between Adjacent Dividing Dimensions	--	≤1.0
Door Leaf Distorsion	--	<4.0
Bending in Door Leaf Width and Height Direction	1000	≤2.0
Difference of Height on the Same Plane	--	≤0.4
Assembly Clearance	--	≤0.4

6.2.1.2 Frame and leaf assembled by bolting or riveting shall be secure, without looseness. Measures, such as stiffener installed inside profiles should be adopted to enhance assembly strength and reliability.

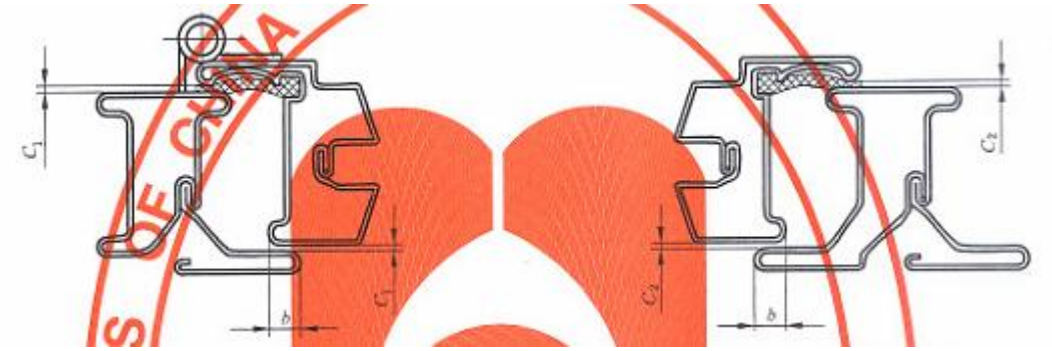
6.2.1.3 Frame and leaf assembled by spot welding or full welding shall be secure, without quality defects like rosin joint or false welding.

6.2.1.4 Frame and leaf bolting or riveting assembly gap and welding assembly non-welding seam shall be tight. Sealant should be filled and pad should be inserted inside corners of frame and leaf assembly.

6.2.2 Frame and Leaf Fit

6.2.2.1 Overlap (gap) between leaf surrounding and frame shall be uniform, there shall be no height difference between adjacent leaves, door leaf and window sash shall be openable freely, without blockage, and sealing strip shall be installed at overlaps between frame and leaf.

6.2.2.2 Refer to Fig. 1 for fit dimension of frame and leaf of slide hung doors and windows. Doors and windows without sealing structure shall meet regulations in Table 7. For slide hung doors without bottom sill, gap between door leaf and floor surface shall be no more than 8. For doors and windows with sealing structure, frame and leaf shall be close to each other tightly, without photic gap.



a) Frame and leaf fit dimensions on hinge plane (b) Frame and leaf fit dimensions on other plane

Fig. 1 Schematic Diagram of Frame and Leaf Fit Dimensions

Table 7 Fit Dimensions between Frame and Leaf of Slide Hung Doors without Sealing Structure, in mm

Item	Dimensional Requirement	
	Door	Window
Frame and Leaf Overlap b	≥6	≥4
Fit Clearance on Hinge Plane C1	≤2	≤1.5
Fit Clearance on Other Plane C2	≤3	≤1.0

6.2.2.3 Gaps between frame and leaf, leaf and leaf, leaf and floor surface of spring door shall be designed according to sealing device to be selected. For spring doors without sealing device, gap design dimension between leaf and floor surface shall be no more than 8mm; other gaps shall be

no more than 4mm.

6.2.2.4 Overlap between window frame and leaf of push-pull doors shall be no less than 6 mm. Doors and windows shall be provided with fall-off protector, level adjustor, door leaf and window sash interlock and door leaf and window sash closing lock-up device should be installed.

6.3 Hardware Fittings Installation

Hardware for doors and windows shall be provided completely, installed at correct places and firmly. Hardware shall have enough strength, open and close freely, noiseless and meet function requirement. Accessories and hardware subject to repetitive motion shall be easy for replacement.

6.4 Glazing

6.4.1 Glazing shall be in accordance with regulations in JGJ 113.

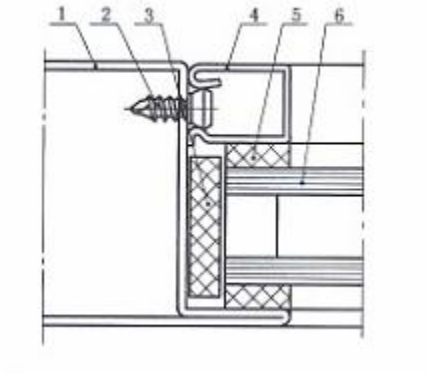
6.4.2 Glass shall be installed for easy replacement; glass should be fixed with glazing bead.

6.4.3 Glass and profile as well as glass stops shall not contact each other. Front and back clearance shall be sealed with sealant or shaped elastic material and plastic filler. Supporting blocks should be installed under glass bottom side, and locating blocks should be installed on left, right and tip side of glass. Refer to Fig. 2.

6.5 Corrosion Treatment

6.5.1 Doors and windows as well as hardware fittings made of plain carbon steel shall be treated against corrosion. Grease and rust shall be removed before galvanizing or applying anti-rust paint. Phosphorized treatment shall be performed as per requirements set out in GB/T 6807.

6.5.2 After color plates for doors and windows are laid off, paint (or glue) shall be applied on profile cuts.



1- Profile
2- Glazing bead fixing nail
3- Supporting block or locating block
4- Glazing bead
5- Sealant or elastic material, plastic filler
6- Glass

Fig. 2 Glazing Schematic Diagram

6.6 Performance

6.6.1 Determination of Performances and Indexes of Steel Doors and Windows

Performances and indexes of steel doors and windows shall be determined based on local geology, climate and surrounding environment as well as building height, form and importance,

and meet design requirements.

6.6.2 Wind Pressure Resistance Performance

Major bearing members of doors and windows shall be determined by test or calculation, glass wind performance shall meet regulations in JGJ 113, wind pressure resistance performance class index values are specified as per Table 8.

Table 8 Wind Pressure Resistance Performance Classes, in kPa

Class	1	2	3	4	5
Index Value P_3	$1.0 \le P_3 < 1.5$	$1.5 \le P_3 < 2.0$	$2.0 \le P_3 < 2.5$	$2.5 \le P_3 < 3.0$	$3.0 \le P_3 < 3.5$
Class	6	7	8	$X \cdot X$	--
Index Value P_3	$3.5 \le P_3 < 4.0$	$4.0 \le P_3 < 4.5$	$4.5 \le P_3 < 5.0$	$P_3 \ge 5.0$	--
Note: $X \cdot X$ means that specific value larger than or equal to 5.0 kPa shall be used, in stead of class code.					

6.6.3 Water-Tightness

Water-tightness index values of exterior doors and exterior windows shall be specified as per Table 9.

Table 9 Water-Tightness Classes, in Pa

Class	1	2	3	4	5	XXXX
Index Value ΔP	$100 \leqslant \Delta P < 150$	$150 \leqslant \Delta P < 250$	$250 \leqslant \Delta P < 350$	$350 \leqslant \Delta P < 500$	$500 \leqslant \Delta P < 700$	$\Delta P \geqslant 700$
Note: XXXX means that specific value larger than or equal to 700 Pa shall supersedes class code, suitable for buildings in tropical storm and typhoon attack regions.						

6.6.4 Air-Tightness

Air-tightness class index values shall be specified as per Table 10.

Table 10 Air-Tightness Classes

Class	1	2	3	4	5
Index Value of Unit Seam Length $q_1/[m^3/(m \cdot h)]$	$6.0 \ge q_1 > 4.0$	$4.0 \ge q_1 > 2.5$	$2.5 \ge q_1 > 1.5$	$1.5 \ge q_1 > 0.5$	$q_1 \le 0.5$
Index Value of Unit Area $q_2/[m^3/(m \cdot h)]$	$18 \ge q_2 > 12$	$12 \ge q_2 > 7.5$	$7.5 \ge q_2 > 4.5$	$4.5 \ge q_2 > 1.5$	$q_2 \le 1.5$

6.6.5 Heat Insulation Performance

Heat insulation performance class index values hall be specified as per Table 11.

Table 11 Heat Insulation Performance Classes, in $W/m^2.K$

Class	5	6	7	8	9	10
Index Value K	$4.0 > K \geq 3.5$	$3.5 > K \geq 3.0$	$3.0 > K \geq 2.5$	$2.5 > K \geq 2.0$	$2.0 > K \geq 1.5$	$K < 1.5$

6.6.6 Air Noise Isolation Performance

Air noise isolation performance class index values hall be specified as per Table 12.

Table 12 Air Noise Isolation Performance Classes, in dB

Class	1	2	3	4	5	6
Index Value R_W	$20 \leq R_W < 25$	$20 \leq R_W < 30$	$30 \leq R_W < 35$	$35 \leq R_W < 40$	$40 \leq R_W < 45$	$R_W \geq 45$
Note: When $R_W \geq 45$ dB, specific value shall be given.						

6.6.7 Lighting Performance

Lighting performance class index values hall be specified as per Table 13.

Table 13 Lighting Performance Classes

Class	1	2	3	4	5
Index Value T_t	$0.20 \leq T_t < 0.30$	$0.30 \leq T_t < 0.40$	$0.40 \leq T_t < 0.50$	$0.50 \leq T_t < 0.60$	$T_t \geq 0.60$
Note: When $T_t \geq 0.60$, specific value shall be given.					

6.6.8 Burglary Resistance Performance

Burglary resistance performance of steel doors shall, if required, meet regulations in GB 17565.

6.6.9 Fire-Proofness

Fire-Proofness of steel doors and windows shall, if required, meet regulations in GB 12955 and GB 15809

6.6.10 Soft Object Impact Performance

Soft object impact performance of steel doors shall satisfy following requirements:

a) Door leaf shall not have any concave deformation larger than 5 mm, and there shall be no looseness or crack at connections between frame and leaf.
b) Hardware, like bolt, lock and hinge, shall be complete, able to open and close normally.
c) Glass shall not be damaged.

6.6.11 Overhung Weight

Under action of a 500N weight, residual deformation of slide hung door and spring door shall be no more than 2 mm; test piece shall not be damaged, able to open and close normally.

6.6.12 Opening and Closing Force

Opening and closing force shall be no more than 50N.

6.6.13 Repetitive Opening and Closing Performance

Repetitive opening and closing of a steel window shall be no less than 10,000 times, repetitive opening and closing of a steel door shall be no less than 100,000 times, without opening and closing abnormal or obstructed.

7 Method for Inspection

7.1 Method for Inspection of Fabrication Quality

Apparent quality, frame and leaf assembly and fit, hardware installation, glazing and corrosion treatment test shall meet regulations in Table 14.

Table 14 Method for Inspection of Fabrication Quality

Item		Method or Inspection Tool
Appearance Quality	Coating adhesion	GB/T 1720-1979
	Coating impact property	GB/T 1732-1993
	Scotch and scratch	Steel ruler (Accuracy ±0.5 mm)
	Other appearance quality	With sufficient natural light, visually checked 0.5 meter away from doors and windows
Frame and Leaf Assembly	Width and height dimensions of frame and leaf	Steel tape ruler(Accuracy ±0.5 mm), measuring location shall be 50-100 mm away from four corners
	Dimensional difference between two opposite sides of door and window frame and leaf	
	Dimensional difference between two diagonal lines of door and window frame and leaf	(Φ30 mm cylinder mated) steel tape ruler(accuracy ±0.5 mm) or special diagonal ruler; interior angle shall be measured for doors and windows with frame structure.
	Dividing dimension, difference between adjacent dividing dimensions	Steel tape ruler(accuracy ±0.5 mm)
	Door leaf bending degree	1 m steel ruler, filler gauge (accuracy ±0.02 mm)
	Door leaf distorsion	On 1mX2m platform no lower than Class III, with three corners of four corners of door leaf supported on finials with height deviation no more than 1mm, measure height of corner not supported with height gauge(accuracy ± 0.02 mm) . Turn over door leaf by 180°, measure height of corner not supported, and calculate height difference average value.
	Height difference on the same plane	150mm steel ruler, filler gauge(accuracy ±0.02 mm)
	Assembly clearance	Filler gauge(accuracy ±0.02 mm)
	Other items of frame and leaf assembly	Hand feeling(to open and close door leaf and window sash), visual check
Frame and Leaf Fit	Frame and leaf overlap	Depth gauge or calipers (accuracy ±0.02 mm)
	Frame and leaf fit gap C1, C2	Filler gauge(accuracy ±0.02 mm)
	Other items of frame and leaf fit	Hand feeling(to open and close door leaf and window sash), visual check
Hardware fittings installation		Hand feeling, visual check
Glazing		Visual check, calipers(accuracy ±0.02 mm)
Corrosion treatment		Visual check

7.2 Methods for Performance Inspection

7.2.1 Physical properties shall be tested in order of air-tightness, water-tightness and wind pressure resistance.

7.2.2 Mechanical properties shall be tested in order of impact, opening and closing force, repetitive opening and closing and sagging amount.

7.2.3 Methods for performance inspection shall satisfy regulations in Table 15.

Table 15 Methods for Performance Inspection

Item	Method
Wind Pressure Resistance	GB/T 7106
Air-tightness	GB/T 7107
Water-tightness	GB/T 7108
Heat Insulation	GB/T 8484
Air Noise Isolation	GB/T 8485
Lighting	GB/T 11976
Burglary Resistant	GB 17565
Fire Proofness	GB 7633、GB 12513
Soft Object Impact	GB/T 14155
Overhung Weight	6.2.2 of GB/T 9158—1988
Opening and Closing Force	6.1 of GB/T 9158
Repetitive Opening and Closing	JG/T 192—2006

8 Rules for Inspections

8.1 Classes of Inspections

Product inspections contains type inspection and ex-works inspection

8.2 Type Test

8.2.1 Test Conditions

Under any one of following cases, type test shall be conducted:

a) Identification of type approval of trial production of new product or old product production transfer;

b) During normal production, when major changes in structure, material or process may affect product performance;

c) During normal production, inspection shall be performed once biyearly;

d) Product is resumed for production after shut-down for more than 1 year;

e) In case major quality event occurs;

f) There is larger difference between ex-works inspection results and last type test;

g) When type test is required by State quality supervision authority or contract stipulation.

8.2.2 Rules for Lotting and Method for Sampling

Three frames of products with the same designation and brands shall be random sampled from products certified for ex-works inspection.

8.2.3 Inspection Items

Inspection items shall comply with regulations in Table 16.

Table 16 Items for Type Test and Ex-Works Inspection

Serial No.	Item Description			Type Test	Ex-Works Inspection
1	Items for fabrication Quality Inspection	Appearance Quality	Coating adhesion	√	△*
2			Coating impact property	√	△*
3			Scotch and scratch	√	√
4			Other appearance quality	√	√
5		Frame and Leaf Assembly	Width and height dimensions of frame and leaf , dimensional difference between two opposite sides of door and window frame and leaf	√	√
6			Dimensional difference between two diagonal lines of door and window frame and leaf	√	√
7			Dividing dimension, difference between adjacent dividing dimensions	√	√
8			Door leaf bending degree in width and height directions	√	√

9			Door leaf distorsion	√	√
10			Height difference on the same plane	√	√
11			Assembly clearance	√	√
12			Other items of frame and leaf	√	√
13		Frame and Leaf Fit	Frame and leaf overlap	√	√
14			Frame and leaf fit gap C1, C2	√	√
15			Other items of frame and leaf fit	√	√
16		Hardware fittings installation		√	√
17		Glazing		√	√
18		Corrosion treatment		√	√

Table 16 (Cont'd)

Serial No.	Item Description			Type Test	Ex-Works Inspection
19	Items for Performance Inspection	Wind Pressure Resistance	Steel door	△	--
			Steel window	√	--
20		Water-Tightness	Steel door	△	--
			Steel window	√	--
21		Air-Tightness	Steel door	△	--
			Steel window	√	--
22		Heat Insulation		△	--
23		Air Noise Isolation		△	--
24		Lighting		△	--
25		Burglary Resistant		△	--
26		Fire Proofness		△	--
27		(Door) Soft Object Impact		△	--
28		(Slide Hung Door, Spring Door) Overhung Weight		√	--
29		Opening and Closing Force		√	△
30		Repetitive Opening and Closing		√	--
Note: " √ " stands for inspection items; "△"stands for inspection items as per requirement; "-" stands for items not inspected					
A For inspection, test piece may be replaced with 65mmX150mm steel plate made of the same material, thickness and lot as that of members to be inspected.					

8.2.4 Rules for Judgment

During inspection, if inspection results of three frames of products reach standard requirements, type test of such lot of products shall be judged as accepted, if any frame is disqualified, additional double samples shall be drawn for re-check. If re-check is qualified, such lot shall be regarded as accepted; if any frame is disqualified, type test of such lot of products shall be judged as rejected.

8.3 Ex-Works Inspection

8.3.1 Inspection Conditions

During type test validity term

8.3.2 Rules for Lotting and Plan for Sampling

3% but no less than 3 frames shall be random sampled from products of different brands and different designations in each project.

8.3.3 Inspection Items

Product inspection items shall conform to regulations in Table 16.

8.3.4 Rules for Judgment

A lot products shall be judged as accepted only if all inspected products reach standard requirements. if any frame is under-standard, double samples shall be drawn for re-check. If re-check is qualified, such lot shall be regarded as accepted; if any frame is disqualified, such lot of products shall be judged as rejected.

8.4 Others

Accepted products shall carry certificate, which shall meet regulations in GB/T 14436.

9 Marking, Packing, Transport and Storage

9.1 Marking

9.1.1 Following marks shall appear at obvious locations of products:

A) Manufacturer's Name and Trade Mark;

b) Product name, model and mark;

c) Products shall carry nameplate, which shall meet regulations in GB/T 13306;

d) Manufacture date or serial No.

9.1.2 Marks on packing cases shall meet regulations in GB/T 6388.

9.1.3 Obvious letters and marks "Moisture Proof", "Handle with Care" and "This Side Up" shall appear on packing cases, whose graphics shall meet regulations in GB/T 191.

9.2 Packing

9.2.1 Products shall be packed with corrosion-less soft material.

9.2.2 Packing cases shall have enough strength to make sure products will not be damaged during transportation.

9.2.3 Different components in packing case shall be placed firmly and reliably, to avoid mutual collision and play.

9.2.4 packing list and product certificate shall be placed inside packing cases.

9.3 Transportation

9.3.1 During transportation and handling, handle products with care. It shall strictly prohibited to fall, throw and strike products.

9.3.2 During transportation, measures against mutual collision of products shall be taken.

9.3.3 During transportation, products shall have rain-proof measures, and be kept clean and non-polluted.

9.4 Storage

9.4.1 Products shall be stored at ventilated, dry and rain-proof place, strictly inhibited to contact acids, alkali and salts.

9.4.2 Product placement shall be padded horizontally by using wooden pad with height more than 100m, vertical placement angle shall be no less than 70^{o}.

Annex A
(Informative Annex)
Common Standards

A.1 Metal Material

GB/T 708-2006 Dimensions, Profile, Weight and Allowable tolerance of Cold Rolled Steel Plates and Strips

GB/T 3280-1992 Cold Rolled Stainless Steel Plates

GB/T 4239-1991 Stainless and Heat Resistant Cold Rolled Steel Strips

A.2 Hardware Accessories and Surface Treatment

GB/T 8377-1987 General Specification for Hardware Fittings for Solid-Wedded Steel Doors and Windows

GB/T 9799-1997 Metal Coatings Galvanized Layer on Iron and Steel Components

A.3 Glass

GB/T 9962-1999 Laminated Glass

GB/T 9963-1998 Armored Glass

GB 11614-1999 Float Glass

GB/T 11944-2002 Hollow Glass

GB/T 18701-2002 Tinted Glass

GB/T 18915.1-2002 Coated Glass Part 1: Sunlight controlled Coated Glass

GB/T 18915.2-2002 Coated Glass Part 2: Low radiation Coated Glass

JC/T 511-2002 Figured Glass

A.4 Fasteners

GB/T 845-1985 Cross Recess Pan Head Self-Driving Screws

GB/T 845-1985 Cross Recess Countersunk Head Self-Driving Screws

A.5 Window Screen

QB/T 3882-1999 (GB 8379-1987) Window Screen types and Dimensions

QB/T 3883-1999 (GB 8380-1987) Specification for Window Screens

A.6 Sealing Material

HG/T 3100-2004 (GB 10712-1989) Vulcanized Rubber and Thermoplastic Rubber Classification, Requirements and Test Method for Pre-Formed Sealing Gaskets for Building

GB/T 12002-1989 Sealing Strips for Plastic Doors and Windows

GB 16776-2005 Silicone Structure Sealing Glues for Building

GB/T 14683-2003 Silicone Sealing Glues for Building