



CNBM

中建材国际贸易有限公司

CNBM INTERNATIONAL CORPORATION

# Borosilicate Special Glass





## COMPANY PROFILE

CNBM is the largest comprehensive building materials industry group in China that integrates scientific research, manufacturing and logistics into one entity, which has been ranked on the Fortune Global 500 list for eight consecutive years. CNBM International Corp., established in 2004, is the business entity for trade and logistic of CNBM Group.

CNBM International is highly recognized by its business partners and clients all over the world and has established good business relationship with the customers in over 160 countries and regions all over the world.





# Product Introduction

## Brief introduction of borosilicate glass

Borosilicate glass, also known as high borosilicate glass, is known as the "King of Glass". Its main component is about 80% silicon oxide and about 10% boron oxide. At this time, both silicon oxide and boron oxide can basically form micro-tetrahedrons. Framework (the more the micro tetrahedral framework in the glass is, the greater the ionic bond force will become, contributing to a more stable performance), the other is about 5% of stable oxide and about 5% of flux.



Because of the ionic bond, it has good thermal properties, mechanical properties and chemical stability, such as low expansion coefficient, high softening temperature, high strength, low density, and not easy to mold and fog.

## Borosilicate 3.3 heat-resistant glass

**A**

Borosilicate 3.3 heat-resistant glass has good thermal properties, mechanical properties, optical properties and ultra-high chemical stability. The visible light transmittance is 92%, and the high light transmittance in the near-infrared and ultraviolet bands exceeds 90%. The sign of fluorescence is far lower than that of soda lime glass.

**B**

**Water resistance**

International Organization for Standardization 719: Grade A

**Acid resistance**

International Organization for Standardization 195: Grade A

**Alkali resistance**

International Organization for Standardization 695: Grade B

**C**

Thickness range:  
2.5-15mm  
Max size:  
4800×2440mm.

**D**

It is widely used in household appliances, electronics, instrumentation, opticals, aerospace and other fields.

# Borosilicate 4.0 fire-resistant glass

## 01

The maximum fire resistance time is 3 hours

Ultra-low expansion coefficient, which is 2/5 of the expansion coefficient of ordinary soda lime silica glass

Ultra-high mechanical strength, 2 times stronger than ordinary soda lime silica glass

## 04

Thickness range: 4-15mm

Maximum size: 4800\*2440mm

Can be punched, cut, sandblasted, and coated to make fireproof glass

Can be cut, edged, punched, tempered, etc.



## 02

Small specific gravity, more than 8% lighter than ordinary soda lime silica glass

Ultra-clear, light transmittance above 92%

Excellent resistance to acid and alkali corrosion and water resistance

## 03

Can be used in fireproof curtain walls, partition walls, platforms, day lighting roofs, smoke-proof vertical walls, railings, doors and windows, elevator shafts, rail transit platform screen doors, rail locomotive doors and windows and other fields. Equipped with water spray, it can be used to replace Class A insulation type fireproof glass system, which can be widely used in building atrium, pedestrian street fireproof glass and building fireproof partition.

### Actual measured parameters of borosilicate glass

Item	Unit	4.0	3.3
Density	( g/cm <sup>3</sup> )	2 . 283	2 . 227
Young's modulus		67 . 92	61 . 7
Poisson's ratio	kN/mm <sup>2</sup>	0 . 2	0 . 19
Vickers hardness		589 . 2	530
Bending strength	Mpa	130 ( tempered )	
Coefficient of linear thermal expansion	$\alpha^* 10^{-6} k^{-1} ( 20 - 300 \text{ }^\circ\text{C} )$	4 . 018	3 . 298
Specific heat	Cp (20 ~ 100 °C)	0 . 829	0 . 829
Thermal shock temperature	°C	> 300 ( tempered )	> 225 ( non- tempered )
Maximum long term use temperature	°C	450	450
Maximum short term use temperature	°C	500	500
Softening Point	°C	843 . 8	820 . 7
Annealing point	°C	593 . 2	565 . 5
Strain point	°C	543 . 1	515 . 5

# Black float glass >>>

Black float glass is the PG series glass developed for car sunroofs and side windows which has extremely beneficial heat insulation function.

**Application:** Car privacy glass, Building glass, Home furniture glass.

**Important benefits:**

- Lower light transmittance
- Good privacy protection effect
- Great color uniformity
- 1.3-19mm thickness



**Architectural glass**



**Automobile glass**



**Home appliances glass**

## ■ Transmittance of Black Float Glass

Thickness	Visible light transmittance(%)
2.0mm	39.84
4.0mm	18.17
6.0mm	7.7
8.0mm	3.69
10.0mm	1.59
12.0mm	0.75



# Product Application >>>

## (I) Borosilicate 3.3 heat-resistant glass

Electric oven baffle    Induction cooker panel    Cinema projector lens    Projector lens



## (II) Borosilicate 4.0 fire-resistant glass



**01**  
Glass curtain wall



**02**  
Fire-resistant partition



**03**  
Smoke-prevent hanging wall



**04**  
Fireproof doors and windows



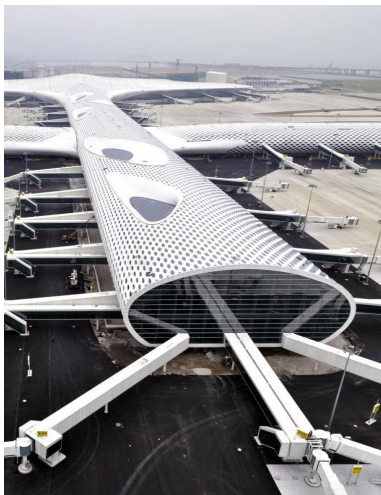
# Engineering Case



## ■ Borosilicate 4.0 fire-resistant glass



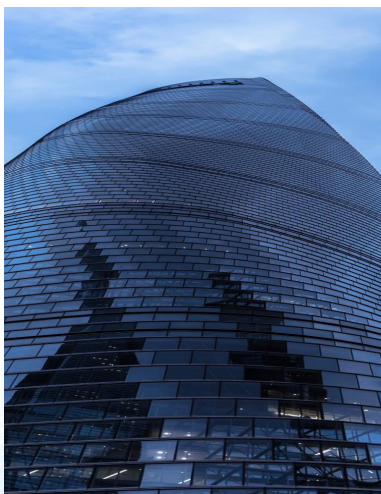
1. Name: Xiongan train station
2. Max.size: 4000\*2200mm
3. Glass structure: laminated, hollow



## ■ Borosilicate 4.0 fire-resistant glass



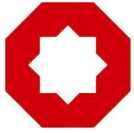
1. Name: Shenzhen airport
2. Max.size: 3585\*1915mm
3. Glass structure: laminated



## ■ Borosilicate 4.0 fire-resistant glass

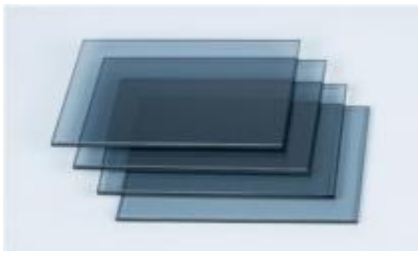
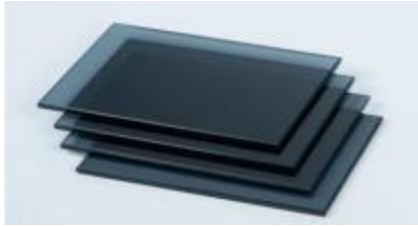

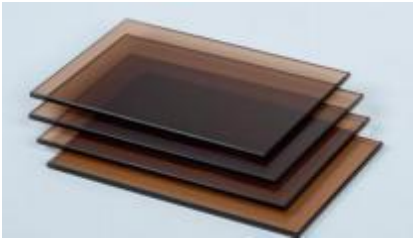
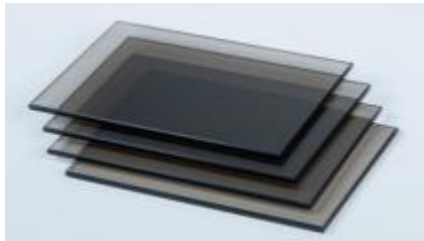
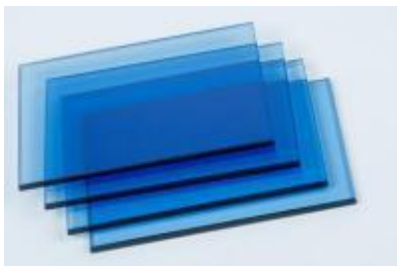


1. Name: Shanghai Center Building
2. Max.size: 2694\*1215mm
3. Glass structure: monolithic

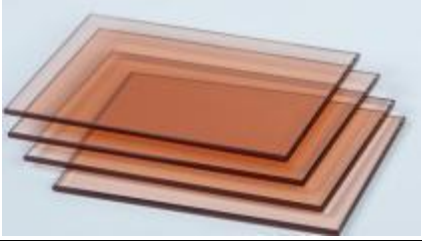
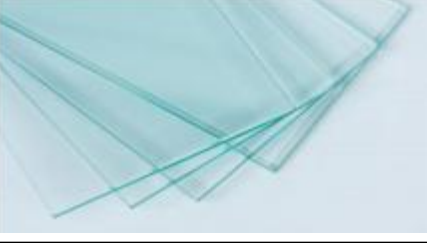



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Sequence Number	Products	Picture	Thickness	Size
1	Euro grey float/reflective glass		4-10mm	3300*2140 3300*2250 3660*2140 3660*2440 3300*2250 3353*2140 2440*1830 3660*2250 2250*1650 3300*2440 ...
2	darkgrey float/reflective glass		4-10mm	
3	Black float/reflective glass		4-12mm	
4	Golden bronze float /reflective glass		4-10mm	
5	Bronze float/reflective glass		4-10mm	
6	Ford blue float/reflective glass		4-10mm	



7	Pink float/reflective glass		4-10mm	
8	Clear float/reflective glass		1.6-15mm	
9	Greenish grey float/reflective glass		3.2-12mm	