

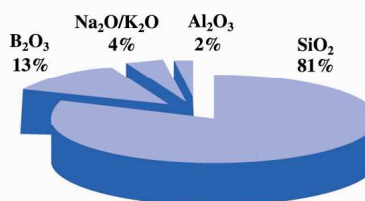
## Borosilicate 3.3 Clear Glass

### Physical Property

No.	Physical Performance	Numerical Value	Unit
1	Coefficient of meamlinear thermal expansion(20℃,300℃)	$3.3 \pm 0.1$	$10^{-6} \text{ k}^{-1}$
2	Transformation temperature	$525 \pm 15$	℃
3	Softening point	$820 \pm 10$	℃
4	Working point	$1260 \pm 20$	℃
5	Density at 20℃	$2.23 \pm 0.02$	$\text{g/cm}^3$
6	Mean thermal conductivity(20℃-100℃)	1.2	$\text{w/m}^2 \text{ k}$
7	Refractive index	0.92	1

### Main Composition

SiO <sub>2</sub>	B <sub>2</sub> O <sub>3</sub>	Na <sub>2</sub> O+K <sub>2</sub> O	Al <sub>2</sub> O <sub>3</sub>
81	13	4	2



### Chemical Property

Hydrolytic resistance at 98℃	ISO719-HGB 1
Hydrolytic resistance at 121℃	ISO720-HGA 1
Acid resistance Class	ISO1776-First Class

# Borosilicate 3.3 Clear Glass



## Glass Tubing

### Size (mm)

OD	Wall Thickness (Thin)	Wall Thickness (Thin)	Wall Thickness (Medium)	Wall Thickness (Heavy)	Wall Thickness (Super Heavy)
*4 ± 0.4	0.5 ± 0.1	0.8 ± 0.1			
*5 ± 0.4	0.5 ± 0.1	0.8 ± 0.1			
6 ± 0.4	0.5 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	
7 ± 0.4	0.5 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	
8 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	
9 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	
10 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	2.5 ± 0.3
11 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	2.5 ± 0.3
12 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	2.5 ± 0.3
13 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	2.5 ± 0.3
14 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	2.5 ± 0.3
15 ± 0.4	0.6 ± 0.1	1 ± 0.1	1.5 ± 0.2	2 ± 0.2	2.5 ± 0.3
16 ± 0.4	0.7 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.2	3 ± 0.3
17 ± 0.4	0.7 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.2	3 ± 0.3
18 ± 0.4	0.7 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.2	3 ± 0.3
19 ± 0.4	0.7 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.2	3 ± 0.3
20 ± 0.5	0.8 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.2	3 ± 0.3
21 ± 0.5	0.8 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.3	3 ± 0.3
22 ± 0.5	0.8 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.3	3 ± 0.3
23 ± 0.5	0.8 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.3	3 ± 0.3
24 ± 0.5	0.8 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.3	3 ± 0.3
25 ± 0.5	0.8 ± 0.1	1.2 ± 0.2	1.8 ± 0.2	2.4 ± 0.3	3 ± 0.3
26 ± 0.5	0.9 ± 0.1	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.2 ± 0.3
27 ± 0.5	0.9 ± 0.1	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.2 ± 0.3
28 ± 0.5	0.9 ± 0.1	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.2 ± 0.3
29 ± 0.5	0.9 ± 0.1	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.2 ± 0.3
30 ± 0.8	1.0 ± 0.2	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.2 ± 0.3
32 ± 0.8	1.0 ± 0.2	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.2 ± 0.3
34 ± 0.8	1.0 ± 0.2	1.4 ± 0.2	2 ± 0.2	2.6 ± 0.3	3.5 ± 0.3
36 ± 0.8	1.0 ± 0.2	1.4 ± 0.2	2 ± 0.2	2.8 ± 0.3	3.5 ± 0.3
38 ± 0.8	1.0 ± 0.2	1.4 ± 0.2	2 ± 0.2	2.8 ± 0.3	3.5 ± 0.3
40 ± 1.0	1.2 ± 0.2	1.6 ± 0.2	2.3 ± 0.2	3.0 ± 0.3	3.8 ± 0.4
42 ± 1.0	1.0 ± 0.2	1.6 ± 0.2	2.3 ± 0.2	3.0 ± 0.3	3.8 ± 0.4
44 ± 1.0	1.2 ± 0.2	1.6 ± 0.2	2.5 ± 0.3	3.0 ± 0.3	3.8 ± 0.4
46 ± 1.0	1.2 ± 0.2	1.6 ± 0.2	2.5 ± 0.3	3.2 ± 0.3	4 ± 0.4
48 ± 1.0	1.2 ± 0.2	1.6 ± 0.2	2.5 ± 0.3	3.2 ± 0.3	4 ± 0.4
50 ± 1.0	1.4 ± 0.2	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.3	4.2 ± 0.4
52 ± 1.0	1.4 ± 0.2	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.3	4.2 ± 0.4
54 ± 1.0	1.4 ± 0.2	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.3	4.2 ± 0.4
56 ± 1.0	1.4 ± 0.2	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.3	4.5 ± 0.5
58 ± 1.0	1.4 ± 0.2	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.3	4.5 ± 0.5
60 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
62 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
64 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
66 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
68 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
70 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
72 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
74 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
76 ± 1.5	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
78 ± 1.6	1.6 ± 0.2	2.2 ± 0.3	3.2 ± 0.4	4.2 ± 0.5	5.3 ± 0.5
80 ± 1.8	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.4	5 ± 0.6	6.3 ± 0.6
82 ± 1.8	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.4	5 ± 0.6	6.3 ± 0.6
84 ± 1.8	1.8 ± 0.2	2.5 ± 0.3	3.5 ± 0.4	5 ± 0.6	6.3 ± 0.6



## Solid Rod

### Size (mm)

Diameter	Deviation	Roundness	Straightness
4	± 0.30	0.30	3‰
6	± 0.30	0.30	3‰
7	± 0.30	0.30	3‰
8	± 0.40	0.40	3‰
9	± 0.40	0.40	3‰
10	± 0.40	0.40	3‰
11	± 0.50	0.50	3‰
12	± 0.50	0.50	3‰
14	± 0.60	0.60	3‰
16	± 0.70	0.70	3‰
18	± 0.80	0.80	3‰
20	± 0.90	0.90	3‰
22	± 1.10	1.10	3‰
24	± 1.20	1.20	3‰
26	± 1.30	1.30	3‰
28	± 1.40	1.40	3‰
30	± 1.50	1.50	3‰
32	± 1.70	1.70	3‰

We also can manufacture customized sizes.

Standard Length: 1200 ± 10(mm)