

CF Alkali Borosilicate Glass High Vacuum Viewing Window

1. Overview:

The CF window is made of 304/316 stainless steel flange after high-temperature solution heat treatment, and then brazed with low-expansion alloy 4J29 Kovar and alkali borosilicate glass at high temperature. It can withstand temperatures up to 200°C. The brazing material is low-temperature glass powder or silver-copper-indium-tin active brazing filler metal. It can be used in normal pressure and 1×10^{-10} ultra-high vacuum environments at $\leq 200^\circ\text{C}$.

Our company's brazed CF windows can be demagnetized according to user requirements to reduce the interference of electromagnetic fields on test signals.

2. Performance Description of Alkali Borosilicate Glass Windows

Project Description	Parameters
Model	CF16-250
Structure	304/316 Stainless steel flange+4J29 Kovar alloy+Alkali borosilicate glass + low-temperature glass powder (or silver-copper-indium-tin active brazing filler metal)
Temperature resistance	$-40^\circ\text{C}/+200^\circ\text{C}$
Ultimate vacuum/leakage rate	1.0×10^{-11} Torr/ 1.0×10^{-11} Pa.m ³ S ⁻¹
Baking (heating/cooling) rate	$\leq 3^\circ\text{C}/\text{min}$
Flange surface treatment	Electropolishing
Kovar alloy	4J29
Brazing materials	low-temperature glass powder (or silver-copper-indium-tin active brazing filler metal)
Glass materials	Alkali borosilicate glass
Glass transmission wavelength (nm)	360-2500
Transmittance T=%	365nm $T \geq 67\%$ 380-1100nm $T \geq 85\%$
Glass-face PV	PV 1/2--1/20
Glass surface smoothness	80/50、60/40、20/10
Non-magnetic treatment of metal parts	Demagnetization processing according to customer requirements.

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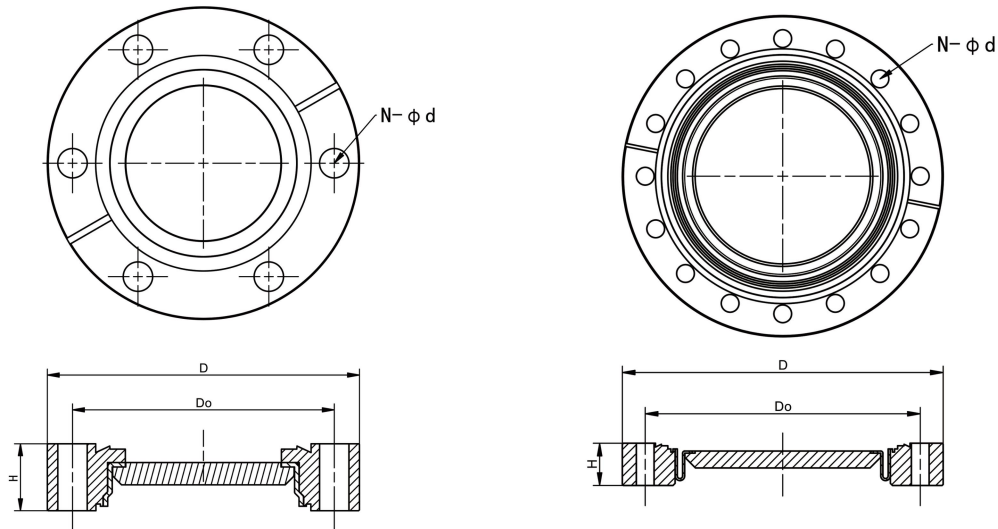
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3. CF Model Data Sheet

Number	Specification	Glass size	glass material	Flange outer diameter	Number of bolt holes * diameter	center distance	Flange thickness
No.	Size	Glass	Material	D	N-Φd	Do	H
1	CF16	15.6*5	Alkali borosilicate glass	34	6*φ4.3	27	12
2	CF20	23.6*5	Alkali borosilicate glass	54	6*φ6.6	41.3	15
3	CF25	30.6*5	Alkali borosilicate glass	60	6*φ6.6	47	15
4	CF40 (CF35)	40.6*5	Alkali borosilicate glass	70	6*φ6.6	58.7	15
5	CF50	51.6*5	Alkali borosilicate glass	86	8*φ8.4	72.4	20
6	CF63	70.6*5	Alkali borosilicate glass	114	8*φ8.4	92.2	20
7	CF80	85.5*6	Alkali borosilicate glass	130	16*φ8.4	110	20
8	CF100	92.6*6	Alkali borosilicate glass	152	16*φ8.4	130.3	20
9	CF160	144.6*8	Alkali borosilicate glass	202	20*φ8.4	181	22
10	CF200	190.6*10	Alkali borosilicate glass	253	24*φ8.4	231.8	24.5
11	CF250	246*12	Alkali borosilicate glass	305	32*φ8.4	284	26

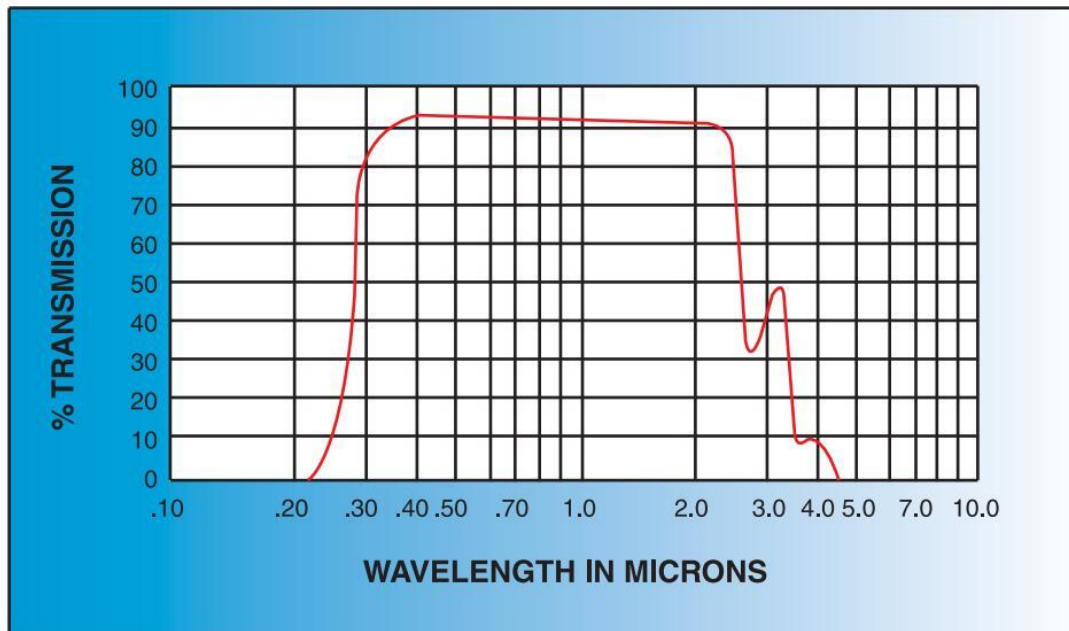
4. CF internal welding style



CF16-CF80 window structure diagram:

CF100-CF250 window structure diagram

5. Transmission curve of alkali borosilicate glass



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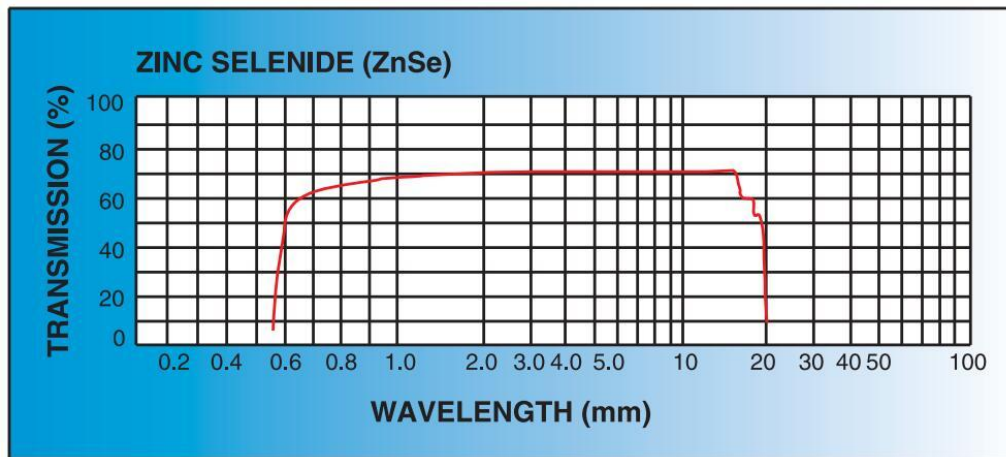
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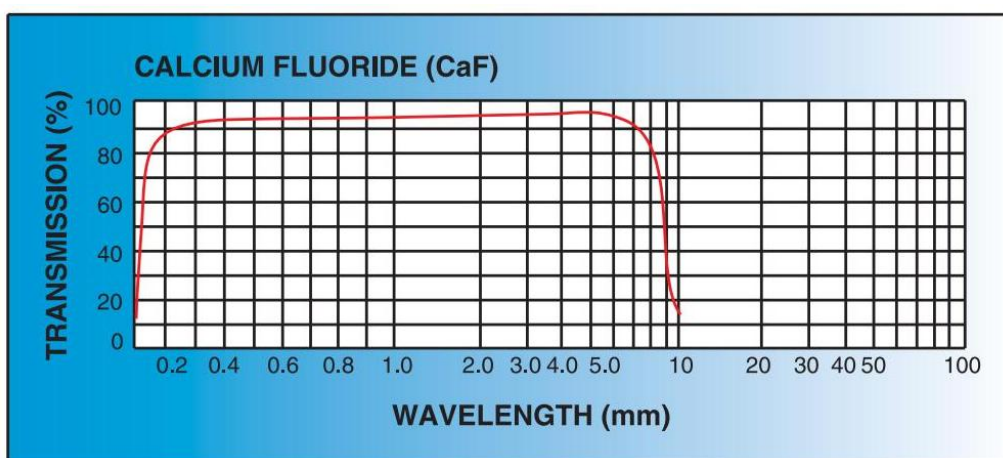
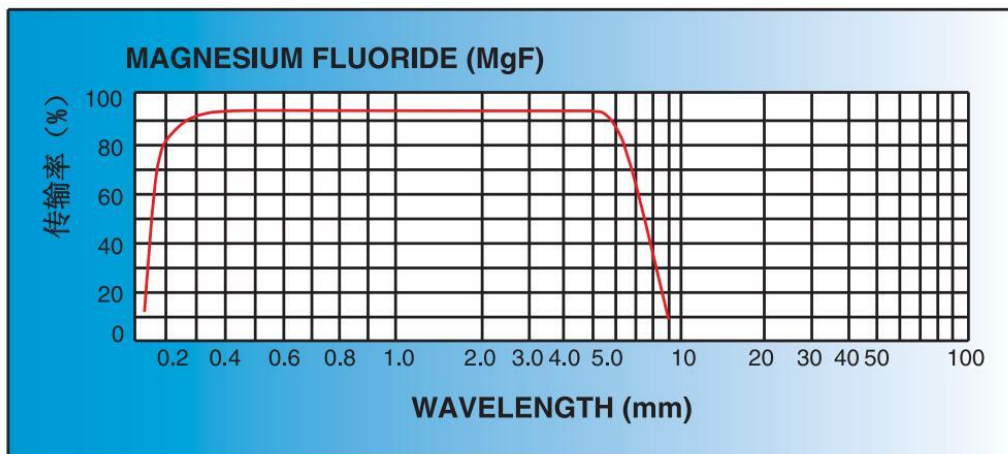
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Special Warnings:

1. The viewing window should be sealed with a fully annealed copper gasket to reduce induced strain.
2. We cannot guarantee that the borosilicate glass viewing window is unaffected by strain or polarization effects.
3. If the mounting port length exceeds the recommended length, the listed viewing angle will be affected.
4. If the process involves material deposition, we strongly recommend using a window shutter, as some deposits can cause permanent damage to certain windows. Although borosilicate glass has reasonable thermal conductivity, for safety reasons, we strongly recommend against exposing the viewing window to temperature changes exceeding 2-3°C per minute and to direct thermal radiation. To limit the thermal gradient when heating the window, we recommend covering the observation area and flange with multiple layers of aluminum foil as a reflective shield.

6. Transmission curves of other optical glasses





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