ANCORP

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UHV VIEWPORTS
VACUUM OPTICS

- Sapphire
- Fused Silica Quartz
- Zinc Selenide ZnSe
- Calcium Fluoride CaF2
- 7056 Borosilicate Glass
- Magnesium Fluoride MgF2

MADE IN USA

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Viewports Introduction

Viewports, also known as windows or sight glasses, are commonly used to observe or illuminate processes inside of a vacuum chamber. In optical applications, viewports are used to transmit electromagnetic radiation into or out of a vacuum chamber. Viewport selection is typically based on requirements for flange type, transmission range, thermal stability, durability, and other optical and physical properties of the window material.

ANCORP offers a wide selection of vacuum viewports with borosilicate glass, quartz, fused silica, sapphire, zinc selenide, magnesium fluoride, and calcium fluoride windows and designs rated for high and ultra-high vacuum (UHV) applications. Detailed specifications about each glass type can be found on the next two pages.

WINDOW OPTIONS

General Purpose Viewing:
7056 BOROSILICATE GLASS

Precision Optics and Lasers:
FUSED SILICA (QUARTZ) GLASS

Harsh Environments and Heat:
SAPPHIRE

Infrared Applications:
ZINC SELENIDE (ZnSe)

Resistant to Physical Stress and Thermal Shock:
MAGNESIUM FLUORIDE (MGF2)

Chemical and Laser Resistant:
CALCIUM FLUORIDE (CaF2)

7056 BOROSILICATE GLASS offers a wide, distortion-free viewing area and is best suited for general purposes such as viewing inside a chamber. Borosilicate glass has a low coefficient of thermal expansion and has high transmission in the visible range.

Borosilicate glass viewports are available with zero-length profile ConFlat (CF), ISO-QF (quick flange, KF, NW), and ISO-LF (large flange, ISO-K) flanges. The CF viewports are bakeable to 400˚C.

CALCIUM FLUORIDE (CAF2)

Calcium Fluoride is used optically as windows, prisms and lenses transmitting from the vacuum ultraviolet (VUV) into the infrared. It is a physically and chemically stable optical material with good water and chemical resistance. Two qualities are manufactured, one for Visible and Infrared applications and the other specifically for Ultraviolet applications.

For Ultraviolet applications, these are grown from chemically pure powder. Bake-Out Ramp Rate: 20°C per Minute. Calcium fluoride (CaF2) has a wide transmission range from UV to IR and has good chemical and laser damage resistance.

FUSED SILICA

Fused Silica Viewports are available with diameters up to 8 inches and include zero length designs for low profile applications. These are all bakeable to 200˚C. Several standard grades of Fused Silica windows are offered and have excellent transmission from 193nm to 2 microns.

Fused silica has high transmission in the ultraviolet (UV) range and has excellent thermal and optical properties that makes it ideal for use in precision optics and laser applications.

LASER OPTICS FUSED SILICA: Viewports pair a specific type of Fused Silica with a precise AR V-Coating specific to your laser wavelength. These viewports are bakeable to 200˚C. There are four standard wavelengths: 193nm, 248nm, 780nm, and 1064nm. If you need a wavelength, please contact us and we will assist you to get the best performing viewport for your application.

RE-ENTRANT VIEWPORTS: come with view diameters of up to 2.7 inches, and are bakeable to 200˚C. All flange types are ConFlat, and all glass is made from fused silica. The stainless steel re-entrant tube is customizable in length.

MAGNESIUM FLUORIDE (MGF2)

transmits across a wide range from the vacuum ultraviolet (VUV) to mid-IR and is resistant to physical stress and thermal shock. acuum-Optics w/ 157nm Grade Magnesium Fluoride Window, Bakeable to 200 degrees C, Stainless Steel Housing & Flange, UHV Compatible.

SAPPHIRE

UV Sapphire viewports come with view diameters up to 3 inches, and are bakeable to 450˚C. Single crystal, sapphire windows come with orientation either 0˚ or 90˚ and provide transmission from 250nm to 4 microns. Sapphire offers a broad transmission range from UV to near infrared (NIR) and is excellent for use in harsh environments or high temperatures.

ZINC SELENIDE (ZNSE)

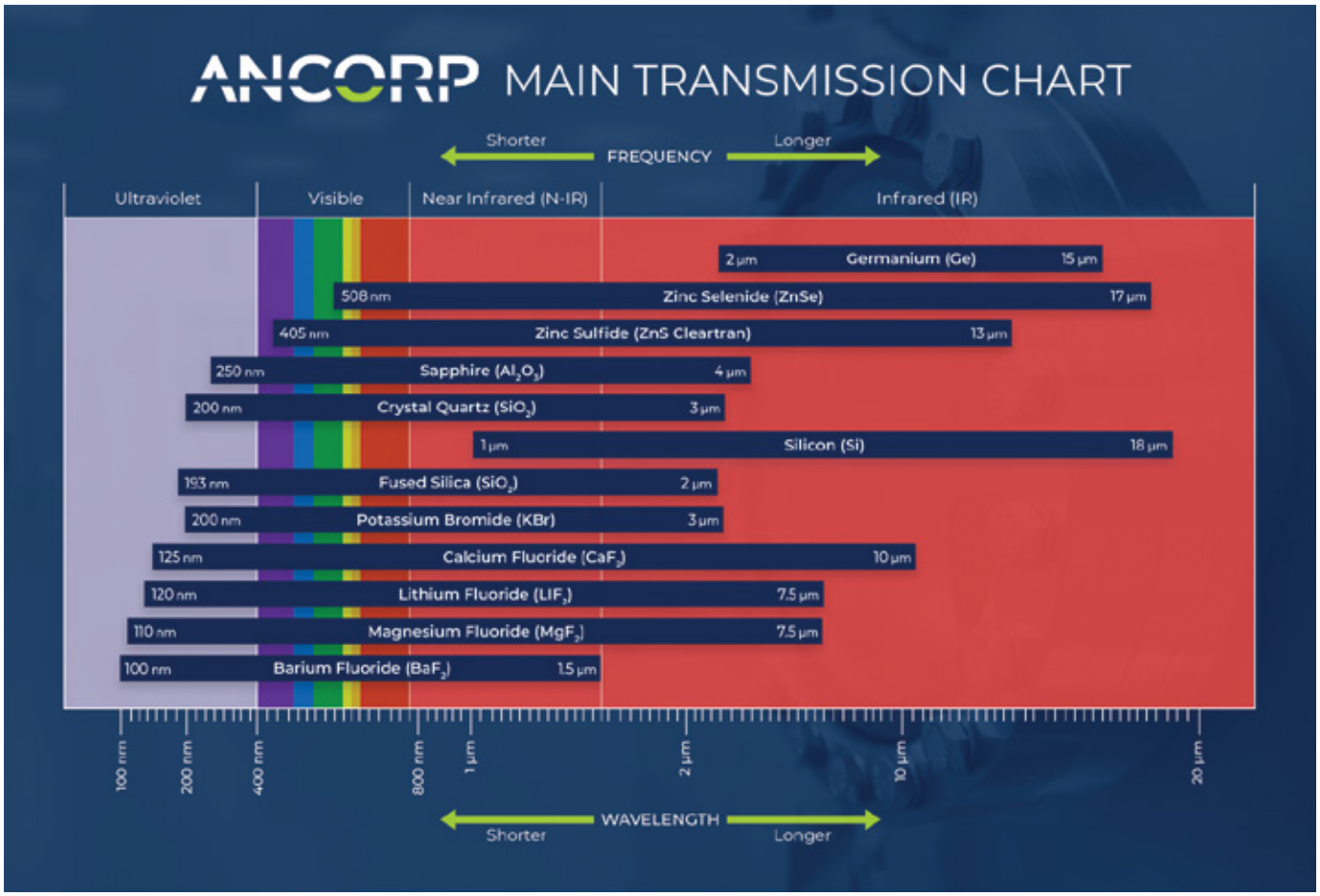
is used for Infrared windows, lenses, mirrors and prisms between 0.5 microns and 22 microns. ZnSe is a widely used in the Forward Looking IR Systems (FLIR). Bake-Out Ramp Rate: 20°C per Minute

EXTENDED RANGE UHV: Ultra-high Vacuum (UHV) viewports use materials for windows such as Zinc Selenide, Magnesium Fluoride, and Calcium Fluoride. We offer metal sealed (CF Flange), extended-range optics in 1 inch and 2 inch view diameters with a combined range of transmission from 120nm to 20 microns. Coatings which enhance the transmission performance of many of these viewports are offered as standard options.

BBAR COATED: BBAR Coated Viewports come with view diameters of up to 2.69 inches. Viewports are made from a BBAR Coated HPFS 7980 Fused Silica material. Viewports or vacuum windows can be specified with either 2.75” CF or 4.5 CF flanges.

NON-MAGNETIC: Our non-magnetic viewport selection includes those manufactured with non-magnetic Stainless Steel or All-Titanium. All connections to the vacuum system are ConFlat for the best seal. Choices range from 200˚C to 450˚C for bakeout temperatures, depending on glass type and coating (Sapphire or Fused Silica).

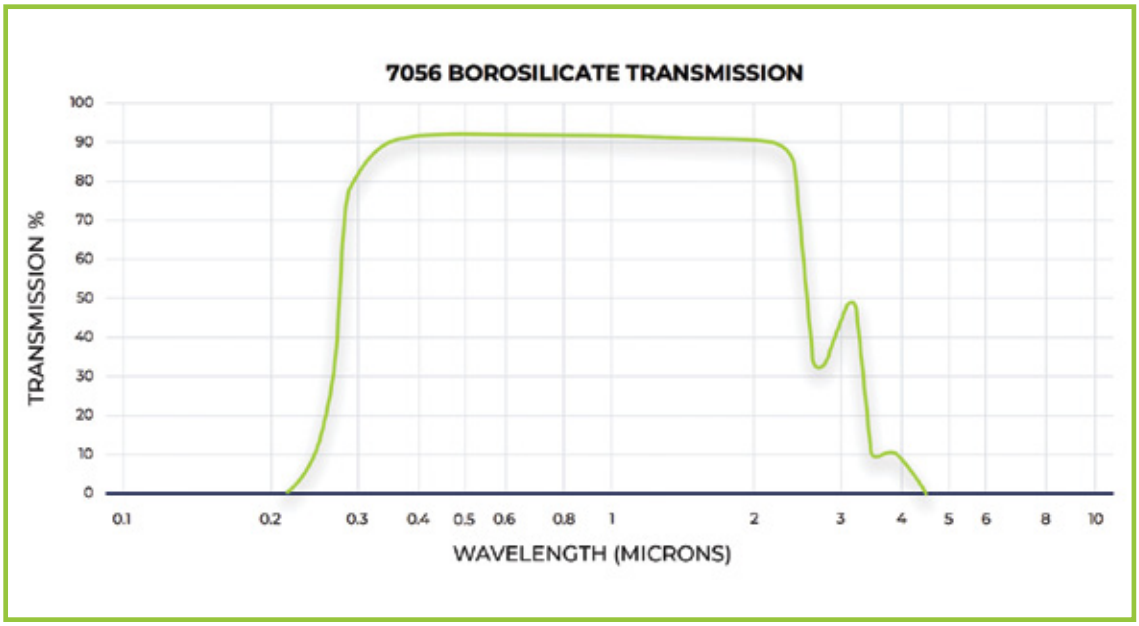
OVER-PRESSURE: Over-pressure protected UHV viewports are tested at 150% of the rated pressure. The maximum overpressure protection offered is 200 psi for ConFlat viewports. Sapphire window viewports are designed with more than 10x safety factor and are tested for up to 300 psi.


ANCORP MAIN TRANSMISSION CHART
Shorter
FREQUENCY
Longer
Ultraviolet
Visible
Near Infrared (N-IR)
Infrared (IR)
2 µm
Germanium (Ge)
15 µm
508 nm
Zinc Selenide (ZnSe)
17 µm
405 nm
Zinc Sulfide (ZnS Cleartran)
13 µm
250 nm
Sapphire (Al_2O_3)
4 µm
200 nm
Crystal Quartz (SiO_2)
3 µm
1 µm
Silicon (Si)
18 µm
193 nm
Fused Silica (SiO_2)
2 µm
200 nm
Potassium Bromide (KBr)
3 µm
125 nm
Calcium Fluoride (CaF_2)
10 µm
120 nm
Lithium Fluoride (LiF_2)
7.5 µm
110 nm
Magnesium Fluoride (MgF_2)
7.5 µm
100 nm
Barium Fluoride (BaF_2)
1.5 µm
100 nm
200 nm
400 nm
800 nm
1 µm
2 µm
10 µm
20 µm
WAVELENGTH
Shorter
Longer

7056 Borosilicate Glass Viewports

ANCORP's 7056 borosilicate glass viewports are excellent general-purpose windows for observation within a vacuum chamber. Borosilicate glass has a low coefficient of thermal expansion and has high transmission in the visible range.

Borosilicate glass viewports are available with zero-length profile ConFlat (CF), ISO-QF (quick flange, KF, NW), and ISO-LF (large flange, ISO-K) flanges.

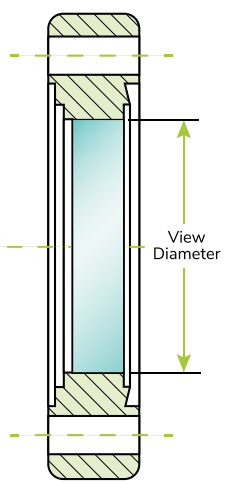


CF Zero Length Viewport

Features:

- Vacuum rating of 1×10^{-10} torr
- Temperature maximum of 400°C
- Temperature minimum of -100C
- ConFlat flange
- Flange material is 304 stainless steel
- Viewing window is 7056 borosilicate glass
- Transition material is Kovar
- Avoid thermal changes in excess of 10°C/minute
- Do not expose to pressure above 1 atmosphere

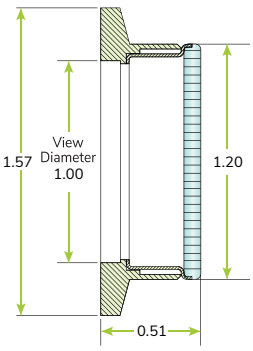
PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9110025	CF133-ZLVP-0.625	1.33	0.63
9110026	CF212-ZLVP-0.625	2.12	0.63
9110027	CF275-ZLVP-1.500	2.75	1.50
9110028	CF338-ZLVP-1.500	3.38	1.50
9110029	CF450-ZLVP-2.672	4.50	2.67
9110030	CF462-ZLVP-2.672	4.62	2.67
9110031	CF600-ZLVP-3.980	6.00	3.98
9110032	CF675-ZLVP-3.980	6.75	3.98
9110033	CF800-ZLVP-5.520	8.00	5.52
9110034	CF1000-ZLVP-5.520	10.00	5.52



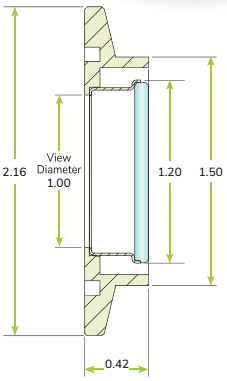
ISO-QF Zero Length Viewport

Features:
- Vacuum rating of 1×10^{-8} torr
- Temperature maximum: 200°C
- Temperature minimum of -100C
- ISO-QF (KF, NW) flange
- Body is manufactured from 304 stainless steel
- Viewing window is manufactured from 7056 borosilicate glass
- Transition material is Kovar
- Avoid thermal changes in excess of 10°C/min
- Do not expose to pressure above 1 atmosphere

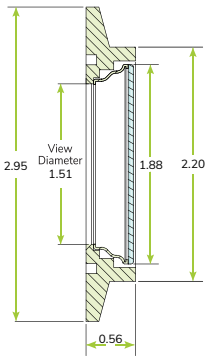
PART #	REFERENCE ID	VIEW DIAMETER
9110002	QF25-ZLVP-1.000	1.0
9110000	QF40-ZLVP-1.000	1.0
9110001	QF50-ZLVP-1.500	1.5



QF25
Borosilicate Glass Viewport



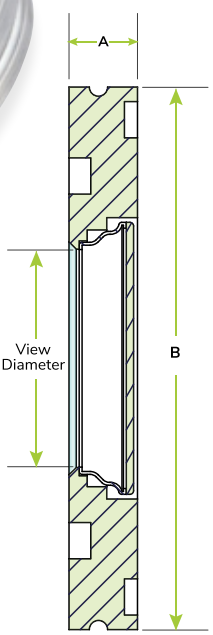
QF40
Borosilicate Glass Viewport



QF50
Borosilicate Glass Viewport

ISO-LF Zero Length Viewports

Features:
- Vacuum rating of 1×10^{-8} torr
- Temperature maximum of 150°C
- Temperature minimum of -100C
- ISO-LF (ISO-K) flange
- Body is manufactured from 304 stainless steel
- Viewing window material is 7056 borosilicate glass
- Transition material is Kovar
- Avoid thermal changes in excess of 10°C/minute
- Do not expose to pressure above 1 atmosphere



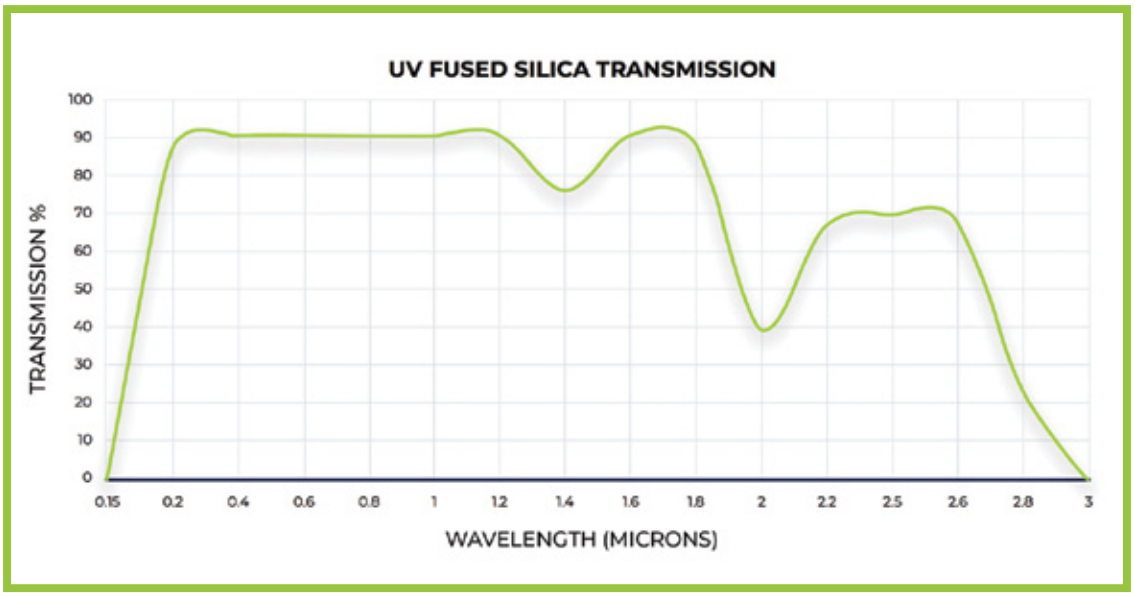
PART #	REFERENCE ID	A	B	VIEW DIAMETER
9110005	LF63-ZLVP-1.500	0.472	3.74	1.50
9110006	LF80-ZLVP-1.500	0.472	4.33	1.50
9110007	LF100-ZLVP-2.67	0.472	5.12	2.67
9110008	LF160-ZLVP-4.00	0.472	7.09	3.98
9110009	LF200-ZLVP-5.52	0.472	9.45	5.52
9110010	LF250-ZVP	0.472	10.00	6.00

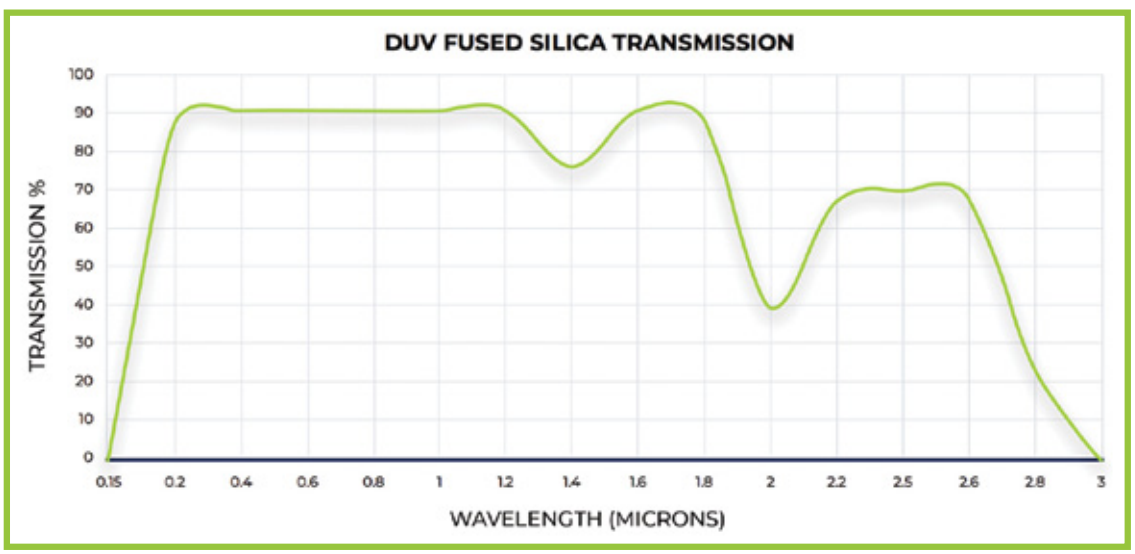
Fused Silica (Quartz) Viewports

ANCORP offers fused silica viewports in both ultraviolet (UV) grade and deep ultraviolet (DUV) laser-grade viewing window materials. Fused silica provides better transmission in the UV range compared to standard borosilicate glass. Fused silica is a type of ultra-pure non-crystalline synthetic quartz with great optical and thermal properties. It is colorless, resistant to abrasion and thermal shock, non-birefringent, has high working temperatures, and has a low coefficient of thermal expansion.

Zero-length UV grade fused silica viewports are available in ConFlat (CF), and ISO-QF (Quick Flange, KF, NW) flanges for high vacuum and ultra-high vacuum (UHV) applications.

Zero-length DUV grade fused silica viewports are available in a variety of ConFlat (CF) flange sizes for ultra-high vacuum (UHV) performance. Single AR and broadband AR anti-reflective coatings are available for minimized reflectance.





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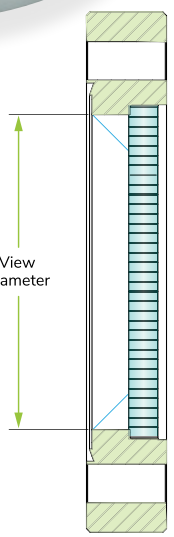
ConFlat (CF) UV Grade Fused Silica Viewport

Description:
- UV Grade Fused Silica viewport
- Zero-length profile
- ConFlat flange
- Bakeable to 200°C
- Non-magnetic materials
- Excellent transmission for UV to 250nm
- UHV compatible

Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN

Specifications:
- Flange material:
  - 316L stainless steel (1.33")
  - 304 stainless steel (2.75" to 8.00")
- Window material: Corning HPFS 7980 Fused Silica or equivalent
- TWD < 10 λ @ 632nm (peak to valley)
- Parallelism < 30 arc minutes
- Surface finish: 40/20 scratch-dig
- Thermal range: -100°C to 200°C
- Bake-out ramp rate: 20°C per minute
- Homogeneity grade: F
- Inclusion class: 2
- Leak rate < 1 X 10^{-9} atm-cc/sec He



PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118029	CF133-ZLVP-Q-UV-0.63	1.33	0.63
9118030	CF275-ZLVP-Q-UV-1.40	2.75	1.40
9118033	CF338-ZLVP-Q-UV-1.40	3.37	1.40
9118032	CF450-ZLVP-Q-UV-2.69	4.50	2.69
9118031	CF600-ZLVP-Q-UV-3.88	6.00	3.88
9110034	CF800-ZLVP-Q-UV-5.38	8.00	5.38

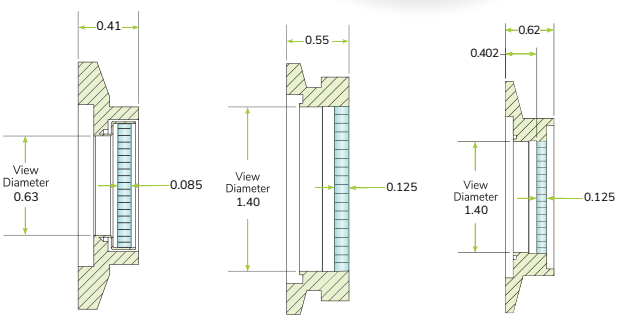
ISO-QF (KF) UV Grade Fused Silica Viewport

Features:
- Vacuum rating of 1×10^{-8} torr
- Temperature max of 200°C
- ISO-QF (KF, NW) flange
- Body is manufactured from 304 stainless steel
- Viewing window is manufactured from UV grade fused silica
- Transition material is Kovar
- Avoid thermal changes in excess of 10°C/minute
- Do not expose to pressure above 1 atmosphere

Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN

Specifications:
- Window material: Corning HPFS 7980 Fused Silica or equivalent
- TWD < 10 λ @ 632nm (peak to valley)
- Parallelism < 30 arc minutes
- Surface finish: 40/20 scratch-dig
- Thermal range: -100°C to 200°C
- Homogeneity grade: F
- Inclusion class: 2
- Leak rate < 1 X 10^{-9} atm-cc/sec He

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9110012	QF25-ZLVP-Q-UV-0.63	1.57	0.63
9110013	QF40-ZLVP-Q-UV-1.40	2.16	1.40
9110014	QF50-ZLVP-Q-UV-1.40	2.95	1.40



QF25 Fused Silica Quartz Viewport

QF40 Fused Silica Quartz Viewport

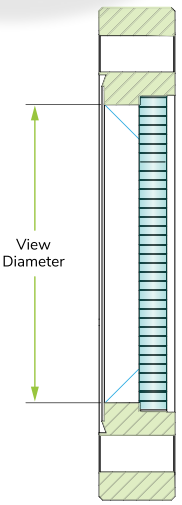
QF50 Fused Silica Quartz Viewport

ConFlat (CF) DUV Grade Fused Silica Viewport

Description:
- DUV grade (laser) fused silica window
- Zero-length profile
- ConFlat flange
- Laser grade fused silica window
- Bakeable to 200°C
- Non-magnetic materials
- Excellent transmission for UV to 248nm
- UHV compatible

Options:
Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN
- IR Grade (Low OH)
- EUV Grade (Excimer)

Specifications:
- Flange material:
  - 316L stainless steel (1.33")
  - 304 stainless steel (2.75" to 6.00")
- Window material: Corning HPFS 7980 fused silica or equivalent
- TWD < λ/4 @ 632nm (peak to valley)
- Parallelism:
  < 30 arc seconds (1.33")
  < 10 arc seconds (2.75" to 6.00")
- Surface finish: 20/10 scratch-dig
- Thermal range: -100°C to 200°C
- Bake-out ramp rate: 20°C per minute
- Homogeneity grade: A
- Inclusion class: 0
- Leak rate < 1 X 10^{-9} atm-cc/sec He



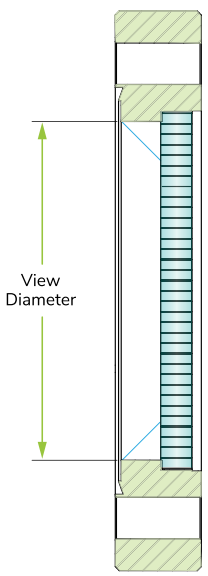
PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118040	CF133-ZLVP-Q-DUV-0.63	1.33	0.63
9118041	CF275-ZLVP-Q-DUV-1.40	2.75	1.40
9118042	CF450-ZLVP-Q-DUV-2.69	4.50	2.69
9118043	CF600-ZLVP-Q-DUV-3.88	6.00	3.88

ConFlat (CF) DUV Grade Fused Silica Viewport, Single AR Coating

Description:
- DUV grade (laser) fused silica window
- Single AR coating
- Anti-reflective coating for minimized reflectance
- Bakeable to 200°C
- Non-magnetic materials
- Zero-length profile
- UHV compatible

Specifications:
- Flange Material: 304 stainless steel
- Window Material: Corning HPFS 7980 Fused Silica or equivalent
- TWD < λ/4 @ 632nm (peak to valley)
- Parallelism < 10 arc seconds
- Surface Finish: 20/10 scratch-dig
- Thermal Range: -100˚C to 200˚C
- Bake-Out Ramp Rate: 20˚C per minute
- Homogenity Grade: A
- Inclusion Class: 0
- Leak rate < 1 X 10^{-9} atm-cc/sec He

- AR coated both sides:
  - 780nm, R < 0.25% per surface
  - 1064nm, R < 0.25% per surface
- Laser damage threshold: 10 J/cm² for 10 ns pulse



PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118050	CF275-ZLVP-Q-DUV-SAR-1064-1.40	2.75	1.40
9118051	CF450-ZLVP-Q-DUV-SAR-1064-2.70	4.50	2.70
9118052	CF275-ZLVP-Q-DUV-SAR-780-1.40	2.75	1.40
9118053	CF450-ZLVP-Q-DUV-SAR-780-2.70	4.50	2.70

Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN
- EUV Grade

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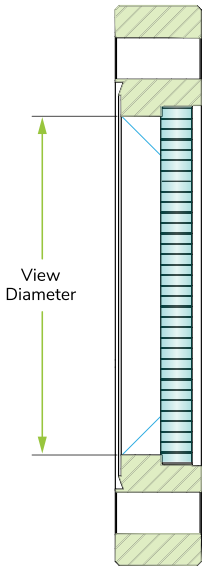
ConFlat (CF) DUV Grade Fused Silica Viewport, Broadband AR Coating

Description:
- DUV grade (laser) fused silica window
- Broadband anti-reflective coating for optimum performance
- Bakeable to 200°C
- Non-magnetic materials
- Zero-length profile
- UHV compatible



Specifications:
- Flange Material: 304 stainless steel
- Window Material: Corning HPFS 7980 Fused Silica or equivalent
- TWD < λ /4 @ 632nm (peak to valley)
- Parallelism < 10 arc seconds
- Surface Finish: 20/10 scratch-dig
- Thermal Range: -100˚C to 200˚C
- Bake-Out Ramp Rate: 20˚C per minute
- Homogenity Grade: A
- Inclusion Class: 0

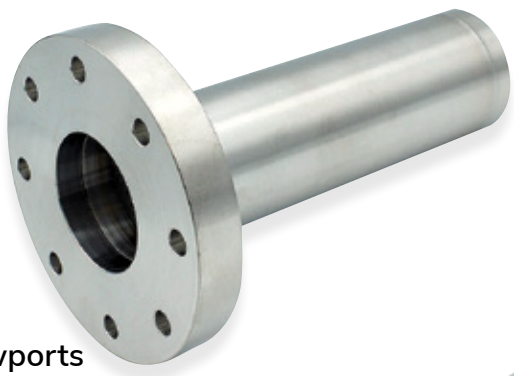
- BBAR coated both sides:
  - 425-760nm, R avg. < 0.5% per surface
  - 550-1100nm, R avg. < 0.5% per surface
- Laser damage threshold: 10 J/cm^2 for 10 ns pulse
- Leak rate < 1 X 10^{-9} atm-cc/sec He

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118054	CF275-ZLVP-Q-DUV-BBAR-425-760-1.40	2.75	1.40
9118055	CF450-ZLVP-Q-DUV-BBAR-425-760-2.69	4.50	2.69
9118056	CF275-ZLVP-Q-DUV-BBAR-550-1100-1.40	2.75	1.40
9118057	CF450-ZLVP-Q-DUV-BBAR-550-1100-2.69	4.50	2.69

Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN

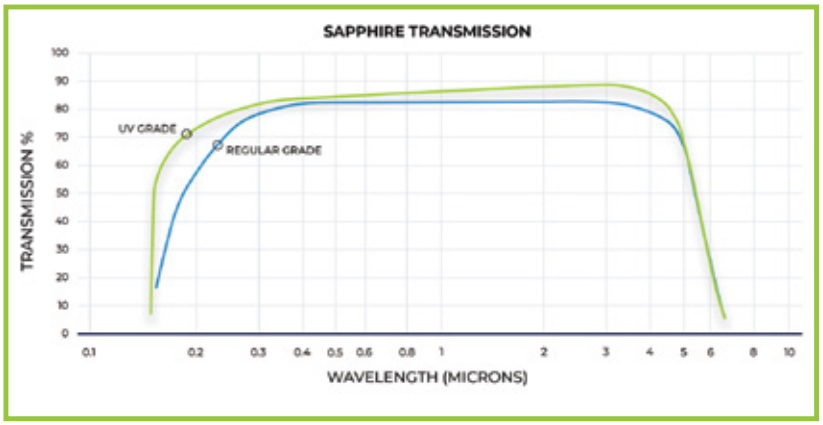
Fused Silica Viewport Available Options - Call for Price and Availability

- All Titanium Viewports
- Weld Adapters
- Re-entrant Design
- ISO Flanges
- AR Coating for 1550nm
- AR Coating for 808nm
- Dual AR Coatings
- EUV Grade (Excimer) Viewports
- IR Grade (Low OH) Viewports
- Geochronological Viewports
- Custom viewports and coatings



Sapphire Viewports

Sapphire has a broad transmission range from UV to near-infrared (NIR) and is excellent in harsh environments and high temperatures. Sapphire is durable, scratch resistant, birefringent, and has a low coefficient of thermal expansion.



ANCORP offers zero-length UV grade sapphire viewports in ConFlat (CF) and ISO-QF (Quick flange, KF, NW) flange sizes for use in high and ultra-high vacuum (UHV) applications.

ConFlat (CF) UV Grade Sapphire Viewport

Description:
- Single crystal UV grade sapphire window
- ConFlat (CF) Flange
- Bakeable to 450˚C
- Temperature minimum of -100C
- Excellent Transmission from 250nm to 5 microns
- UHV Compatible

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118128	CF275-ZLVP-S-UV-0.94	2.75	0.94
9118127	338-ZVP-S-0.943	3.38	0.94
9118130	CF450-ZLVP-S-UV-1.94	4.50	1.94
9118132	CF800-ZLVP-S-2.95	8.00	1.94

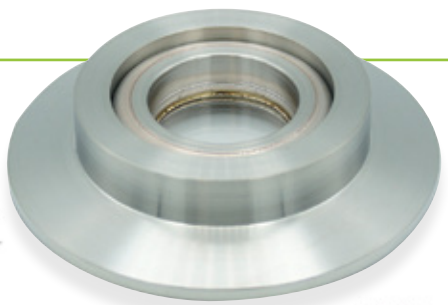
Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN

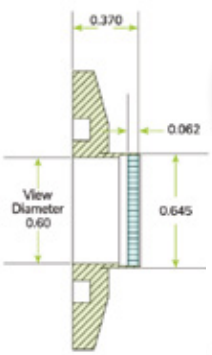
ISO-QF (KF) UV Grade Sapphire Viewport

Description:
- ISO-QF (KF, NW) flange
- Single crystal UV grade sapphire window
- Bakeable to 450°C
- Excellent transmission from 250nm to 5 microns
- UHV compatible

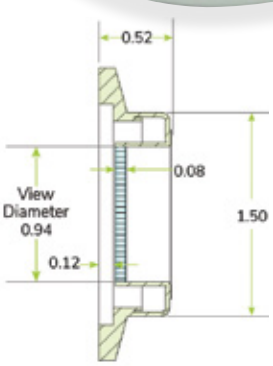
Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN

Specifications:
- Window material: UV grade sapphire
- TWD < 8 λ @ 632nm (peak to valley)
- Parallelism < 3 arc minutes
- Surface finish: 50/20 scratch-dig
- Thermal range: -100°C to 450°C
- Leak rate < 1 X 10-9 atm-cc/sec He

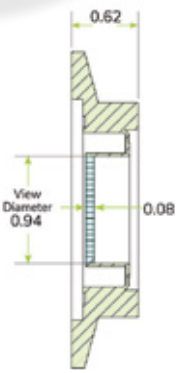




QF25
Sapphire Viewport



QF40
Sapphire Viewport



QF50
Sapphire Viewport

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9110059	QF25-ZLVP-S-UV-0.60	1.57	0.60
9110060	QF40-ZLVP-S-UV-0.94	2.16	0.94
9110061	QF50-ZLVP-S-UV-0.94	2.95	0.94

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Zinc Selenide (ZnSe) Viewports

Zinc Selenide (ZnSe) viewports are ideal for transmission in the near infrared (NIR) to IR range. Zinc selenide viewports are commonly used in IR applications such as thermal imaging and FLIR cameras. Zinc selenide has low absorption and high resistance to thermal shock.

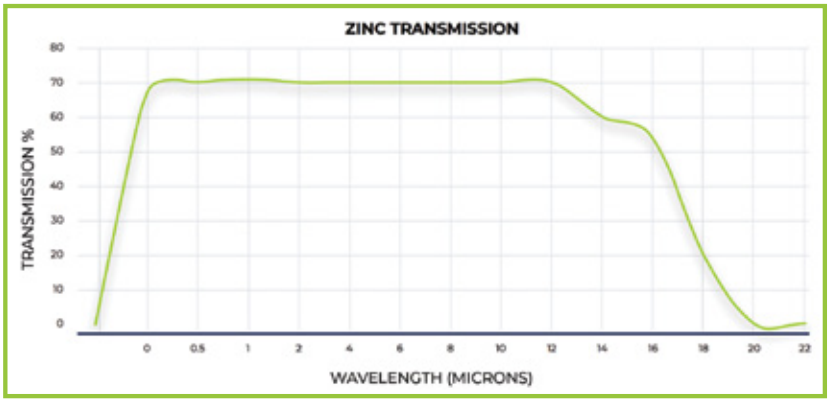
ANCORP offers both anti-reflective (AR) coated and uncoated zero-length zinc selenide viewports with zero-length ConFlat (CF) flanges for use in ultra-high vacuum (UHV) applications.

Specifications:

- Flange Material: 304 stainless steel
- Window Material: Zinc Selenide (ZnSe)
- TWD <1 λ @ 632nm (peak to valley)
- Parallelism < 3 arc min.
- Surface Finish: 40/20 scratch-dig
- Thermal Range: -100˚C to 200˚C
- Bake-Out Ramp Rate: 20˚C per minute
- Leak Rate: < $1x10^{-9}$ atm-cc/s He

Options: Call for price & availability

- Custom window sizes
- Alternative Materials: Titanium, 316LN
- Custom Coatings
- QF (KF) Flanges

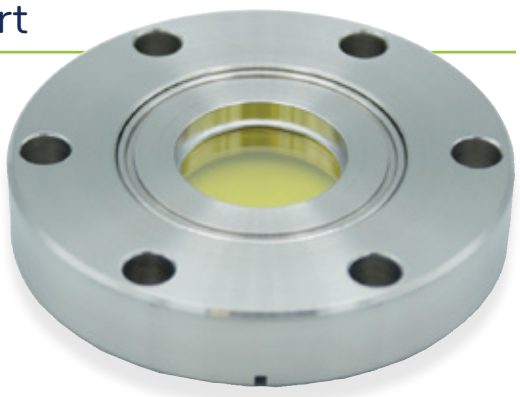


ConFlat (CF) Zinc Selenide (ZnSe) Viewport

Description:

- Zinc selenide (ZnSe) viewport
- UHV rated vacuum optics
- 0.90" view diameter
- 2.75" ConFlat flange
- Bakeable to 200°C
- Vacuum-optics with zinc selenide window
- Stainless steel housing and flange
- UHV compatible

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118060	CF275-ZLVP-ZNSE-0.90	2.75	0.90

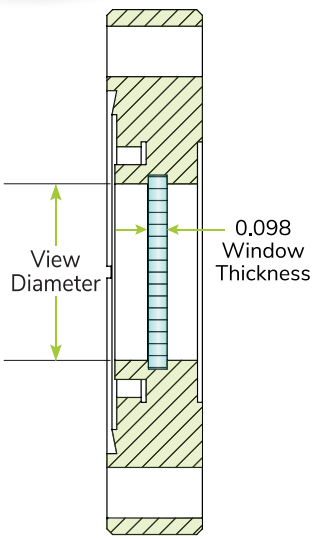


ConFlat (CF) Zinc Selenide (ZnSe) Viewport, Broadband AR Coating

Description:

- Zinc selenide (ZnSe) viewport
- Broadband AR coating @ 8-12 microns
- UHV rated vacuum optics
- 0.90" view diameter
- 2.75" ConFlat flange
- Vacuum-optics w/ zinc selenide window
- Anti-reflective coating for optimum performance
- Bakeable to 200°C
- UHV compatible
- Stainless steel housing and flange

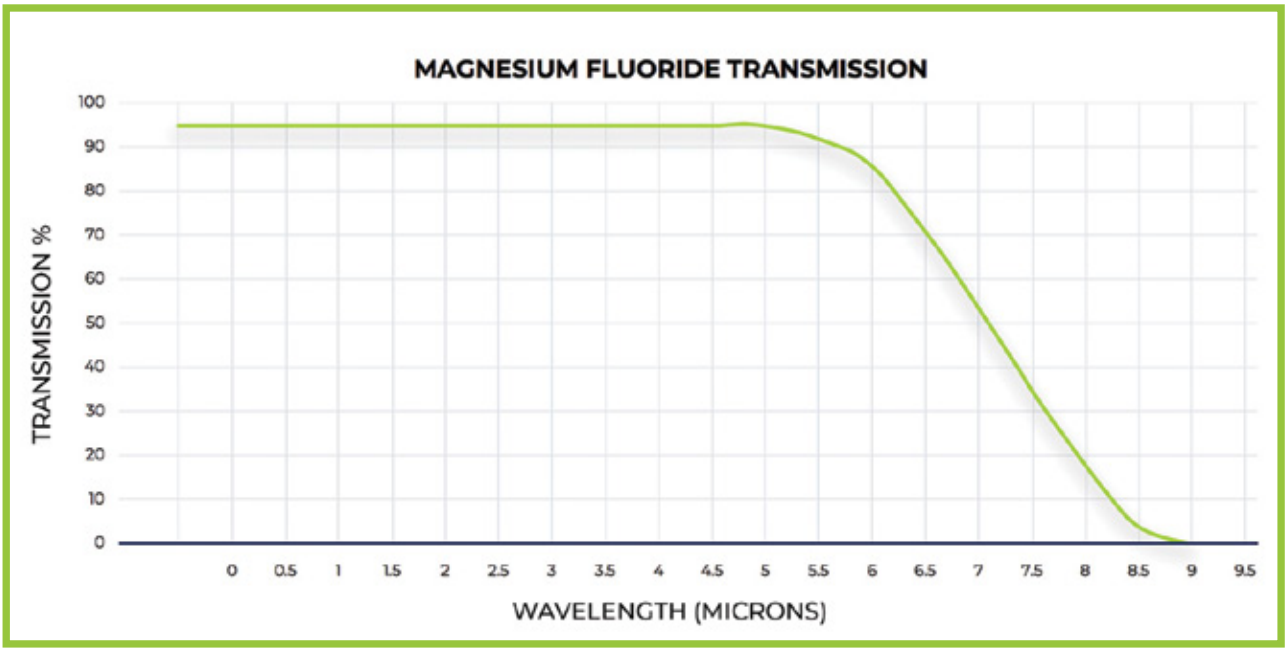
PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118061	CF275-ZLVP-ZNSE-BBAR-0.90	2.75	0.90



Magnesium Fluoride (MgF2) Viewports

Magnesium Fluoride (MgF2) viewports offer an extended range of transmission from the vacuum ultraviolet (VUV) region into the mid-IR. Magnesium fluoride is birefringent, very durable, and resistant to physical stress and thermal shock.

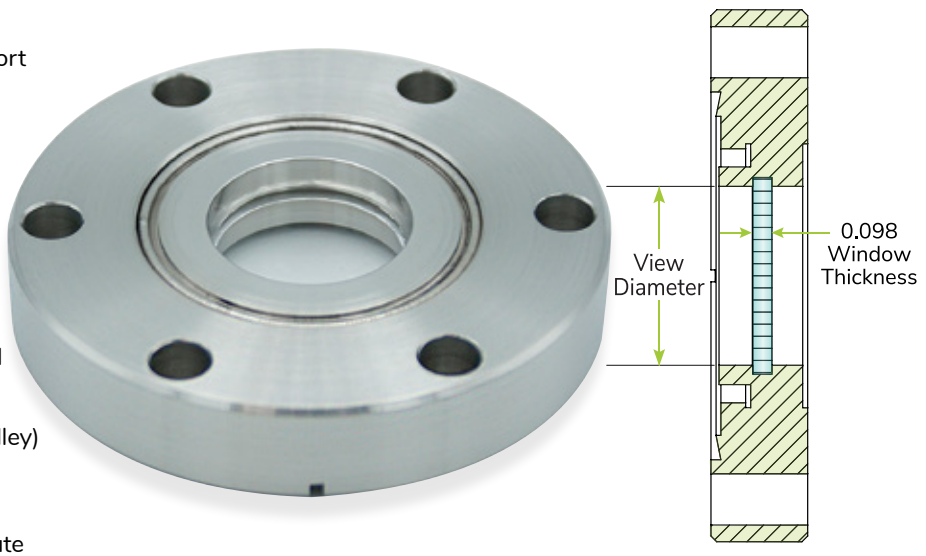
ANCORP offers zero-length magnesium fluoride viewports with ConFlat (CF) flanges for use in ultra-high vacuum (UHV) environments.



ConFlat (CF) Magnesium Fluoride (MgF2) Viewport

Description:

- Magnesium fluoride (MgF2) viewport
- UHV rated vacuum optics
- 2.75" ConFlat flange
- 0.90" view diameter
- Vacuum-optics with magnesium fluoride window
- Bakeable to 200°C
- Stainless steel housing and flange
- UHV compatible



Specifications:

- Flange material: 304 stainless steel
- Window material: Single crystal, 0° Magnesium Fluoride
- TWD < $\lambda/4$ @ 632nm (peak to valley)
- Parallelism: < 3 arc minutes
- Surface finish: 20/10 scratch-dig
- Thermal range: -100°C to 200°C
- Bake-out ramp rate: 20°C per minute
- Leak rate < 1 X 10^{-9} atm-cc/sec He

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118062	CF275-ZLVP-MGF2-0.90	2.75	0.90

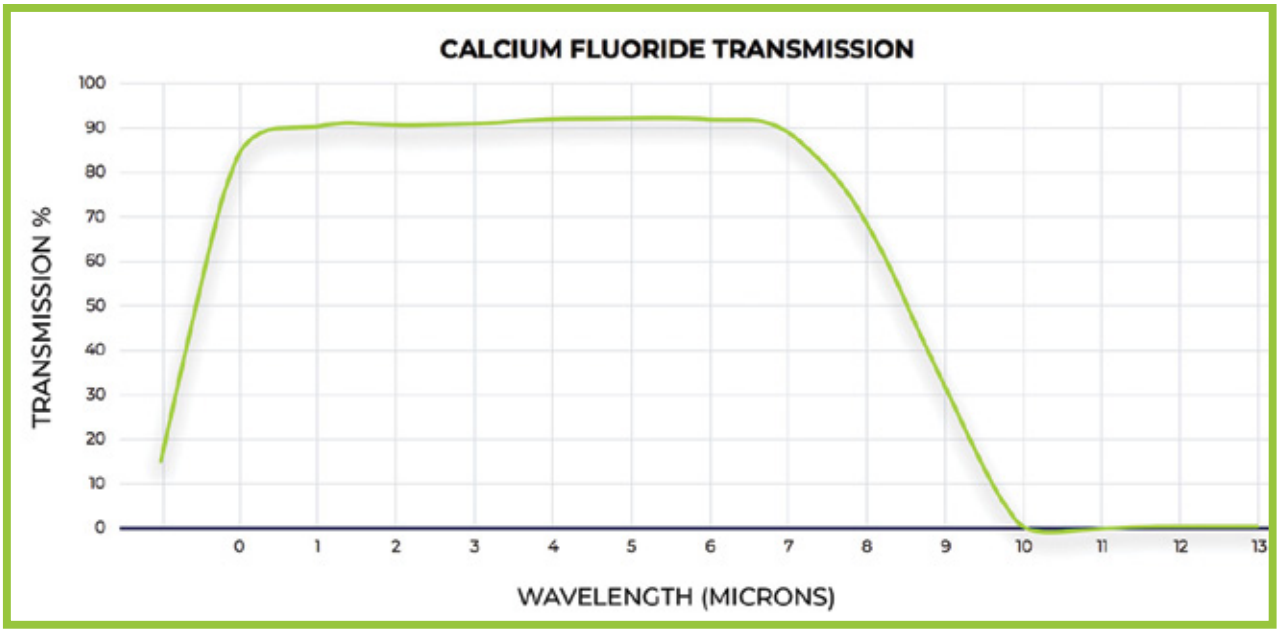
Options: Call for price & availability

- Custom window sizes
- Alternative Materials: Titanium, 316LN
- Custom Coatings
- QF (KF) Flanges

Calcium Fluoride (CaF2) Viewports

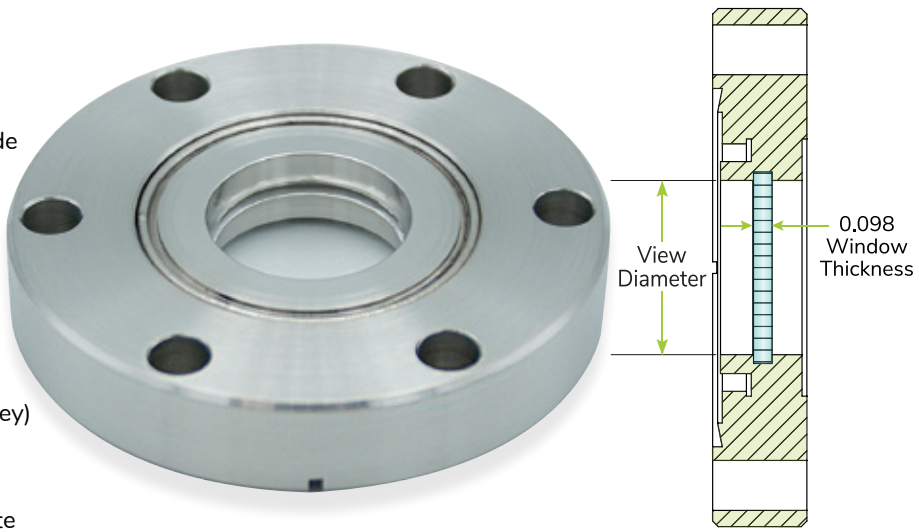
Calcium Fluoride viewports provide extended transmission from the vacuum ultraviolet (VUV) into the infrared range. Calcium fluoride features low absorption, a high laser damage threshold, and good moisture and chemical resistance. Calcium fluoride is birefringent and has a low index of refraction.

ANCORP offers zero-length calcium fluoride viewports with ConFlat (CF) flanges for use in ultra-high vacuum (UHV) applications.



ConFlat (CF) Calcium Fluoride CaF2 UHV Viewport

Description:
- Calcium Fluoride (CaF2) Viewport
- UHV rated vacuum optics,
- 0.90" view diameter
- 2.75" ConFlat flange
- Vacuum-optics with Calcium Fluoride window
- Bakeable to 200°C
- Stainless steel housing and flange
- UHV compatible



Specifications:
- Flange material: 304 stainless steel
- Window material: Single crystal calcium fluoride
- TWD < $\lambda/4$ @ 632nm (peak to valley)
- Parallelism: < 3 arc minutes
- Surface finish: 20/10 scratch-dig
- Thermal range: -100°C to 200°C
- Bake-out ramp rate: 20°C per minute
- Leak rate < 1 X 10^{-9} atm-cc/sec He

PART #	REFERENCE ID	FLANGE SIZE	VIEW DIAMETER
9118063	CF275-ZLVP-CAF2-0.90	2.75	0.90

Options: Call for price & availability
- Custom window sizes
- Alternative Materials: Titanium, 316LN
- Custom Coatings
- QF (KF) Flanges

Weldable Viewports

Vacuum coating or other deposition based processes often result in an unclean system, in which the source material accumulates along the interior surface of the chamber and viewports. This accumulation of material ultimately leads to an obstruction of the user's view.

Weldable viewports feature replaceable borosilicate glass or fused quartz viewing windows and provide a simple method of attaching an observation window to a vacuum system. Borosilicate glass windows allow for over 90 percent transmission of light within the visible electromagnetic spectrum (wavelength 400 – 700 nm), while fused quartz extends that transmission range into the ultraviolet region. The easy to replace port glass ensures continued visibility within your chamber.

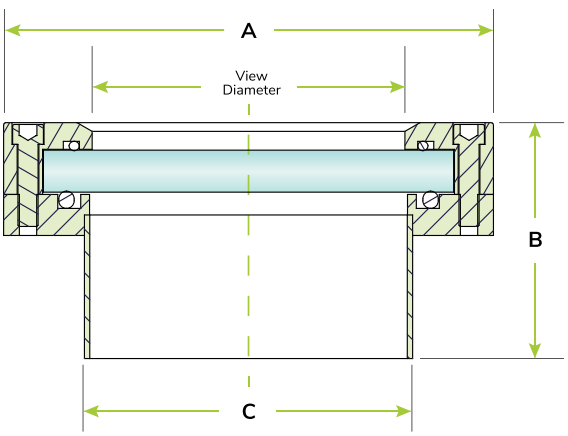
The viewing window is held between a pair of sealing fluoroelastomer rings and compressed together by a retaining flange to form a high vacuum ($1x10^{-8}$ Torr) seal.

Replacement parts for weldable viewports include replacement glass or quartz disks and fluorelastomer seal and bolt kits.

Weldable Glass Viewport

Features:

- High Vacuum rating of 1×10^{-8} torr
- Temperature maximum of 150°C
- Temperature minimum of -100C
- Body is manufactured from 304 stainless steel
- Viewing window is borosilicate glass (Borofloat® 33)
- Viton seal
- Aluminum retaining flange
- Avoid thermal changes in excess of 10°C/minute
- Do not expose to pressure above 1 atmosphere
- Options: Call for price and availability
  - Larger sizes
  - Custom lengths

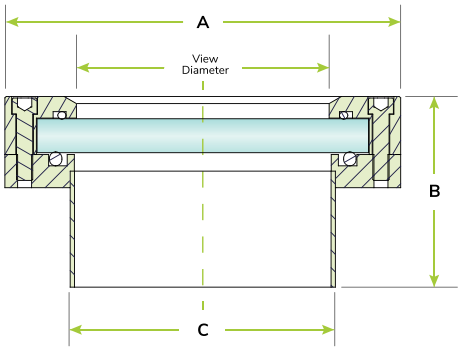


PART #	REFERENCE ID	DESCRIPTION	A	B	C	VIEW DIAMETER
9118001	400-WVP-3.812	4 in. Weldable Glass Viewport	5.97	2.88	4.00	3.88
9118002	600-WVP-6.00	6 in. Weldable Glass Viewport	7.97	2.88	6.00	5.88
9118003	250-WVP-2.50	2.5 in. Weldable Glass Viewport	4.47	2.88	2.50	2.38

Weldable Quartz Viewport

Features:

- High Vacuum rating of 1×10^{-8} torr
- Temperature maximum of 150°C
- Temperature minimum of -100C
- Body is manufactured from 304 stainless steel
- Viewing window is regular grade fused quartz
- Viton seal
- Aluminum retaining flange
- Avoid thermal changes in excess of 10°C/minute
- Do not expose to pressure above 1 atmosphere
- Options: Call for price and availability
  - Larger sizes
  - Custom lengths

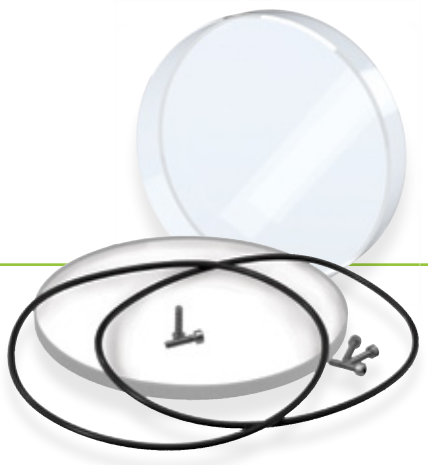


PART #	REFERENCE ID	DESCRIPTION	A	B	C	VIEW DIAMETER
9118005	250-WVP-2.50-Q	2.5 in. Weldable Quartz Viewport	4.47	2.88	2.50	2.38
9118010	400-WVP-3.812-Q	4 in. Weldable Quartz Viewport	5.97	2.88	4.00	3.81
9118015	600-WVP-6.00-Q	6 in. Weldable Quartz Viewport	7.97	2.88	6.00	6.00

Weldable Viewport Replacement Parts

Features:

- Glass windows (borosilicate Borofloat® 33 glass)
- Quartz windows
- Fluoroelastomer seals and bolt kits



PART #	REFERENCE ID	DESCRIPTION
0501085	250-PVP	Replacement Glass Disk for 2.5 in. Weldable Viewports
0501185	250-PVP-Q	Replacement Quartz Disk for 2.5 in. Weldable Viewports
9112000	250-WVP-RSK	Replacement Fluoroelastomer Seals (2) and Bolts Kit for 2.5 in. Weldable Viewports
0501090	400-PVP	Replacement Glass Disk for 4 in. Weldable Viewports
0501190	400-PVP-Q	Replacement Quartz Disk for 4 in. Weldable Viewports
9112001	400-WVP-RSK	Replacement Fluoroelastomer Seals (2) and Bolts Kit for 4 in. Weldable Viewports
0501095	600-PVP	Replacement Glass Disk for 6 in. Weldable Viewports
0501195	600-PVP-Q	Replacement Quartz Disk for 6 in. Weldable Viewports
9112002	600-WVP-RSK	Replacement Fluoroelastomer Seals (2) and Bolts Kit for 6 in. Weldable Viewports

Illum-A-View Viewport Chamber Light

Researchers have been working in the dark—straining to see inside a dimly lit vacuum chamber. You've tried hand-held flashlights or integrated "goose-neck" lamps and have been blinded by the glare on the glass or have had your view blocked by the light source itself.

ANCORP developed the Illum-A-View—a lightweight ring fitted with bright natural white LEDs that shine directly into your chamber with minimal viewing obstruction—as a solution. Illum-A-View easily fits over existing viewports, allowing you to shine a light on your research.

- Slim design machined from lightweight aluminum
- Bright natural white LEDs focus light into your chamber, always stay cool to the touch, and have a lifespan of over 30,000 hours
- Available in standard viewport sizes: CF275 · CF450 · CF600 · CF800 · CF1000
- Mounts securely onto viewport at any angle using 3 small set screws
- Plugs directly into standard AC outlet

Illum·A·View™

THE HANDS-FREE SOLUTION TO YOUR DARK CHAMBER PROBLEM

Features:

- Available for:
  CF275, CF450, CF600, CF800, CF1000 size viewports
- Machined from lightweight 6061 aluminum
- 8 ft cord with in-line switch plugs directly into standard wall outlet
- Side-emitting natural white LEDs focus more light into chamber
- Long lasting LEDs have a lifespan of over 30,000 hours

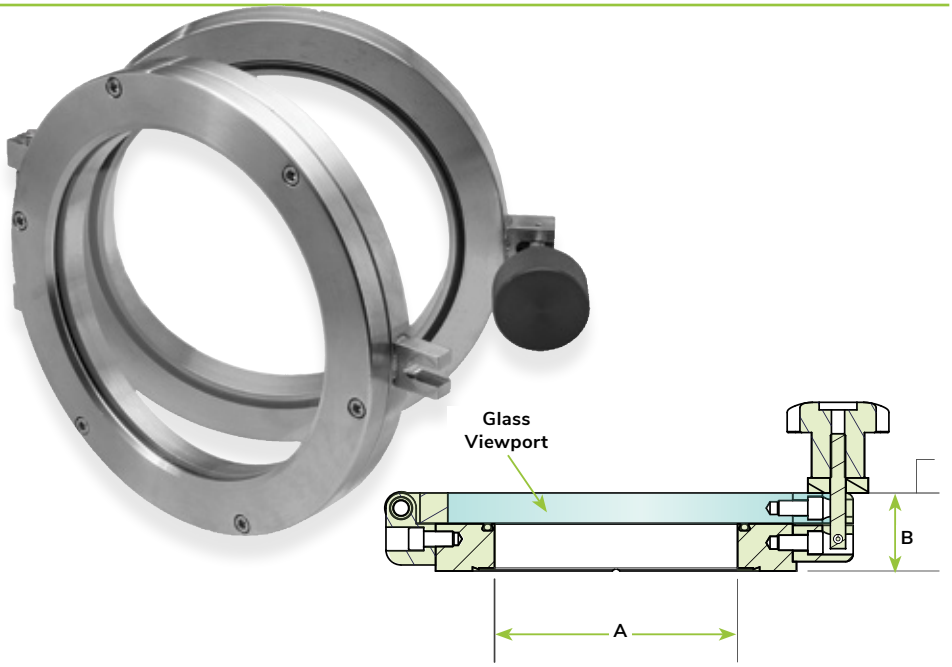
PART #	REFERENCE ID	DESCRIPTION
9120020	CF275-LVP	CF275 Illum-A-View Blue 120V Natural White
9120040	CF450-LVP	CF450 Illum-A-View Blue 120V Natural White
9120060	CF600-LVP	CF600 Illum-A-View Blue 120V Natural White
9120080	CF800-LVP	CF800 Illum-A-View Blue 120V Natural White
9120100	CF1000-LVP	CF1000 Illum-A-View Blue 120V Natural White

Add-A-Door Viewport

Materials:
- Body: 304 stainless steel
- Door: 304 stainless steel
- Viewing window: 7056 borosilicate glass
- Seals: Viton®
- Fastening knob: Polypropylene plastic (PP)
- Temperature: 150˚C maximum
- Vacuum rating: $1x10^{-8}$ Torr, High Vacuum

Product Notes:
- Avoid Thermal changes in excess of 10˚C/minute
- Do not expose to pressure above 1 atmosphere

Options: Call for price and availability
- Larger sizes
- Viewing window: Quartz

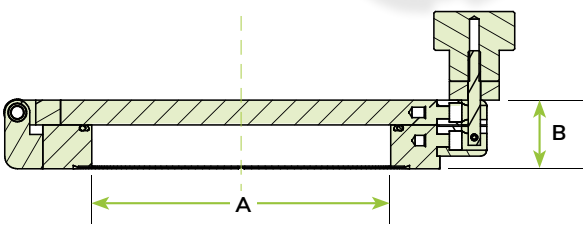


PART #	REFERENCE ID	FLANGE	WINDOW MATERIAL	A	B	VIEWING AREA
9110222	CF600-ADVP-3.8	CF600	7056 Glass	4.02	2.16	3.812
9110223	CF450-ADVP-2.5	CF450	7056 Glass	2.50	1.68	2.50
9110224	CF800-ADVP-6.0	CF800	7056 Glass	6.00	2.00	6.00
9110225	CF1000-ADVP-6.0	CF1000	7056 Glass	7.88	2.10	6.00

Add-A-Door

Materials:
- Body: 304 stainless steel
- Door: 304 stainless steel
- Seals: Viton®
- Fastening knob: Polypropylene plastic (PP)
- Temperature: 150˚C maximum
- Vacuum rating: $1x10^{-8}$ Torr, High Vacuum

Product Notes:
- Avoid Thermal changes in excess of 10˚C/minute
- Do not expose to pressure above 1 atmosphere
- Larger sizes available



PART #	REFERENCE ID	FLANGE	A	B
9110101	CF275-AD	CF275	1.50	0.94
9110102	CF450-AD	CF450	2.50	1.18
9110103	CF600-AD	CF600	4.02	1.28
9110104	CF800-AD	CF800	6.00	1.38
9110105	CF1000-AD	CF1000	7.88	1.47

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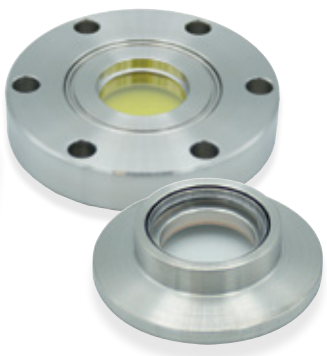
ADD-A-DOOR

LIGHTING

VIEWPORTS



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