

F i l t e r s



Filters Selection Guide

B211

ND Filters



Absorptive Neutral Density Filter
AND/ANDY/MAN/MANY

B213



Reflective Neutral Density Filter
FND/MFND/FNDU/MFNDU

B219



Variable Reflective ND Filter
VND

B224



Rotating Variable Reflective
ND Filter Holder
NDHN

B225



Reflective Stepping Variable
ND Filter
SND

B226

Diffusers



Beam Shaping Diffuser
MDFPC

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Ground Glass Diffusers
DFB1/DFSQ1

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Colored Glass Filters



Short Wave Cutoff Filters
SCF

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IR Transmitting Filters
ITF

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UV Transmitting Filters
UTVAF

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Blue and Green Filters
BLF/GRF

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Heat Absorbing Filters
HAF

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Colored Glass Filters



Color Temperature Conversion Filter
LA/LB

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Color Correction Filter
CCF/ECM

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Contact sheet **B238**

Dielectric Filters



Visible Dichroic Filters
DIF

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Visible Dichroic Filters
DIM

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Cold Filters
CLDF

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Cold Mirrors
CLDM

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Ultra-Violet Cut Filters
NHOTM

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Short Pass Filters
SHPF

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Long Pass Filters
LOPF

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Raman Long Pass Edge Filters
RSF

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Sharp Cut Dichroic Mirror
SDM

B248



Laser Line Filter / Interference Filters
Bandpass Interference Filters
VPFHT/YIF/VPF

B250

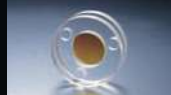


Notch Filter
NF

B258

Contact sheet **B260**

Other

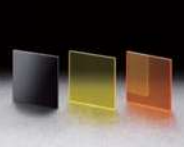


Etalon
Custom-made

B262

Filters Selection Guide

There is a large choice of filters, their characteristics are thoroughly differentiated. To choose the right filter characteristic may help you to increase your experimentation efficiency. The filter structure can be simple to be replaced, prepare many filters for replacement to obtain the best optical experimentation condition.

Application	Sample of use	Products		Features
Brightness adjustment	Prevention of saturation of sensor			Absorption ND filter Reference B213
	Contrast tuning of interference fringes			Reflectance ND filter Reference B219
	A proper brightness adjustment			Variable ND filter Reference B224
Choice of wavelength (color)	Fluorescence observation			Color glass filter Reference B230 - B237
	Select a single color light			Dichroic filter Reference B239 - B248
	Infrared and Ultraviolet observation			Bandpass filter Reference B250 - B257
Attenuate the scattered light	Uniformize the light			Beam shaping diffuser Reference B227
	Illumination for Observation			Diffuser plate Reference B228
	Screen			

Selective wavelength filter

Long-pass filter

Wavelength [nm]	Part Number	Reference	Wavelength [nm]	Part Number	Reference
300	306 LOPF-25C-300	B246	550	560 SCF-50S-560	B230
	327 RSF-25C-325RU	B247		567 RSF-25C-561RU	B247
	347 LOPF-25C-341	B246		570 SDM570S	B249
350	359 RSF-25C-355RU	B247	600	572 LOPF-25C-561	B246
	367 RSF-25C-364RU	B247		573 YIF-BA575IFS	B253
	370 SCF-50S-37L	B230		574 RSF-25C-568RU	B247
400	380 SCF-50S-38L	B230	650	580 SCF-50S-580	B230
	390 SCF-50S-39L	B230		595 SDM595S	B249
	410 SDM410S	B249		600 SCF-50S-60R	B230
450	415 LOPF-25C-409	B246	700	601 LOPF-25C-593	B246
	416 YIF-BA420IFS	B253		602 YIF-BA600IFS	B253
	418 LOPF-25C-405	B246	750	610 DIF-50S-RED	B240
500	420 SCF-50S-42L	B230		620 SCF-50S-62R	B230
	440 SCF-50S-44Y	B230		637 RSF-25C-633RU	B247
	445 RSF-25C-442RU	B247	800	640 SCF-50S-64R	B230
550	455 SDM455S	B249		654 RSF-25C-647RU	B247
	460 YIF-BA460IFS	B253		655 LOPF-25C-635	B246
	463 RSF-25C-458RU	B247	850	660 SCF-50S-66R	B230
600	466 LOPF-25C-458	B246		671 RSF-25C-664RU	B247
	476 RSF-25C-473RU	B247		700 SCF-50S-70R	B230
650	480 SCF-50S-48Y	B230	1000	720 SCF-50S-72R	B230
	490 SDM490S	B249		723 LOPF-25C-715	B246
	490 DIM-50S-BLE	B241	1300	754 LOPF-25C-736	B246
700	491 RSF-25C-488RU	B247		760 ITF-50S-76IR	B231
	500 SCF-50S-50Y	B230		760 CLDM	B243
750	500 LOPF-25C-488	B246	850	788 RSF-25C-780RU	B247
	501 LOPF-25C-496	B246		791 RSF-25C-785RU	B247
	505 SDM505S	B249	1000	800 ITF-50S-80IR	B231
800	511 YIF-BA510IFS	B253		805 LOPF-25C-785	B246
	515 SDM515S	B249		812 LOPF-25C-800	B246
850	515 LOPF-25C-500	B246	1300	812 RSF-25C-808RU	B247
	518 RSF-25C-514RU	B247		830 ITF-50S-83IR	B231
	520 SCF-50S-52Y	B230	1000	838 RSF-25C-830RU	B247
900	520 DIF-50S-YEL	B240		840 LOPF-25C-834	B246
	522 LOPF-25C-515	B246		850 ITF-50S-85IR	B231
950	526 LOPF-25C-514	B246	1300	985 ITF-50S-100RM	B231
	530 LOPF-25C-519	B246		986 RSF-25C-980RU	B247
	535 RSF-25C-532RU	B247	1300	1057 LOPF-25C-1020	B246
1000	540 SCF-50S-540	B230		1071 RSF-25C-1064RU	B247
	542 LOPF-25C-532	B246		1326 RSF-25C-1319RU	B247

Short-pass filter

Wavelength [nm]	Part Number	Reference
450	430 SHPF-25C-440	B245
	483 SHPF-25C-492	B245
	488 SHPF-25C-518	B245
500	495 DIF-50S-BLE	B240
	522 SHPF-25C-533	B245
	590 DIF-50S-CYA	B240
550	590 DIM-50S-RED	B241
	599 SHPF-25C-612	B245
	638 SHPF-25C-650	B245
600	646 SHPF-25C-655	B245
	654 SHPF-25C-680	B245
	681 SHPF-25C-694	B245
650	698 SHPF-25C-720	B245
	700 CLDF-50S	B242
	701 HAF-50S-15H	B235
700	727 SHPF-25C-750	B245
	743 HAF-50S-30H	B235
	747 SHPF-25C-770	B245
750	761 SHPF-25C-775	B245
	765 SHPF-25C-790	B245
	777 HAF-50S-50H	B235
800	835 SHPF-25C-842	B245
	875 SHPF-25C-890	B245
	912 SHPF-25C-950	B245
850	936 SHPF-25C-945	B245

Nootch type

Wavelength [nm]	Part Number	Reference
350	355 NF-25C05-27-355	B258
400		
500	532 NF-25C05-40-532	B258
	540 DIM-50G-GRE	B241
	550 DIF-50S-MAG	B240
600		
1000	633 NF-25C05-47-633	B258
1064		

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Band-pass type

		Wavelength [nm]	Part Number	Reference		Wavelength [nm]	Part Number	Reference		Wavelength [nm]	Part Number	Reference					
	200	214	VPF-25C-10-12-21400	B254	500	500	VPF-25C-10-50-50000	B254	700	700	VPF-25C-10-50-70000	B254					
		228	VPF-25C-10-15-22800	B254			VPF-25C-40-50-50000	B254			VPF-25C-40-50-70000	B254					
		232	VPF-25C-10-15-23200	B254		509	VPF-50S-10-55-50000	B257		710	VPF-50S-12-65-70000	B257					
		239	VPF-25C-10-15-23900	B254		510	VPF-50S-10-55-51000	B257		720	VPF-50S-12-65-72000	B257					
		250	254	VPF-25C-10-12-25370		B254	515	VPF-25C-01-40-51450		B254	730	VPF-50S-12-65-73000	B257				
			265	VPF-25C-10-12-26500		B254		VPF-25C-03-45-51450		B254	740	VPF-50S-12-65-74000	B257				
			280	VPF-25C-10-12-28000		B254		VPF-25C-10-50-51450		B254	750	VPF-25C-10-45-75000	B254				
			289	VPF-25C-10-15-28900		B254		VPFHT-5145		B250		VPF-25C-40-40-75000	B254				
			297	VPF-25C-10-15-29670		B254	517	YIF-BA495-540S		B253		VPF-50S-12-65-75000	B257				
			300					520		VPF-50S-10-55-52000	B257	760	VPF-50S-12-65-76000	B257			
								526		GRF-50S-530G	B234	766	VPF-25C-10-45-76650	B254			
				307		VPF-25C-10-15-30710	B254	530		YIF-BA510-550S	B253	770	VPF-50S-12-65-77000	B257			
				313		VPF-25C-10-15-31300	B254			VPF-50S-10-55-53000	B257	780	VPF-25C-10-45-78000	B254			
				317		UTVAF-50S-33U	B232	532		VPF-25C-01-40-53200	B254		VPF-50S-12-65-78000	B257			
				325		VPFHT-3250	B250			VPF-25C-03-45-53200	B254		VPFHT-7800	B250			
						UTVAF-50S-34U	B232			VPF-25C-10-50-53200	B254	785	VPFHT-7850	B250			
				326		VPF-25C-10-25-32600	B254			VPFHT-5320	B250	790	VPF-50S-12-65-79000	B257			
				334		VPF-25C-10-25-33400	B254	533		GRF-50S-533G	B234		ITF-50S-83RT	B231			
				337		VPF-25C-03-20-33710	B254	535		VPF-25C-10-50-53500	B254	795	VPF-25C-10-45-79470	B254			
				350		350	VPF-25C-10-25-33710	B254		537	YIF-BA515-560S	B253	800	VPF-25C-10-45-80000	B254		
							VPF-25C-10-25-35000	B254		540	VPF-50S-10-55-54000	B257		VPF-25C-40-45-80000	B254		
							VPF-25C-40-25-35000	B254			DIF-50S-GRE	B240		VPF-50S-12-65-80000	B257		
							UTVAF-50S-36U	B232		541	GRF-50S-545G	B234	808	VPFHT-8080	B250		
						355	VPF-25C-10-25-35500	B254		543	YIF-BP530-550S	B253	810	VPF-25C-10-45-81000	B254		
							VPFHT-3550	B250		544	VPFHT-5435	B250		VPF-50S-12-65-81000	B257		
						364	VPFHT-3638	B250		546	YIF-BP540-550S	B253	820	VPF-50S-12-65-82000	B257		
						365	VPF-25C-10-25-36500	B254			VPF-25C-10-50-54610	B254	830	VPF-25C-10-45-83000	B254		
							YIF-BP360-370S	B253		548	GRF-50S-550G	B234		VPF-50S-12-65-83000	B257		
						370	BLF-50S-370B	B234		550	VPF-25C-10-50-55000	B254		VPFHT-8300	B250		
							YIF-BP340-390S	B253			VPF-25C-40-50-55000	B254	840	VPF-50S-12-65-84000	B257		
							VPFHT-3720	B250			VPF-50S-10-60-55000	B257	850	VPF-50S-12-65-85000	B257		
						372	BLF-50S-390B	B234		560	VPF-50S-10-60-56000	B257	852	VPFHT-8520	B250		
						400	400	VPF-25C-10-40-40000		B254	561	VPFHT-5614	B250	860	VPF-50S-12-65-86000	B257	
								VPF-25C-40-40-40000		B254	562	YIF-BP540-585S	B253	870	VPF-50S-12-65-87000	B257	
								VPF-50S-10-45-40000		B257	568	VPFHT-5682	B250	880	VPF-50S-12-65-88000	B257	
							405	YIF-BP400-410S		B253	570	VPF-50S-10-60-57000	B257	890	VPF-50S-12-65-89000	B257	
								VPF-25C-10-40-40470		B254	576	YIF-BP565-585S	B253	900	VPF-50S-12-65-90000	B257	
							410	BLF-50S-410B		B234	577	VPF-25C-10-50-57700	B254	905	VPF-25C-10-45-90500	B254	
								VPF-50S-10-45-41000		B257	580	VPF-50S-10-60-58000	B257	976	VPFHT-9760	B250	
							420	YIF-BP400-440S		B253	589	VPF-25C-10-50-58930	B254	980	VPFHT-9800	B250	
								VPF-50S-10-45-42000		B257	590	VPF-50S-10-60-59000	B257				
							430	VPF-50S-10-45-43000		B257	599	YIF-BA575-625S	B253	1014	VPF-25C-10-40-10140	B254	
							436	VPF-25C-10-40-43580		B254	600	VPF-25C-10-50-60000	B254	1047	VPFHT-10471	B250	
							450	440		BLF-50S-440B	B234		VPF-25C-40-50-60000	B254	1050		
										VPF-50S-10-45-44000	B257		VPF-50S-12-60-60000	B257	1064	VPF-25C-01-30-10640	B254
								442		VPF-25C-01-30-44160	B254	610	VPF-50S-12-60-61000	B257		VPF-25C-03-35-10640	B254
										VPF-25C-03-35-44160	B254	620	VPF-50S-12-60-62000	B257		VPF-25C-10-40-10640	B254
										VPF-25C-10-45-44160	B254	630	VPF-50S-12-60-63000	B257		VPFHT-10640	B251
	VPFHT-4416				B250			633	VPF-25C-01-40-63280	B254	1100						
445	YIF-BA420-460S				B253				VPF-25C-03-45-63280	B254	1300	VPF-25C-10-35-13000	B254				
450	VPF-25C-10-45-45000				B254				VPF-25C-10-50-63280	B254	1500	VPF-25C-10-30-15000	B254				
	VPF-25C-40-50-45000				B254				VPFHT-6328	B250	1550	VPF-25C-10-30-15500	B254				
	VPF-50S-10-50-45000	B257			636			VPF-25C-10-50-63620	B254								
456	VPF-25C-10-45-45550	B254			640			VPF-50S-12-60-64000	B257								
458	VPF-25C-01-30-45790	B254			644			YIF-BA600-690S	B253								
	VPF-25C-03-35-45790	B254			647			VPF-25C-03-45-64710	B254								
	VPF-25C-10-45-45790	B254						VPFHT-6471	B250								
460	BLF-50S-460B	B234	650		VPF-25C-10-50-65000			B254									
	VPF-50S-10-50-46000	B257			VPF-25C-40-50-65000			B254									
470	VPF-50S-10-50-47000	B257			VPF-50S-12-60-65000			B257									
471	YIF-BP460-480S	B253	656		VPF-25C-10-50-65630			B254									
477	YIF-BP460-495S	B253	660		VPF-50S-12-60-66000			B257									
480	VPF-50S-10-50-48000	B257	670		VPF-25C-10-50-67000			B254									
484	YIF-BP470-495S	B253			VPF-50S-12-60-67000			B257									
486	VPF-25C-10-45-48610	B254	671		VPFHT-6710			B250									
487	YIF-BA460-510S	B253	680		VPF-50S-12-60-68000			B257									
488	VPF-25C-01-40-48800	B254	690		VPF-50S-12-60-69000			B257									
	VPF-25C-03-45-48800	B254	694	VPF-25C-10-50-69430	B254												
	VPF-25C-10-50-48800	B254															
	VPFHT-4880	B250															
490	VPF-50S-10-50-49000	B257															
491	VPFHT-4910	B250															
495	YIF-BP490-500S	B253															

We offer a complete line of ND filters to reduce intensity of the visible light. This is an absorptive type of filter that reduces stray reflected light and reduces intensity of the light with minimal difference of transmission for visible wavelengths.

- The transmittance can be fine tuned and can offer light intensity adjustment. Moreover, with a multi-filter set up, ultra fine light intensity tuning can be realized.
- The mounted filter (model MAN/MANY) with it's outer frame can be easily mounted in our filter holder (model FH). For a filter with diameter 30mm outer frame please see lens holder (model LHF-30S) for your reference.



Specifications

Material	Optical Glass (including a substance of visible light absorption)
Wavelength Range	Visible (AND/MAN): 400 – 700nm YAG Laser (ANDY/MANY): 1064nm
Mount (MAN/MANY only)	Material: Aluminum Finishing: Black anodized

Guide

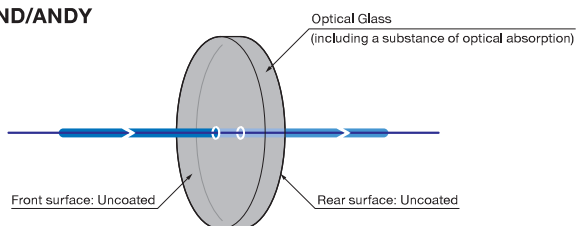
- ▶ Different size, wavelength and deviation ratio which is not listed on-line or in our catalog is available as custom product upon the request.
- ▶ Absorptive ND filter placed near to a light-source can be broken by the sudden high temperature. The filter must be treated with thermal reinforcement for heat resistance.

Attention

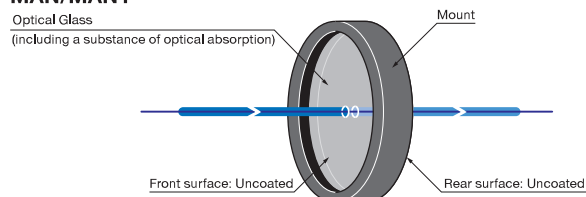
- ▶ Do not use with high power laser, the filter can be damaged. In that case, please try our Reflective type of ND filter (model FND).
- ▶ To obtain a better transmittance characteristic, the thickness of the filter can be changed. For this reason the thickness of each filter is different. For filter with thickness below 5mm, we recommend to use the mounted filter. (model MAN/MANY).
- ▶ The filter transmittance characteristic of each production lot is different. The outside wavelength properties of the adaptation wavelength may greatly vary in particular according to production lot. Please refer to reflective filter (model FND) if the use of wavelength is wider than a specified wavelength.
- ▶ ND filter does not have Anti Reflection coating so there is 4% reflection loss.

Schematic

AND/ANDY



MAN/MANY

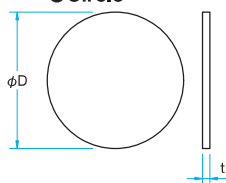


Outline Drawing

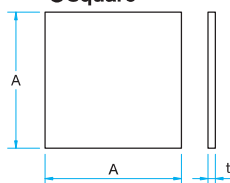
(in mm)

AND/ANDY

●Circle

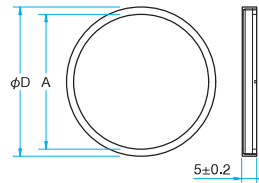


●Square



- Tolerance
(Circle) Diameter
(Square) Length
 $\phi D_{-0.1}^{+0}$
 $A_{-0.1}^{+0}$ ($A \leq 40$)
 $A_{-0.2}^{+0}$ ($A = 50$)

MAN/MANY



- Tolerance
Mount outer
diameter $\phi D \pm 0.1$

Strengthened glass

Glass can be broken under sudden heat effect. Sudden difference of temperature occurs inside of the glass, it is called thermal expansion and the tensile stress of the inside of the glass occurs. The glass will be broken when the stress is beyond machine strength. However, stress is offset, and glass becomes hard to be broken when there is a compression power in the inside of the glass even if tensile stress is caused by heat to glass. Using this principle, heat strengthened glass was made out of compression stress forcibly in inside glass at the beginning of the process. In the polishing process, a strengthened glass must be brought to a familiar softening temperature before to the forcibly cooling process. The inner of the glass is higher in density than the outside of the glass.

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Etalon

Absorptive Neutral Density Filter (Mounted and Unmounted)

AND/ANDY/MAN/MANY

Catalog
Code

W3093

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Visible · Circle (φ10 – φ25)

Part Number	Diameter φD [mm]	Average Transmittance (400 – 700nm) [%]
AND-10C-001	φ10	0.1±0.07
AND-10C-01	φ10	1±0.5
AND-10C-05	φ10	5±1
AND-10C-10	φ10	10±2
AND-10C-13	φ10	12.5±2
AND-10C-20	φ10	20±2
AND-10C-25	φ10	25±2.5
AND-10C-30	φ10	30±3
AND-10C-40	φ10	40±4
AND-10C-50	φ10	50±5
AND-10C-70	φ10	70±5
AND-15C-001	φ15	0.1±0.07
AND-15C-01	φ15	1±0.5
AND-15C-05	φ15	5±1
AND-15C-10	φ15	10±2
AND-15C-13	φ15	12.5±2
AND-15C-20	φ15	20±2
AND-15C-25	φ15	25±2.5
AND-15C-30	φ15	30±3
AND-15C-40	φ15	40±4
AND-15C-50	φ15	50±5
AND-15C-70	φ15	70±5
AND-20C-001	φ20	0.1±0.07
AND-20C-01	φ20	1±0.5
AND-20C-05	φ20	5±1
AND-20C-10	φ20	10±2
AND-20C-13	φ20	12.5±2
AND-20C-20	φ20	20±2
AND-20C-25	φ20	25±2.5
AND-20C-30	φ20	30±3
AND-20C-40	φ20	40±4
AND-20C-50	φ20	50±5
AND-20C-70	φ20	70±5
AND-25C-001	φ25	0.1±0.07
AND-25C-01	φ25	1±0.5
AND-25C-05	φ25	5±1
AND-25C-10	φ25	10±2
AND-25C-13	φ25	12.5±2
AND-25C-20	φ25	20±2
AND-25C-25	φ25	25±2.5
AND-25C-30	φ25	30±3
AND-25C-40	φ25	40±4
AND-25C-50	φ25	50±5
AND-25C-70	φ25	70±5

Visible · Circle (φ30 – φ50)

Part Number	Diameter φD [mm]	Average Transmittance (400 – 700nm) [%]
AND-30C-001	φ30	0.1±0.07
AND-30C-01	φ30	1±0.5
AND-30C-05	φ30	5±1
AND-30C-10	φ30	10±2
AND-30C-13	φ30	12.5±2
AND-30C-20	φ30	20±2
AND-30C-25	φ30	25±2.5
AND-30C-30	φ30	30±3
AND-30C-40	φ30	40±4
AND-30C-50	φ30	50±5
AND-30C-70	φ30	70±5
AND-40C-001	φ40	0.1±0.07
AND-40C-01	φ40	1±0.5
AND-40C-05	φ40	5±1
AND-40C-10	φ40	10±2
AND-40C-13	φ40	12.5±2
AND-40C-20	φ40	20±2
AND-40C-25	φ40	25±2.5
AND-40C-30	φ40	30±3
AND-40C-40	φ40	40±4
AND-40C-50	φ40	50±5
AND-40C-70	φ40	70±5
AND-50C-001	φ50	0.1±0.07
AND-50C-01	φ50	1±0.5
AND-50C-05	φ50	5±1
AND-50C-10	φ50	10±2
AND-50C-13	φ50	12.5±2
AND-50C-20	φ50	20±2
AND-50C-25	φ50	25±2.5
AND-50C-30	φ50	30±3
AND-50C-40	φ50	40±4
AND-50C-50	φ50	50±5
AND-50C-70	φ50	70±5

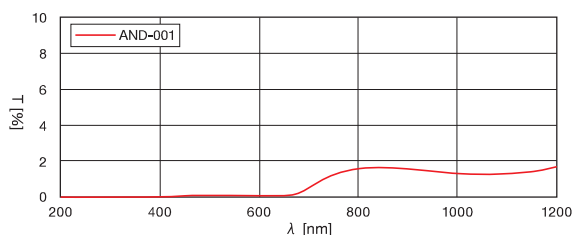
Compatible Optic Mounts

FH-25, -50 / FHS-25, -50 / NDWH-15SRO / FH-10

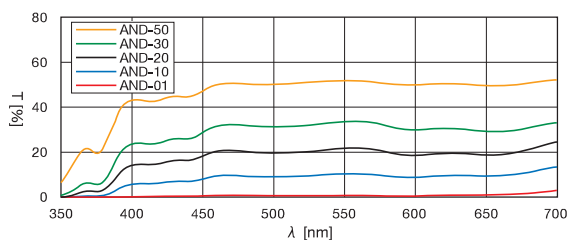
Typical Transmittance Data

T: Transmission

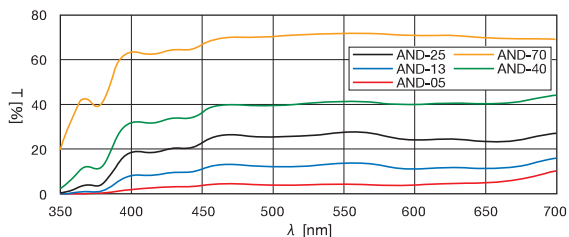
AND-001



AND-01 · 10 · 20 · 30 · 50



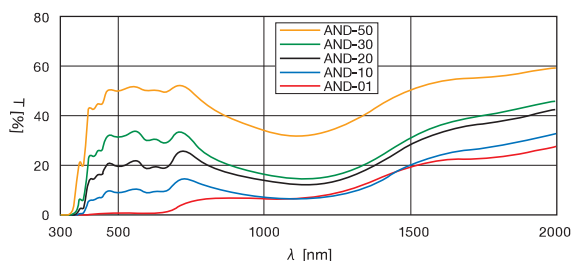
AND-05 · 13 · 25 · 40 · 70



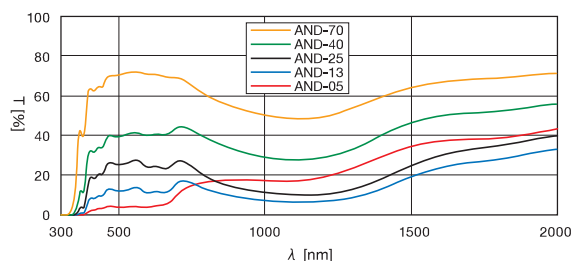
Typical Transmittance Data (300 – 2000nm)

T: Transmission

AND-01 · 10 · 20 · 30 · 50



AND-05 · 13 · 25 · 40 · 70



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Etolon

Absorptive Neutral Density Filter (Mounted and Unmounted)

AND/ANDY/MAN/MANY

Catalog Code W3094

Visible • Mounted

Part Number	Mount outer diameter φD [mm]	Clear aperture φA [mm]	Average Transmittance (400 – 700nm) [%]
MAN-25-0.1	φ25	φ17	0.1±0.07
MAN-25-1	φ25	φ17	1±0.5
MAN-25-5	φ25	φ17	5±1
MAN-25-10	φ25	φ17	10±2
MAN-25-13	φ25	φ17	12.5±2
MAN-25-20	φ25	φ17	20±2
MAN-25-25	φ25	φ17	25±2.5
MAN-25-30	φ25	φ17	30±3
MAN-25-40	φ25	φ17	40±4
MAN-25-50	φ25	φ17	50±5
MAN-25-70	φ25	φ17	70±5
MAN-30-0.1	φ30	φ22	0.1±0.07
MAN-30-1	φ30	φ22	1±0.5
MAN-30-5	φ30	φ22	5±1
MAN-30-10	φ30	φ22	10±2
MAN-30-13	φ30	φ22	12.5±2
MAN-30-20	φ30	φ22	20±2
MAN-30-25	φ30	φ22	25±2.5
MAN-30-30	φ30	φ22	30±3
MAN-30-40	φ30	φ22	40±4
MAN-30-50	φ30	φ22	50±5
MAN-30-70	φ30	φ22	70±5
MAN-52-0.1	φ52	φ47	0.1±0.07
MAN-52-1	φ52	φ47	1±0.5
MAN-52-5	φ52	φ47	5±1
MAN-52-10	φ52	φ47	10±2
MAN-52-13	φ52	φ47	12.5±2
MAN-52-20	φ52	φ47	20±2
MAN-52-25	φ52	φ47	25±2.5
MAN-52-30	φ52	φ47	30±3
MAN-52-40	φ52	φ47	40±4
MAN-52-50	φ52	φ47	50±5
MAN-52-70	φ52	φ47	70±5

Please refer to the chart for transmittance Data (AND).

Transmittance Chart							(Unit: %)
Part Number	Visible 550nm	LD 780nm	LD 830nm	YAG 1064nm	LD 1300nm	LD 1550nm	
AND-01	1	6	6	5	8	17	
AND-05	5	16	17	14	20	32	
AND-10	10	12	10	5	7	19	
AND-13	13	14	11	6	8	20	
AND-20	20	18	15	8	11	25	
AND-25	25	23	20	12	16	30	
AND-30	30	27	23	14	17	33	
AND-40	40	40	35	24	29	43	
AND-50	50	45	40	30	35	49	
AND-70	70	64	60	49	53	64	

The transmittance values are approximate values.

Compatible Optic Mounts

FH-25, -50 / LHF-30S

Square (□10 – □25)		
Part Number	Length A [mm]	Average Transmittance (400 – 700nm) [%]
AND-10S-001	10×10	0.1±0.07
AND-10S-01	10×10	1±0.5
AND-10S-05	10×10	5±1
AND-10S-10	10×10	10±2
AND-10S-13	10×10	12.5±2
AND-10S-20	10×10	20±2
AND-10S-25	10×10	25±2.5
AND-10S-30	10×10	30±3
AND-10S-40	10×10	40±4
AND-10S-50	10×10	50±5
AND-10S-70	10×10	70±5
AND-15S-001	15×15	0.1±0.07
AND-15S-01	15×15	1±0.5
AND-15S-05	15×15	5±1
AND-15S-10	15×15	10±2
AND-15S-13	15×15	12.5±2
AND-15S-20	15×15	20±2
AND-15S-25	15×15	25±2.5
AND-15S-30	15×15	30±3
AND-15S-40	15×15	40±4
AND-15S-50	15×15	50±5
AND-15S-70	15×15	70±5
AND-20S-001	20×20	0.1±0.07
AND-20S-01	20×20	1±0.5
AND-20S-05	20×20	5±1
AND-20S-10	20×20	10±2
AND-20S-13	20×20	12.5±2
AND-20S-20	20×20	20±2
AND-20S-25	20×20	25±2.5
AND-20S-30	20×20	30±3
AND-20S-40	20×20	40±4
AND-20S-50	20×20	50±5
AND-20S-70	20×20	70±5
AND-25S-001	25×25	0.1±0.07
AND-25S-01	25×25	1±0.5
AND-25S-05	25×25	5±1
AND-25S-10	25×25	10±2
AND-25S-13	25×25	12.5±2
AND-25S-20	25×25	20±2
AND-25S-25	25×25	25±2.5
AND-25S-30	25×25	30±3
AND-25S-40	25×25	40±4
AND-25S-50	25×25	50±5
AND-25S-70	25×25	70±5

Square (□30 – □50)		
Part Number	Length A [mm]	Average Transmittance (400 – 700nm) [%]
AND-30S-001	30×30	0.1±0.07
AND-30S-01	30×30	1±0.5
AND-30S-05	30×30	5±1
AND-30S-10	30×30	10±2
AND-30S-13	30×30	12.5±2
AND-30S-20	30×30	20±2
AND-30S-25	30×30	25±2.5
AND-30S-30	30×30	30±3
AND-30S-40	30×30	40±4
AND-30S-50	30×30	50±5
AND-30S-70	30×30	70±5
AND-40S-001	40×40	0.1±0.07
AND-40S-01	40×40	1±0.5
AND-40S-05	40×40	5±1
AND-40S-10	40×40	10±2
AND-40S-13	40×40	12.5±2
AND-40S-20	40×40	20±2
AND-40S-25	40×40	25±2.5
AND-40S-30	40×40	30±3
AND-40S-40	40×40	40±4
AND-40S-50	40×40	50±5
AND-40S-70	40×40	70±5
AND-50S-001	50×50	0.1±0.07
AND-50S-01	50×50	1±0.5
AND-50S-05	50×50	5±1
AND-50S-10	50×50	10±2
AND-50S-13	50×50	12.5±2
AND-50S-20	50×50	20±2
AND-50S-25	50×50	25±2.5
AND-50S-30	50×50	30±3
AND-50S-40	50×50	40±4
AND-50S-50	50×50	50±5
AND-50S-70	50×50	70±5

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Absorptive Neutral Density Filter (Mounted and Unmounted)

AND/ANDY/MAN/MANY

Catalog Code W3096

Catalog Code W3097

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YAG Laser · Circle ($\phi 10 - \phi 30$ and $\phi 50$)		
Part Number	Diameter ϕD [mm]	Transmittance (1064nm) [%]
ANDY-10C-05	$\phi 10$	5
ANDY-10C-10	$\phi 10$	10
ANDY-10C-15	$\phi 10$	15
ANDY-10C-20	$\phi 10$	20
ANDY-10C-25	$\phi 10$	25
ANDY-10C-30	$\phi 10$	30
ANDY-10C-50	$\phi 10$	50
ANDY-15C-05	$\phi 15$	5
ANDY-15C-10	$\phi 15$	10
ANDY-15C-15	$\phi 15$	15
ANDY-15C-20	$\phi 15$	20
ANDY-15C-25	$\phi 15$	25
ANDY-15C-30	$\phi 15$	30
ANDY-15C-50	$\phi 15$	50
ANDY-20C-05	$\phi 20$	5
ANDY-20C-10	$\phi 20$	10
ANDY-20C-15	$\phi 20$	15
ANDY-20C-20	$\phi 20$	20
ANDY-20C-25	$\phi 20$	25
ANDY-20C-30	$\phi 20$	30
ANDY-20C-50	$\phi 20$	50
ANDY-25C-05	$\phi 25$	5
ANDY-25C-10	$\phi 25$	10
ANDY-25C-15	$\phi 25$	15
ANDY-25C-20	$\phi 25$	20
ANDY-25C-25	$\phi 25$	25
ANDY-25C-30	$\phi 25$	30
ANDY-25C-50	$\phi 25$	50
ANDY-30C-05	$\phi 30$	5
ANDY-30C-10	$\phi 30$	10
ANDY-30C-15	$\phi 30$	15
ANDY-30C-20	$\phi 30$	20
ANDY-30C-25	$\phi 30$	25
ANDY-30C-30	$\phi 30$	30
ANDY-30C-50	$\phi 30$	50
ANDY-50C-05	$\phi 50$	5
ANDY-50C-10	$\phi 50$	10
ANDY-50C-15	$\phi 50$	15
ANDY-50C-20	$\phi 50$	20
ANDY-50C-25	$\phi 50$	25
ANDY-50C-30	$\phi 50$	30
ANDY-50C-50	$\phi 50$	50

YAG Laser · Square

Part Number	Length A [mm]	Transmittance (1064nm) [%]
ANDY-50S-05	50×50	5
ANDY-50S-10	50×50	10
ANDY-50S-15	50×50	15
ANDY-50S-20	50×50	20
ANDY-50S-25	50×50	25
ANDY-50S-30	50×50	30
ANDY-50S-50	50×50	50

Catalog Code W3096

YAG Laser · Mounted

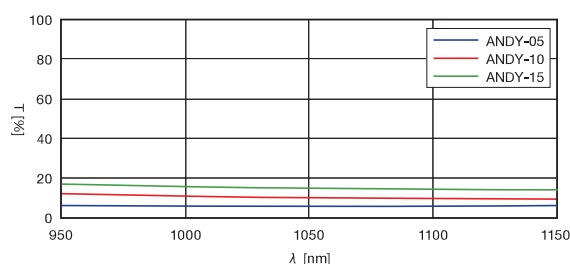
Part Number	Mount outer diameter ϕD [mm]	Clear aperture ϕA [mm]	Transmittance (1064nm) [%]
MANY-25-5	$\phi 25$	$\phi 17$	5
MANY-25-10	$\phi 25$	$\phi 17$	10
MANY-25-15	$\phi 25$	$\phi 17$	15
MANY-25-20	$\phi 25$	$\phi 17$	20
MANY-25-25	$\phi 25$	$\phi 17$	25
MANY-25-30	$\phi 25$	$\phi 17$	30
MANY-25-50	$\phi 25$	$\phi 17$	50
MANY-30-5	$\phi 30$	$\phi 22$	5
MANY-30-10	$\phi 30$	$\phi 22$	10
MANY-30-15	$\phi 30$	$\phi 22$	15
MANY-30-20	$\phi 30$	$\phi 22$	20
MANY-30-25	$\phi 30$	$\phi 22$	25
MANY-30-30	$\phi 30$	$\phi 22$	30
MANY-30-50	$\phi 30$	$\phi 22$	50
MANY-52-5	$\phi 52$	$\phi 47$	5
MANY-52-10	$\phi 52$	$\phi 47$	10
MANY-52-15	$\phi 52$	$\phi 47$	15
MANY-52-20	$\phi 52$	$\phi 47$	20
MANY-52-25	$\phi 52$	$\phi 47$	25
MANY-52-30	$\phi 52$	$\phi 47$	30
MANY-52-50	$\phi 52$	$\phi 47$	50

Please refer to the chart for transmittance data (ANDY).

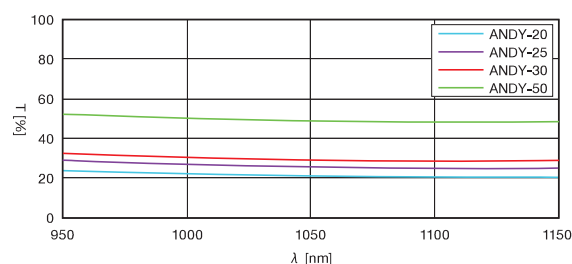
Typical Transmittance Data

T: Transmission

ANDY-05 · 10 · 15

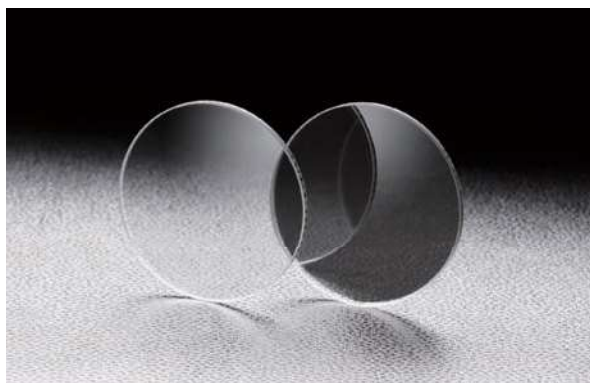


ANDY-20 · 25 · 30 · 50



The reflective ND filter is used for high power and broadband wavelength light density reducing. The untransmitted light would not be absorbed, there is no possibility of glass damaging by the heat.

- The metal reflection coating provides an extremely smooth transmission characteristic from the UV to IR wavelengths.
- We are using synthetic fused silica substrates for high transmission at UV range for the UV ND filter. We can obtain almost the similar transmittance at the Near UV and the visible range.
- The substrate thickness is 2mm $\pm$ 0.1mm with no difference with the transmittance.



Specifications

	Visible (FND)	UV (FNDU)
Material	BK7	Synthetic fused silica
Coating	Chrome coating (Cr) but FND-92, FNDU-92, MFND-92, MFNDU-92 is uncoated	
Wavelength Range	400 - 700nm	200 - 400nm
Parallelism	<1'	<30"
Surface flatness	λ (Measurement area: ϕ 30mm)	
Surface Quality (Scratch-Dig)	60-40	
Mount (MFND/MFNDU)	Material: Aluminum Finishing: Black anodized	
Clear aperture	90% of Actual Aperture	

Guide

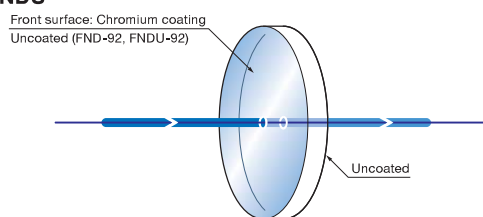
- ▶ Different size, wavelength and deviation not mentioned on-line or in our catalog are available as custom product upon on request.

Attention

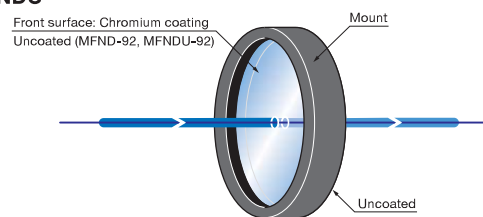
- ▶ Chrome coating is an absorptive material and can not be used with high power pulsed laser.
- ▶ The thermal lens effect may happen on filter with high power laser, for high power laser or high energy laser, please use our variable beamsplitter (model VBS). [Reference](#) B062
- ▶ The reflected light off of the filter is dangerous for eyes, please make sure a non-reflective material at the edge end of the light.
- ▶ A vertical light into the filter may have feedback light back into the laser source, it may make an instability to the laser oscillator. To avoid this phenomenon please incline the filter at a small angle.
- ▶ The filter with 92% transmittance rate (model FND-92 and others) is non-coated on both surface. The reflectance is about 4% on each surface, and so, 8% total loss.

Schematic

FND/FNDU



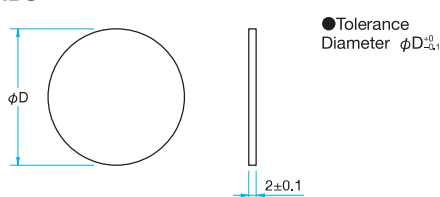
MFND/MFNDU



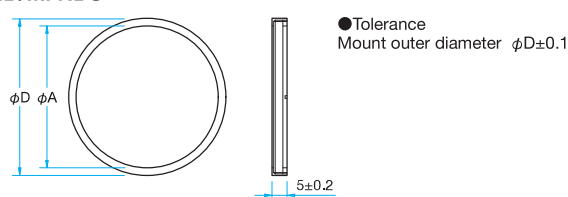
Outline Drawing

(in mm)

FND/FNDU



MFND/MFNDU



Compatible Optic Mounts

FH-10 / FH-25, -50 / FHS-25, -50 / NDWH-15SRO

Reflective Neutral Density Filter (Mounted and Unmounted)

FND/MFND/FNDU/MFNDU

Catalog Code W3098

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Visible		
Part Number	Diameter φD [mm]	Transmittance (550nm) [%]
FND-15C02-0.1	φ15	0.1
FND-15C02-1	φ15	1
FND-15C02-5	φ15	5
FND-15C02-10	φ15	10
FND-15C02-20	φ15	20
FND-15C02-30	φ15	30
FND-15C02-40	φ15	40
FND-15C02-50	φ15	50
FND-15C02-60	φ15	60
FND-15C02-70	φ15	70
FND-15C02-80	φ15	80
FND-15C02-92	φ15	92
FND-20C02-0.1	φ20	0.1
FND-20C02-1	φ20	1
FND-20C02-5	φ20	5
FND-20C02-10	φ20	10
FND-20C02-20	φ20	20
FND-20C02-30	φ20	30
FND-20C02-40	φ20	40
FND-20C02-50	φ20	50
FND-20C02-60	φ20	60
FND-20C02-70	φ20	70
FND-20C02-80	φ20	80
FND-20C02-92	φ20	92
FND-25C02-0.1	φ25	0.1
FND-25C02-1	φ25	1
FND-25C02-5	φ25	5
FND-25C02-10	φ25	10
FND-25C02-20	φ25	20
FND-25C02-30	φ25	30
FND-25C02-40	φ25	40
FND-25C02-50	φ25	50
FND-25C02-60	φ25	60
FND-25C02-70	φ25	70
FND-25C02-80	φ25	80
FND-25C02-92	φ25	92
FND-30C02-0.1	φ30	0.1
FND-30C02-1	φ30	1
FND-30C02-5	φ30	5
FND-30C02-10	φ30	10
FND-30C02-20	φ30	20
FND-30C02-30	φ30	30
FND-30C02-40	φ30	40
FND-30C02-50	φ30	50
FND-30C02-60	φ30	60
FND-30C02-70	φ30	70
FND-30C02-80	φ30	80
FND-30C02-92	φ30	92
FND-50C02-0.1	φ50	0.1
FND-50C02-1	φ50	1
FND-50C02-5	φ50	5
FND-50C02-10	φ50	10
FND-50C02-20	φ50	20
FND-50C02-30	φ50	30
FND-50C02-40	φ50	40
FND-50C02-50	φ50	50
FND-50C02-60	φ50	60
FND-50C02-70	φ50	70
FND-50C02-80	φ50	80
FND-50C02-92	φ50	92

Visible · Mounted

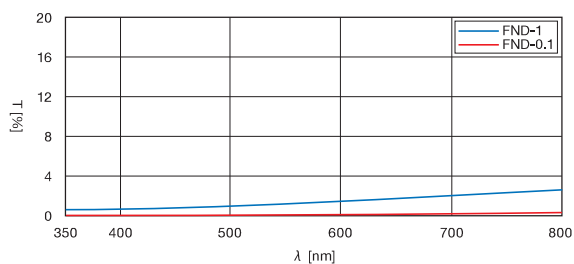
Part Number	Mount outer diameter φD [mm]	Clear aperture φA [mm]	Transmittance (550nm) [%]
MFND-25-0.1	φ25	φ17	0.1
MFND-25-1	φ25	φ17	1
MFND-25-5	φ25	φ17	5
MFND-25-10	φ25	φ17	10
MFND-25-20	φ25	φ17	20
MFND-25-30	φ25	φ17	30
MFND-25-40	φ25	φ17	40
MFND-25-50	φ25	φ17	50
MFND-25-60	φ25	φ17	60
MFND-25-70	φ25	φ17	70
MFND-25-80	φ25	φ17	80
MFND-25-92	φ25	φ17	92
MFND-30-0.1	φ30	φ22	0.1
MFND-30-1	φ30	φ22	1
MFND-30-5	φ30	φ22	5
MFND-30-10	φ30	φ22	10
MFND-30-20	φ30	φ22	20
MFND-30-30	φ30	φ22	30
MFND-30-40	φ30	φ22	40
MFND-30-50	φ30	φ22	50
MFND-30-60	φ30	φ22	60
MFND-30-70	φ30	φ22	70
MFND-30-80	φ30	φ22	80
MFND-30-92	φ30	φ22	92
MFND-52-0.1	φ52	φ47	0.1
MFND-52-1	φ52	φ47	1
MFND-52-5	φ52	φ47	5
MFND-52-10	φ52	φ47	10
MFND-52-20	φ52	φ47	20
MFND-52-30	φ52	φ47	30
MFND-52-40	φ52	φ47	40
MFND-52-50	φ52	φ47	50
MFND-52-60	φ52	φ47	60
MFND-52-70	φ52	φ47	70
MFND-52-80	φ52	φ47	80
MFND-52-92	φ52	φ47	92

Please refer to the chart for transmittance data (FND).

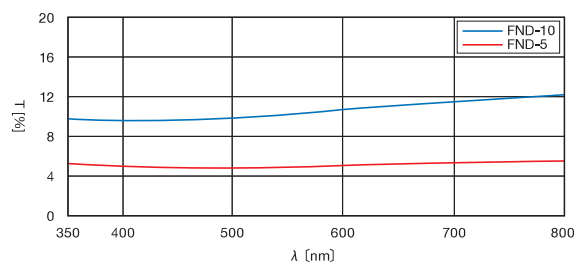
Typical Transmittance Data

T: Transmission

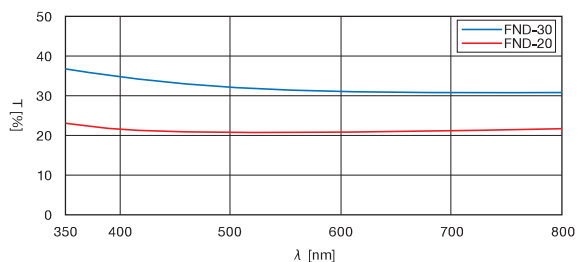
FND-0.1 · 1



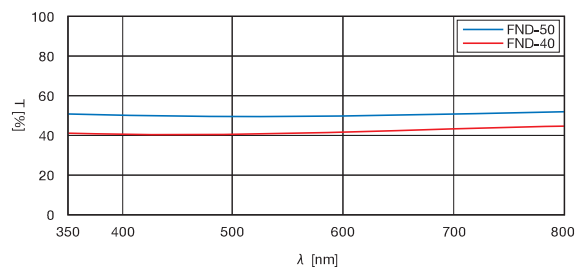
FND-5 · 10



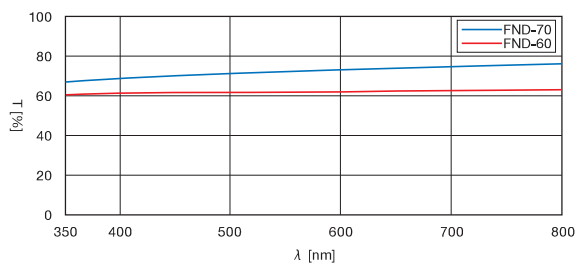
FND-20 · 30



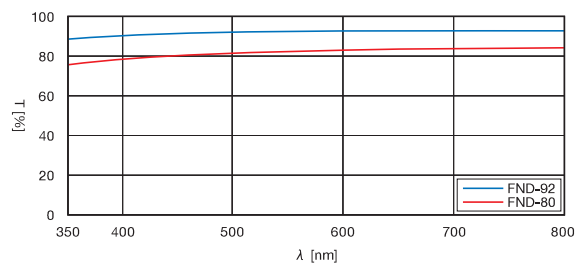
FND-40 · 50



FND-60 · 70



FND-80 · 92



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Reflective Neutral Density Filter (Mounted and Unmounted)

FND/MFND/FNDU/MFNDU

Catalog Code W3099

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Ultraviolet

Part Number	Diameter φD [mm]	Transmittance (300nm) [%]
FNDU-20C02-0.1	φ20	0.1
FNDU-20C02-1	φ20	1
FNDU-20C02-5	φ20	5
FNDU-20C02-10	φ20	10
FNDU-20C02-20	φ20	20
FNDU-20C02-30	φ20	30
FNDU-20C02-40	φ20	40
FNDU-20C02-50	φ20	50
FNDU-20C02-60	φ20	60
FNDU-20C02-70	φ20	70
FNDU-20C02-80	φ20	80
FNDU-20C02-92	φ20	92
FNDU-25C02-0.1	φ25	0.1
FNDU-25C02-1	φ25	1
FNDU-25C02-5	φ25	5
FNDU-25C02-10	φ25	10
FNDU-25C02-20	φ25	20
FNDU-25C02-30	φ25	30
FNDU-25C02-40	φ25	40
FNDU-25C02-50	φ25	50
FNDU-25C02-60	φ25	60
FNDU-25C02-70	φ25	70
FNDU-25C02-80	φ25	80
FNDU-25C02-92	φ25	92
FNDU-30C02-0.1	φ30	0.1
FNDU-30C02-1	φ30	1
FNDU-30C02-5	φ30	5
FNDU-30C02-10	φ30	10
FNDU-30C02-20	φ30	20
FNDU-30C02-30	φ30	30
FNDU-30C02-40	φ30	40
FNDU-30C02-50	φ30	50
FNDU-30C02-60	φ30	60
FNDU-30C02-70	φ30	70
FNDU-30C02-80	φ30	80
FNDU-30C02-92	φ30	92
FNDU-50C02-0.1	φ50	0.1
FNDU-50C02-1	φ50	1
FNDU-50C02-5	φ50	5
FNDU-50C02-10	φ50	10
FNDU-50C02-20	φ50	20
FNDU-50C02-30	φ50	30
FNDU-50C02-40	φ50	40
FNDU-50C02-50	φ50	50
FNDU-50C02-60	φ50	60
FNDU-50C02-70	φ50	70
FNDU-50C02-80	φ50	80
FNDU-50C02-92	φ50	92

Ultraviolet • Mounted

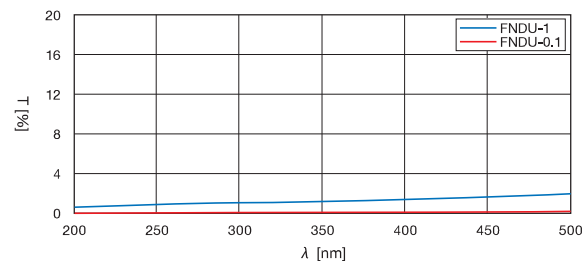
Part Number	Mount outer diameter φD [mm]	Clear aperture φA [mm]	Transmittance (300nm) [%]
MFNDU-25-0.1	φ25	φ17	0.1
MFNDU-25-1	φ25	φ17	1
MFNDU-25-5	φ25	φ17	5
MFNDU-25-10	φ25	φ17	10
MFNDU-25-20	φ25	φ17	20
MFNDU-25-30	φ25	φ17	30
MFNDU-25-40	φ25	φ17	40
MFNDU-25-50	φ25	φ17	50
MFNDU-25-60	φ25	φ17	60
MFNDU-25-70	φ25	φ17	70
MFNDU-25-80	φ25	φ17	80
MFNDU-25-92	φ25	φ17	92
MFNDU-30-0.1	φ30	φ22	0.1
MFNDU-30-1	φ30	φ22	1
MFNDU-30-5	φ30	φ22	5
MFNDU-30-10	φ30	φ22	10
MFNDU-30-20	φ30	φ22	20
MFNDU-30-30	φ30	φ22	30
MFNDU-30-40	φ30	φ22	40
MFNDU-30-50	φ30	φ22	50
MFNDU-30-60	φ30	φ22	60
MFNDU-30-70	φ30	φ22	70
MFNDU-30-80	φ30	φ22	80
MFNDU-30-92	φ30	φ22	92
MFNDU-52-0.1	φ52	φ47	0.1
MFNDU-52-1	φ52	φ47	1
MFNDU-52-5	φ52	φ47	5
MFNDU-52-10	φ52	φ47	10
MFNDU-52-20	φ52	φ47	20
MFNDU-52-30	φ52	φ47	30
MFNDU-52-40	φ52	φ47	40
MFNDU-52-50	φ52	φ47	50
MFNDU-52-60	φ52	φ47	60
MFNDU-52-70	φ52	φ47	70
MFNDU-52-80	φ52	φ47	80
MFNDU-52-92	φ52	φ47	92

Please refer to the chart for transmittance data (FND).

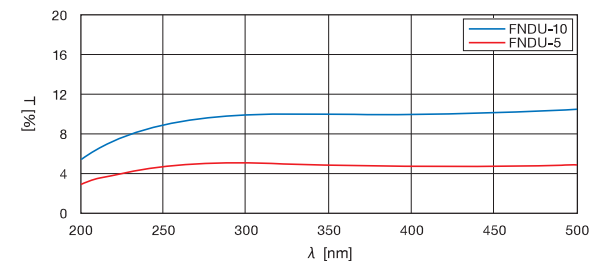
Typical Transmittance Data

T: Transmission

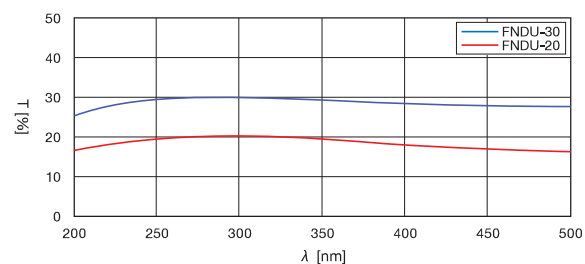
FNDU-0.1 · 1



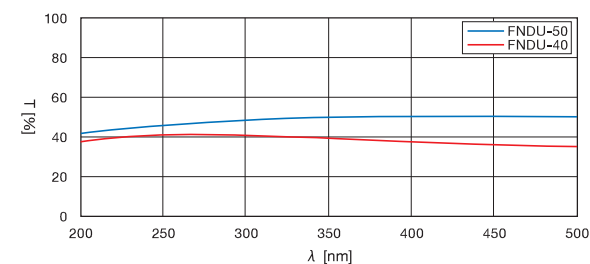
FNDU-5 · 10



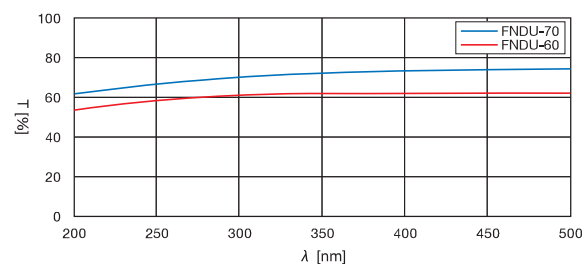
FNDU-20 · 30



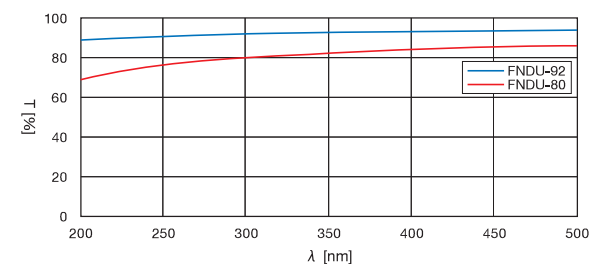
FNDU-40 · 50



FNDU-60 · 70



FNDU-80 · 92



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Variable Reflective ND Filter

Rotating Variable Reflective ND Filter Holder

VND
NDHN
RoHS
RoHS

VND

Catalog Code **W3100**

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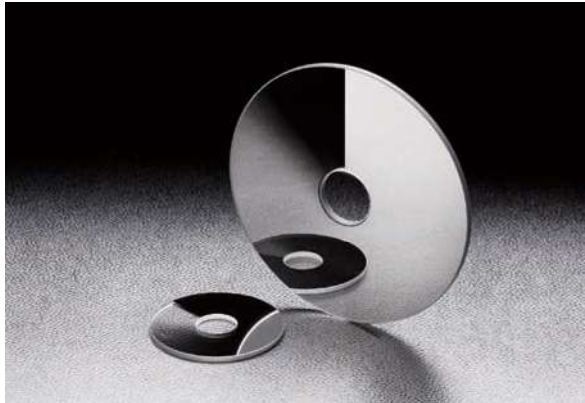
Colored Glass Filters

Dielectric Filters

Etalon

The VND is a reflective ND filter. The reflectivity and the transmittance vary by rotation. They are used mainly for light intensity adjustment in vision or illumination experiments.

- Possible to adjust the intensity by rotation continuously or select light intensity position.
- The transmittance light can be adjusted logarithmically, it makes dynamic light intensity adjustment possible.
- Thin and space saving, it is easy to be placed in a narrow optical test set up.
- The VND-U model is adaptable for use at Ultraviolet bandwidth made of fused silica.



Specifications

Circle

Material	VND: BK7 VND-U: Synthetic fused silica
Coating	Cr (Chrome)
Transmittance	0.1 – 92%
Surface flatness of substrate	λ (Measurement area: $\phi 30\text{mm}$)
Parallelism	$<1'$
Surface Quality (Scratch-Dig)	60–40

Rectangle

Material	Soda Lime Glass
Coating	Cr (Chrome)
Wavelength Range	400 – 700nm
Transmittance	1 – 92%
Surface flatness of substrate	Both side: glossy surface (no polishing)
Surface Quality (Scratch-Dig)	80–50

Guide

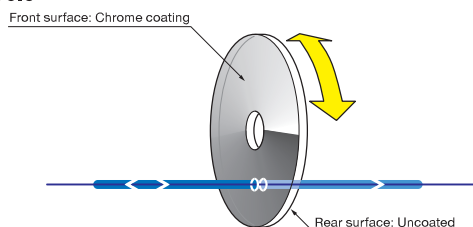
- For AOI (Angle of Incident) changing, the transmittance can be also changed. We recommend to use with the VBS, Variable Beam Splitter. [Reference](#) B062

Attention

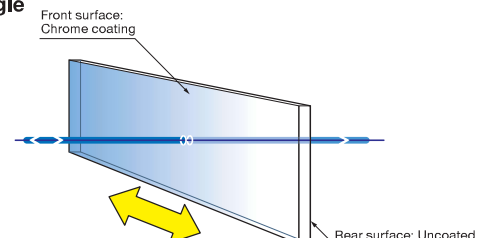
- The round shape variable ND filter is very fragile. The bore is made of glass. Do not force on one surface of the bore when fixed in a holder, it could be broken. For a compatible ND filter holder (NDHN) for your optics replacement on to the holder, please contact our Sales Division for assistance.
- The Chromium film coating is absorptive, please avoid to use with high power laser.
- High power laser light can have thermal lens effects, please use (VBS) Variable Beam Splitter for high power and high energy laser applications. [Reference](#) B062
- The reflected laser light beam is dangerous for eyes, the user must be aware and be prepared to use unreflective tools at the end of the laser beam.
- The normal incident of the laser beam may produce optical feedback, to avoid this situation please use it with a small incident angle.
- Incident light with large beam onto the Variable ND can produce a laser strength inside of the beam. Use incident light to the filter with a narrow beam.

Schematic

● Circle



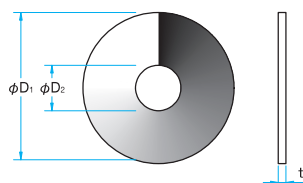
● Rectangle



Outline Drawing

(in mm)

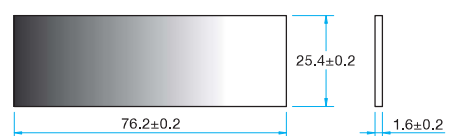
● Circle



● Tolerance

$\phi 50$	Diameter	$\phi D1_{-0.1}^{+0.0}$
	Inner diameter	$\phi D2_{-0.1}^{+0.1}$
	Thickness	$t_{\pm 0.1}$
$\phi 100$	Diameter	$\phi D1_{-0.2}^{+0.0}$
	Inner diameter	$\phi D2_{-0.1}^{+0.1}$
	Thickness	$t_{\pm 0.2}$

● Rectangle





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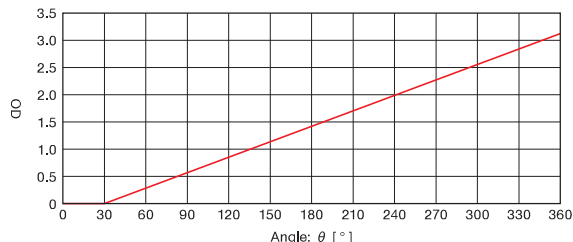
Etalon

Circle				
Part Number	Wavelength Range [nm]	ϕD_1 [mm]	ϕD_2 [mm]	t [mm]
VND-50	400 - 2000	$\phi 50$	$\phi 15$	2
VND-100	400 - 2000	$\phi 100$	$\phi 20$	3
VND-50U	200 - 2000	$\phi 50$	$\phi 15$	2
VND-100U	200 - 2000	$\phi 100$	$\phi 20$	3

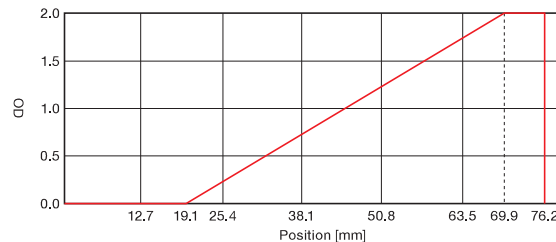
Rectangle	
Part Number	VND-13

Optical Density (Reference data) OD: Optical density

Circle



Rectangle



NDHN

Catalog Code W3101

Round shape variable reflective ND filter is mounted with its holder.
The glass part to the metal part is safely mounted and ready to be used.

- The adjusted position can be fixed with a clamp
- The filter can be turned in 360 degrees without break
- NDHN-U is used with VND-U, the Ultraviolet ND filter.



Attention

► For ND filter change, please contact our Sales Division.

Specifications

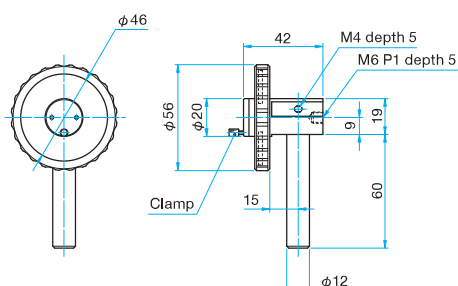
Primary material: Aluminum
Finish: Black Anodized

Part Number	ND filter parts number	Weight [kg]
NDHN-50	VND-50	0.09
NDHN-100	VND-100	0.2
NDHN-U50	VND-50U	0.09
NDHN-U100	VND-100U	0.2

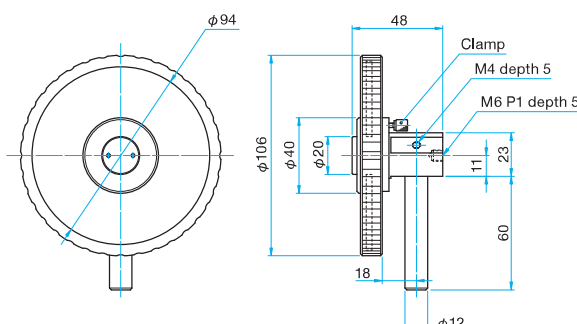
Outline Drawing

(in mm)

NDHN-50/U50 M6 P1



NDHN-100/U100 M6 P1



Reflective Stepping Variable ND Filter | SND

RoHS

Catalog Code W3102

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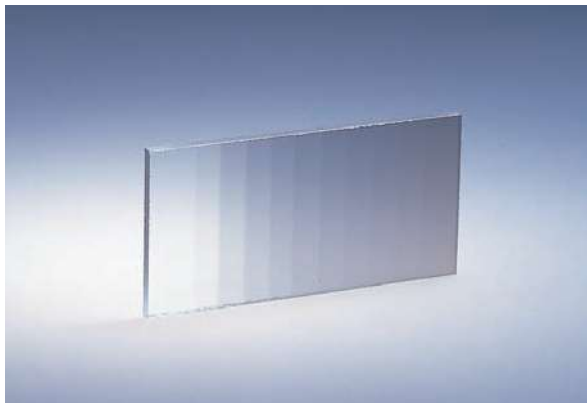
Colored Glass Filters

Dielectric Filters

Etalon

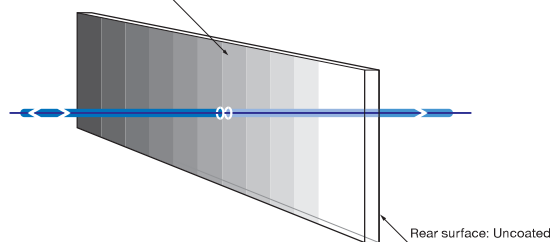
For adjusting the transmitting light at equal intervals of optical density.
Fit for densitometer and colorimeter calibration use.

- Possible to visually select and use 11 steps of optical density on one single plate.
- The chrome thin coating applied is design to adjust the laser spot power.
- The optical density is shows only minimal change across the visible wavelength range.



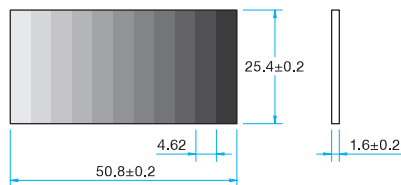
Schematic

Front surface: Chrome coating



Outline Drawing

(in mm)



Transmittance: Divided by 11 strp

Specifications

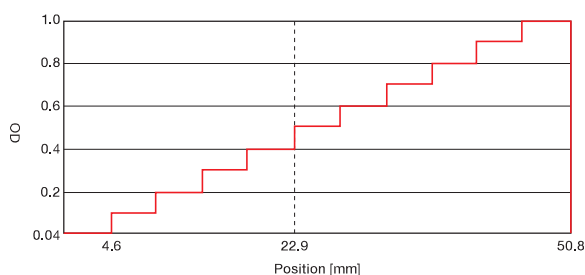
Part Number	SND-12
Material	Soda Lime Glass
Surface flatness of substrate	Both side: glossy surface (no polishing)
Coating	Cr (Chrome)
Wavelength Range	400 – 700nm
Transmittance	10 – 91.2% (Divided by 11 step)
Surface Quality (Scratch-Dig)	80–50

Attention

- ▶ The uniformity of the transmitted light is limited to 4.6mm × 2.5mm beam size, please use for 3mm diameter beam size or below.
- ▶ The transmittance changes with a logarithm for quantity of movement. It is not a proportional movement.
- ▶ Can not be used with high energy pulsed laser.

Optical Density (Reference data)

OD: Optical density



Position and relation of transmittance

Position [mm]	2.31	6.93	11.55	16.17	20.79	25.41	30.03	34.65	39.27	43.89	48.51
Optical density (OD)	0.04	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1
Transmittance [%]	91.2	79.4	63.1	50.1	39.8	31.6	25.1	20.0	15.8	12.6	10.0

Compatible Optic Mounts

CHA-60 / FHS-50

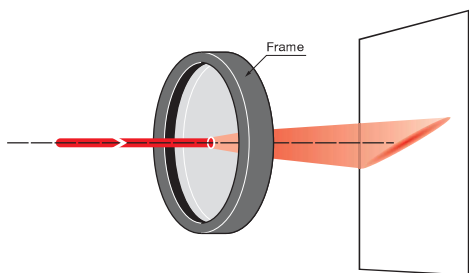
This product is a high transmittance diffuser compared to the other products and we can obtain a wide diffusion light in a single direction.

It is fit for fluid observation, used as a light panel and laser marking system.

- The beam shaping diffuser is made of with many small lenses in random shape on its surface. The emitted light thru the small lenses form the beam into an ellipse shape. Light cannot cause a big light quantity loss by dispersion or a reflection in the irrelevant direction.
- There is not necessary to adjust the light axis like a lens since the light incident can be projected anywhere on the beam shaping diffuser surface and an ellipse beam shape will be obtained.
- When the optic is rotated, the ellipse shape will rotate too.

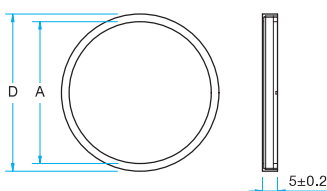


Schematic



Outline Drawing

(in mm)



● Tolerance
Mount outer diameter D±0.1

Specifications

Material	Polycarbonate
Optics diameter	About 0.25mm
Wavelength Range	400 – 1100nm
Transmittance	85 – 90% (But it depend on the diffusion angle)
Angle tolerance	±15% (Launch angle >10°) ±1.5° (Launch angle ≤10°)
Refractive index	1.586

Guide

- ▶ We offer this product without mount and in different size, contact our Sales Division with your requests.
- ▶ We can produce the emitted light in circular distribution form.

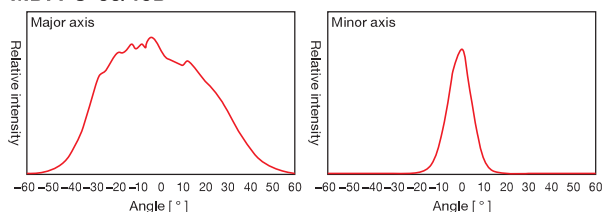
Attention

- ▶ Can be used for laser light but the diffused light can not be returned to one focused spot.
- ▶ Clean the optics with appropriate lens cleaning alcohol or distilled water only.
- ▶ The surface of the optics is extremely delicate, please avoid any contact with hard material or rub the surface.
- ▶ The optics can be deformed or melt, please avoid using it with high power laser or high energy pulsed laser.

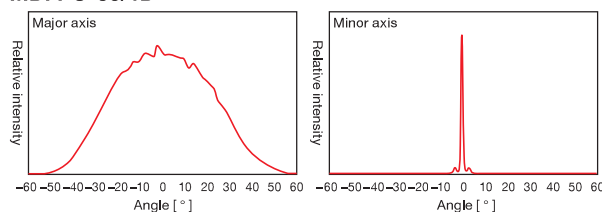
Part Number	Mount outer diameter φD [mm]	Clear aperture φA [mm]	Elliptic diffusion angle (major axis × minor axis) [°]
MDFPC-30-60/10D	φ30	φ22	60×10
MDFPC-30-60/1D	φ30	φ22	60×1
MDFPC-30-40/0.2D	φ30	φ22	40×0.2
MDFPC-30-30/5D	φ30	φ22	30×5
MDFPC-52-60/10D	φ52	φ47	60×10
MDFPC-52-60/1D	φ52	φ47	60×1
MDFPC-52-40/0.2D	φ52	φ47	40×0.2
MDFPC-52-30/5D	φ52	φ47	30×5

Diffusion Angle Characteristics (Reference data)

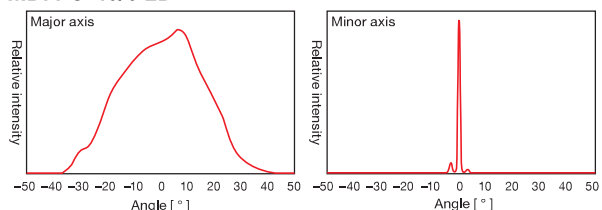
MDFPC-60/10D



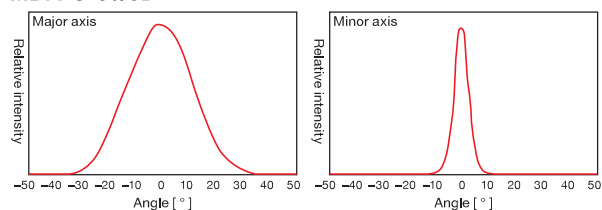
MDFPC-60/1D



MDFPC-40/0.2D



MDFPC-30/5D



Compatible Optic Mounts

FH-50 / LHF-30 / LHA-60

Ground Glass Diffusers | DFB1/DFSQ1

RoHS

Catalog
Code

W3104

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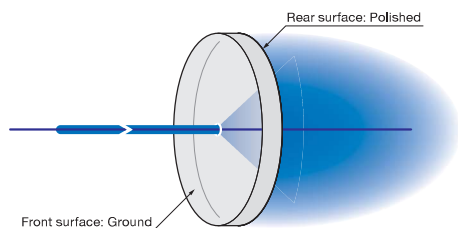
Etalon

Ground glass diffuser has a large area diffusion of an incident light. It is widely used in prevention of imaging of lamp filament, to diffuse a large area of projected light or used as a screen.

- The ground glass diffuser with sandblasted surface at a grit range from #240 to #1500. The higher the grit number the finer the sandblast size.
- BK7 for visible and NIR and for Ultraviolet we recommend Synthetic fused silica substrates.



Schematic



Specifications

Material	DFB1: BK7 DFSQ1: Synthetic fused silica	
Surface condition	Front surface	Sand abrasive surface at various sand number range
	Rear surface	Polished (Surface flatness: about 4λ)
Wavelength Range	DFB1: 400 – 2000nm DFSQ: 200 – 2000nm	
Clear aperture	90% of Actual Aperture	

Guide

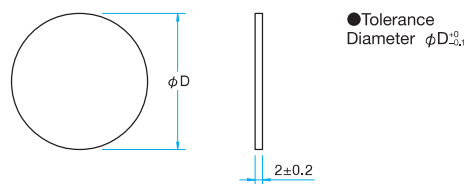
- Ground glass on both surfaces or specific custom size substrates are available, please contact our Sales Division with your request.

Attention

- The characteristic graph shown below is just a reference measurement and is not a measured result of our products.
- Use the sandblast surface for screen application. The backside may have 4% reflectivity and it may cause a ghost imaging phenomena.

Outline Drawing

(in mm)



BK7

Part Number	Diameter φD [mm]	Sand blasted surface (sand number range)
DFB1-30C02-240	φ30	#240
DFB1-30C02-400	φ30	#400
DFB1-30C02-600	φ30	#600
DFB1-30C02-800	φ30	#800
DFB1-30C02-1000	φ30	#1000
DFB1-30C02-1500	φ30	#1500
DFB1-50C02-240	φ50	#240
DFB1-50C02-400	φ50	#400
DFB1-50C02-600	φ50	#600
DFB1-50C02-800	φ50	#800
DFB1-50C02-1000	φ50	#1000
DFB1-50C02-1500	φ50	#1500

Synthetic fused silica

Part Number	Diameter φD [mm]	Sand blasted surface (sand number range)
DFSQ1-30C02-240	φ30	#240
DFSQ1-30C02-400	φ30	#400
DFSQ1-30C02-600	φ30	#600
DFSQ1-30C02-800	φ30	#800
DFSQ1-30C02-1000	φ30	#1000
DFSQ1-30C02-1500	φ30	#1500
DFSQ1-50C02-240	φ50	#240
DFSQ1-50C02-400	φ50	#400
DFSQ1-50C02-600	φ50	#600
DFSQ1-50C02-800	φ50	#800
DFSQ1-50C02-1000	φ50	#1000
DFSQ1-50C02-1500	φ50	#1500

Compatible Optic Mounts

FHS-25, -50 / LHA-60



■Diffuser characteristics

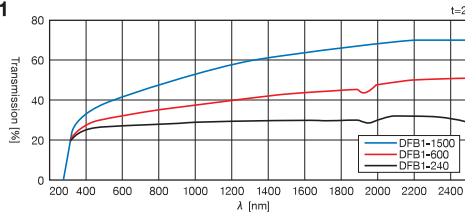
The characteristic of the diffuser depends on the sandblast grit range.

The sand number range at #240 & #400 with large surface roughness the light incident is strongly diffused and the transmitted light is projected onto larger area. The sand number range at #1000 & #1500 with small surface roughness the diffused light is weak and the transmitted beam diffuse gradually the surrounding of the beam.

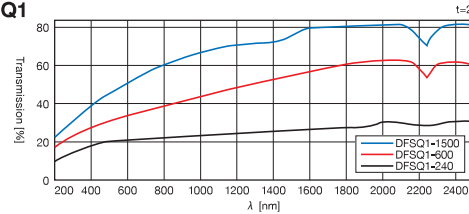
The diffusion of the light is different in accordance with the wavelength, the long wavelength light has lower diffusion capability.

Please see the graph here below for your reference:

DFB1



DFSQ1



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Short Wave Cutoff Filters | SCF

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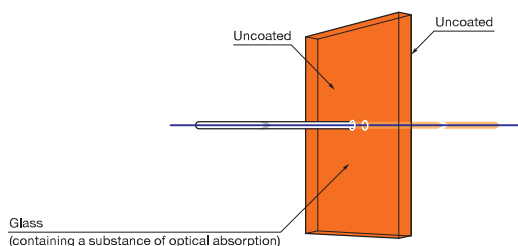
Etalon

Longpass filter that cut the short wavelength and let the long wavelength transmit. Primarily used for cutting the unused wavelength like the UV light when doing inspection and measurement experiments.

- The cut wavelength range is well absorbed without leaking of transmittance light.
- Can select the transmitted light with an accuracy notch as accurate as 10nm to 20nm.
- The transmitted wavelength range has low absorption and no ripple, even at 2000nm with no ripple transmittance is present.

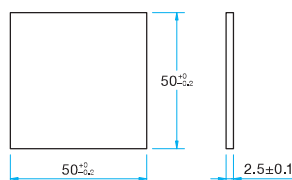


Schematic



Outline Drawing

(in mm)



Guide

- For Dichroic filter with smaller wavelength slope we recommend the (model SDM) in our catalog. [Reference](#) B248
- We can provide custom filters not mentioned on-line or in our catalog, please contact our Sales Division with your requests.

Attention

- The absorption wavelength range can not be used with high power laser and high energy pulsed laser.
- There is no coating on both surfaces of the filter and there is a transmission loss of about 10%.

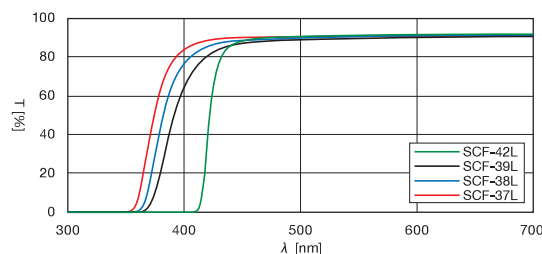
370 – 720nm

Part Number	Transition wavelength λ_T [nm]	Transition Interval $\Delta\lambda$ [nm]	Color tone
SCF-50S-37L	370±5	<35	Colorless
SCF-50S-38L	380±5	<35	Colorless
SCF-50S-39L	390±5	<35	Colorless
SCF-50S-42L	420±5	<25	Colorless
SCF-50S-44Y	440±5	<25	Yellow
SCF-50S-48Y	480±5	<25	Yellow
SCF-50S-50Y	500±5	<25	Yellow
SCF-50S-52Y	520±5	<25	Yellow
SCF-50S-54O	540±5	<25	Orange
SCF-50S-56O	560±5	<25	Orange
SCF-50S-58O	580±5	<25	Orange
SCF-50S-60R	600±5	<25	Red
SCF-50S-62R	620±5	<25	Red
SCF-50S-64R	640±5	<35	Red
★SCF-50S-66R	660±5	<35	Red
SCF-50S-70R	700±10	<45	Black
SCF-50S-72R	720±10	<45	Black

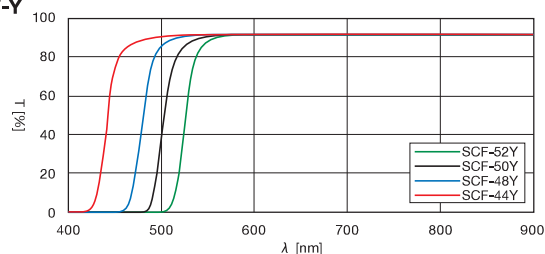
Typical Transmittance Data

T: Transmission

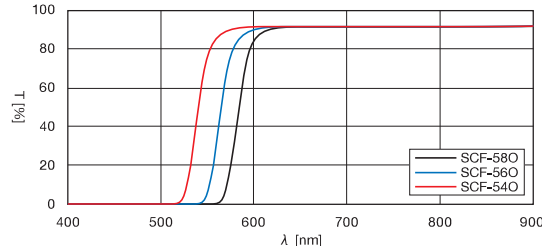
SCF-L



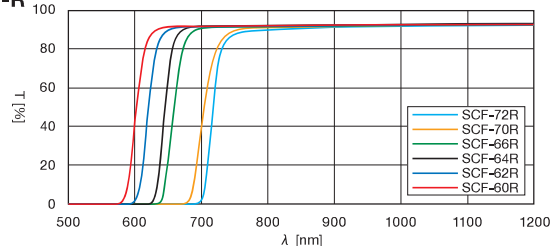
SCF-Y



SCF-O



SCF-R

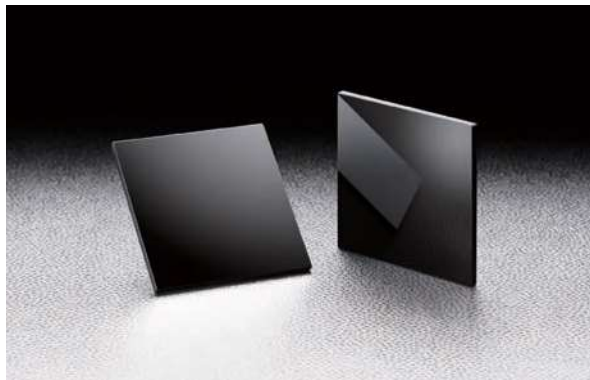


Compatible Optic Mounts

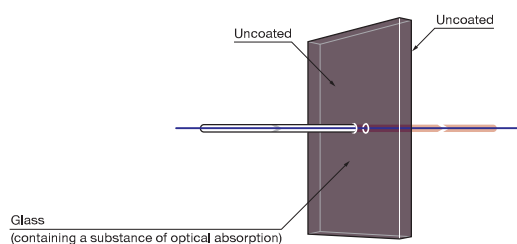
FHS-50 / FH-50

A filter that transmits IR wavelengths and absorbs the UV and Visible range. It is widely used in IR light selection from visible light and applications include infrared alarm systems, night vision systems.

- Transmission limit wavelength selectable at ranges from 760nm to 985nm.
- It is used for a IR sensing camera by adding an IR transmitting filter onto an image sensor.
- The visible and UV range can be blocked and the sensibility get higher by adding it onto an image sensor.



Schematic



Guide

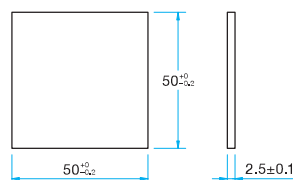
- ▶ For a reflective type of filter, "cold mirror" we recommend (model CLDM) in our catalog. [Reference](#) B243
- ▶ We can provide similar products to custom specifications which are not mentioned on-line or in our catalog, please contact our Sales Division with your requests.

Attention

- ▶ The absorption wavelength range can not be used with high power laser and high energy pulsed laser.
- ▶ There is no coating on both surfaces of the filter and there is a transmission loss of about 10%.

Outline Drawing

(in mm)



760 – 985nm

Part Number	Transition wavelength λ_T [nm]	Transition Interval $\Delta\lambda$ [nm]	Color tone
ITF-50S-76IR	760±10	<60	Black
ITF-50S-80IR	800±10	<60	Black
ITF-50S-83IR	830±10	<60	Black
ITF-50S-85IR	850±10	<60	Black
ITF-50S-100RM	985±10	<222	Black

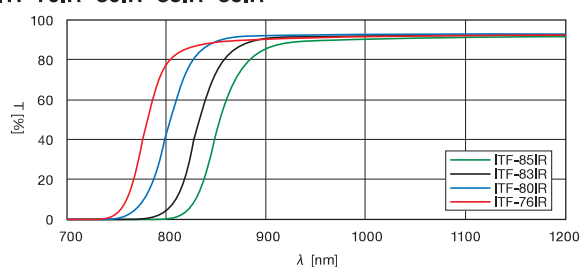
830nm

Part Number	Transition wavelength λ_T [nm]	Transition Interval $\Delta\lambda$ [nm]	Center wavelength [nm]	Transmittance for center wavelength [%]	Absorption limit short wavelength [nm]	Transmittance at short absorption limit [%]	Absorption limit long wavelength [nm]	Transmittance at long absorption limit [%]	Color tone
★ITF-50S-83RT	730±10	<40	790±5	85±3	691	<0.1	1225	<0.2	Black

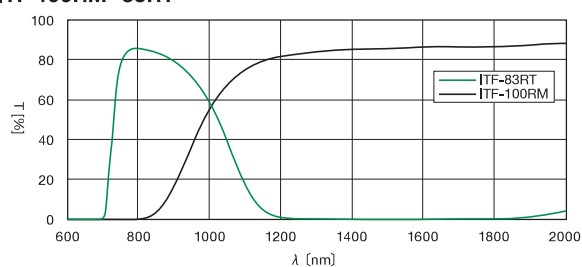
Typical Transmittance Data

T: Transmission

ITF-76IR · 80IR · 83IR · 85IR



ITF-100RM · 83RT



Compatible Optic Mounts

FHS-50 / FH-50

UV Transmitting Filters | UTVAF

RoHS

Catalog
Code

W3108

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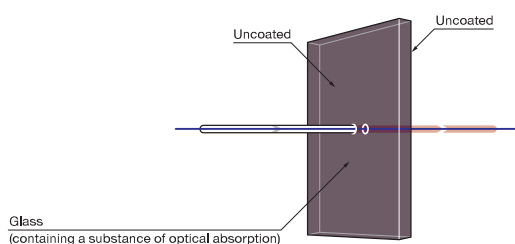
Etalon

A filter that transmits a specific wavelength in the UV range and cuts the visible range. It is used to select UV wavelength from a light emission or select a specific wavelength from multiwavelengths.

- It is widely used in fluorescence imaging or selection of only UV exposure from a visible light.
- UTVAF-36U is used for selecting the emitted light of the i line (365nm).
- Use the filter in a short wavelength detector, or to cut off the brightness of the visible light and increase the sensibility of the UV light.



Schematic



Guide

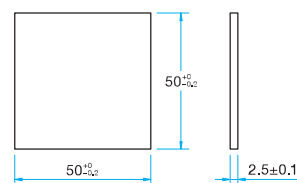
- ▶ We are also providing bandpass filter at narrow wavelength (model VPF). [Reference](#) B254
- ▶ We are also providing high transmittance filter for interference application (model YIF). [Reference](#) B252
- ▶ We can provide custom product not specifically mentioned on-line or in our catalog to your specifications, please contact our Sales Division with your specific requests.

Attention

- ▶ The absorption wavelength range can not be used with high power laser and high energy pulsed laser.
- ▶ There is no coating on both surfaces of the filter and there is a transmission loss of about 10%.

Outline Drawing

(in mm)



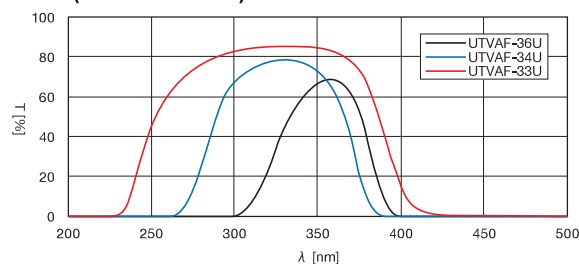
Specifications

Part Number	Center wavelength [nm]	Transmittance for center wavelength [%]	Absorption limit short wavelength [nm]	Transmittance at short absorption limit [%]	Absorption limit long wavelength [nm]	Transmittance at long absorption limit [%]	Average Transmittance (absorption limit long wavelength – 700nm) [%]
UTVAF-50S-33U	317	>85	233	<5	431	<0.3	<5.0
UTVAF-50S-34U	325	>73	251	<5	398	<0.1	<0.1
UTVAF-50S-36U	350	>72	288	<5	410	<0.1	<0.1

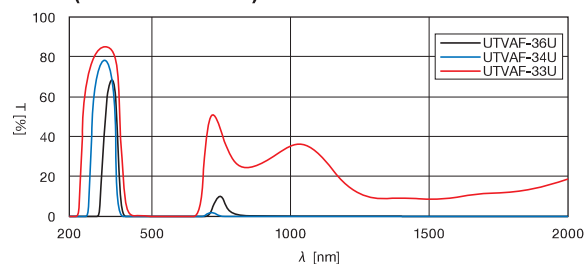
Typical Transmittance Data

T: Transmission

UTVAF (200nm – 500nm)



UTVAF (200nm – 2000nm)



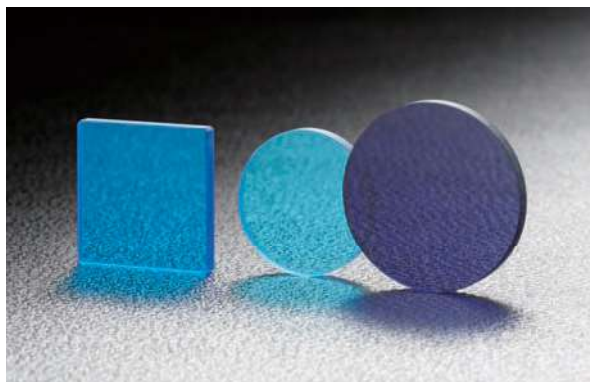
Compatible Optic Mounts

FHS-50 / FH-50

A filter that transmits a specific wavelength at green from blue, and cuts off other wavelengths in the visible range.

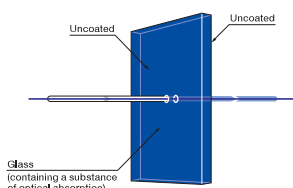
It is used to select blue or green wavelength from a light emission or select a specific wavelength from multi-wavelengths.

- A selection of different type of main wavelength and bandwidth from 370nm to 550nm.
- To select a wavelength from a large bandwidth light.
- By insertion of the filter into microscope or CCD camera will provide better contrast in a vision experiment.

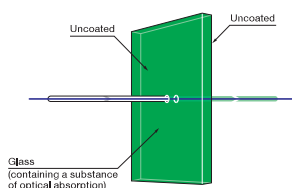


Schematic

●Blue Filter

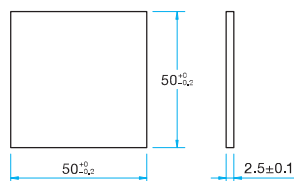


●Green Filter



Outline Drawing

(in mm)



Guide

- ▶ We are also providing bandpass filter with narrow wavelength (model VPF). [Reference](#) B254
- ▶ We can provide high transmittance filter for interference application (model YIF). [Reference](#) B252
- ▶ We also can supply to custom specifications which are not mentioned on-line or in our catalog, please contact our Sales Division with your request.

Attention

- ▶ The absorption wavelength range can not be used with high power laser and high energy pulsed laser.
- ▶ There is no coating on both surfaces of the filter and there is a transmission loss of about 10%.
- ▶ Due to the specifications of the glass material of the green filter, you can not obtain a high and sharp transmittance, we recommend using the high transmittance interference filter (model YIF). [Reference](#) B252

Blue Filter

Part Number	Center wavelength [nm]	Transmittance for center wavelength [%]	Absorption limit short wavelength [nm]	Transmittance at short absorption limit [%]	Absorption limit long wavelength [nm]	Transmittance at long absorption limit [%]	Average Transmittance (absorption limit long wavelength - 700nm) [%]
★BLF-50S-370B	370	>82	289	<0.5	486	<0.1	<0.1
BLF-50S-390B	390	>78	309	<5	528	<0.1	<0.1
BLF-50S-410B	410	>92	261	<1	625	<0.5	<5 (555 - 700nm)
BLF-50S-440B	440	>44	358	<1	535	<0.5	<0.3
BLF-50S-460B	460	>84.5	324	<5	718	<1.0	<14 (555 - 700nm)

Green Filter

Part Number	Center wavelength [nm]	Transmittance for center wavelength [%]	Absorption limit short wavelength [nm]	Transmittance at short absorption limit [%]	Absorption limit long wavelength [nm]	Transmittance at long absorption limit [%]	Average Transmittance (absorption limit long wavelength - 700nm) [%]
GRF-50S-530G	526	>15	452	<0.1	615	<0.1	<0.1
GRF-50S-533G	533	>50	415	<0.1	668	<3.0	<3.0
GRF-50S-545G	541	>13	483	<0.1	621	<0.1	<0.1
GRF-50S-550G	548	>80	406	<0.1	637	<55	<55

Compatible Optic Mounts

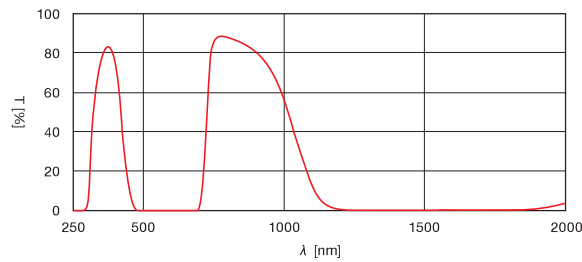
FHS-50 / FH-50

Blue and Green Filters | BLF/GRF

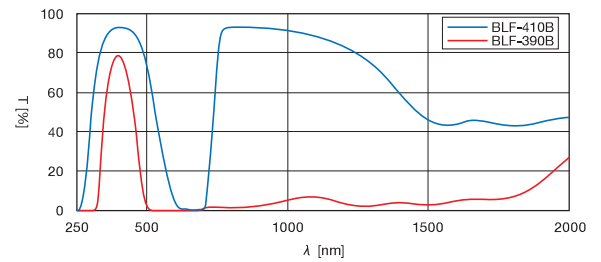
Typical Transmittance Data

T: Transmission

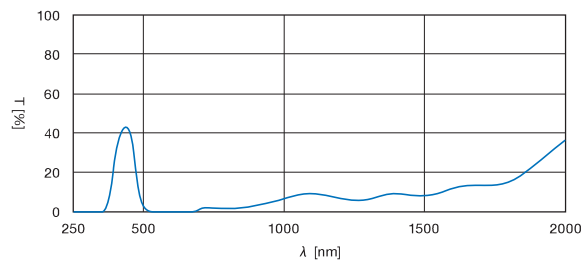
BLF-370B



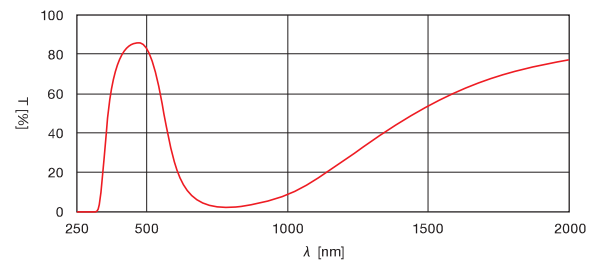
BLF-390B · 410B



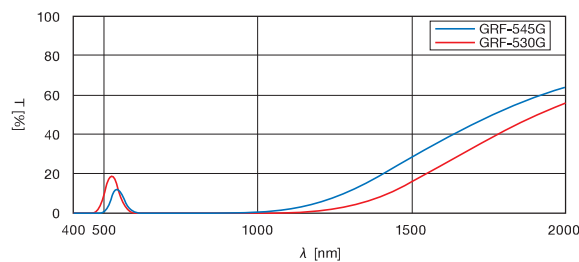
BLF-440B



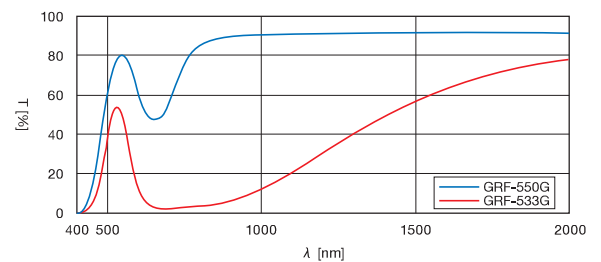
BLF-460B



GRF-530G · 545G



GRF-533G · 550G

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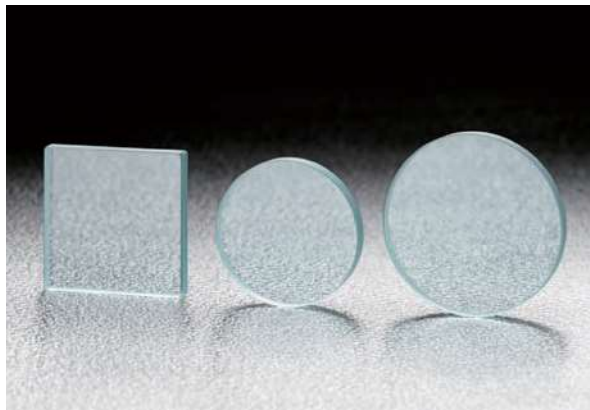
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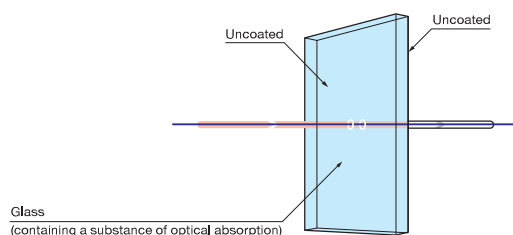
Etalon

This product is widely used for absorbing heat from halogen and xenon lights for experiments that need to avoid UV or heat from those lightings.

- Keep away from the heat that is released from NIR and IR range and it cuts off the brightness of the NIR and IR light.
- It also cuts-off spot light and heat during microscope illumination.
- Light transmitted through the filter does not darken the high transmitted visible light.



Schematic



Guide

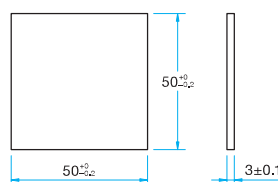
- ▶ The filter can be broken if it is placed too close to a high brightness lamp with its sudden heat. We recommend to strengthen the glass before this operation. (strengthened glass) [Reference](#) B213
- ▶ We can provide custom specification which are not mentioned on-line or in our catalog, please contact our Sales Division with your request.

Attention

- ▶ The absorption wavelength range can not be used with high power laser and high energy pulsed laser.
- ▶ There is no coating on both surfaces of the filter and there is a transmission loss of about 10%.

Outline Drawing

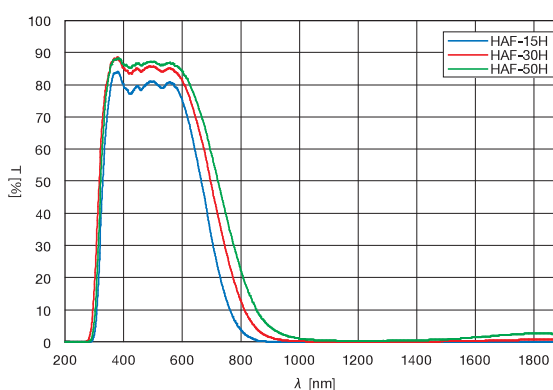
(in mm)



Specifications

Part Number	Average transmittance (visible range) [%]	High transmittance limit wavelength [nm]	Transition wavelength [nm]	Absorption limit long wavelength [nm]	Transmittance of absorption range [%]	Average Transmittance (absorption limit long wavelength – 2000nm) [%]
HAF-50S-15H	>75	573	701±10	867	<0.5	<0.1
HAF-50S-30H	>80	558	743±10	975	<0.5	<0.5
HAF-50S-50H	>81	570	777±10	1052	<1.0	<3.0

Typical Transmittance Data T: Transmission



Compatible Optic Mounts

FHS-50 / FH-50

Color Temperature Conversion Filter | LA/LB

RoHS

Catalog
Code

W3111

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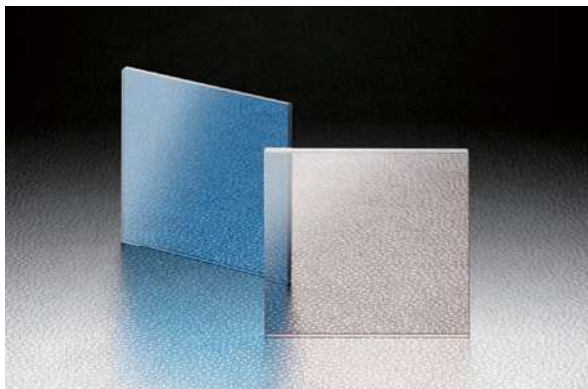
Colored Glass
Filters

Dielectric Filters

Etalon

Use the LB filter for reducing the reddish light of the Tungsten lamp and use the LA filter for reducing the bluish of the LED lamp.
It keeps the light at a natural color without adjusting the illumination for microscope observation.

- Fit perfectly for image processing with CCD camera without color balance.
- For chromaticity measurement application to enable the color temperature changing.



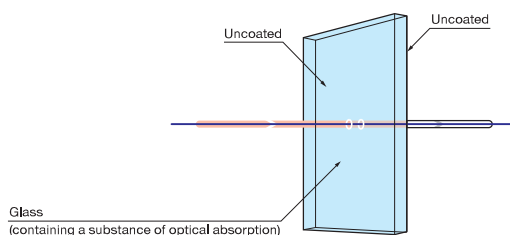
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- We can produce custom sizes, please contact our Sales Division with your request.
- We can provide other custom specifications which are not mentioned on-line or in our catalog, please contact our Sales Division.

Attention

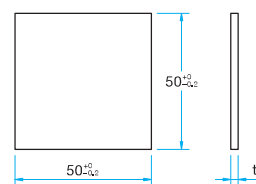
- To keep the transmittance as our priority specification, the filter thickness of each filter will vary in accordance with the transmittance specification.
- There is no coating on both surfaces of the filter, the transmission loss is about 10%.
- The filter can be damaged if it is placed too close to a high brightness lamp with sudden heat.

Schematic



Outline Drawing

(in mm)



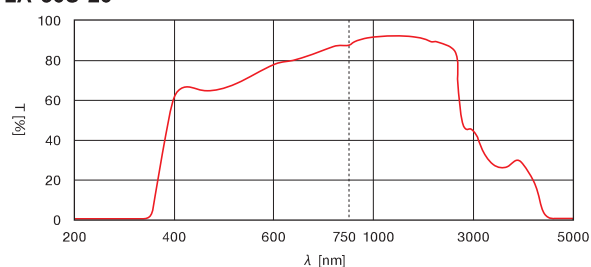
Specifications

Part Number	Thickness t [mm]	Color specification X (standard illuminants A)	Color specification Y (standard illuminants A)
LA-50S-20	Please contact	0.467	0.408
LB-50S-120	Please contact	0.370	0.378

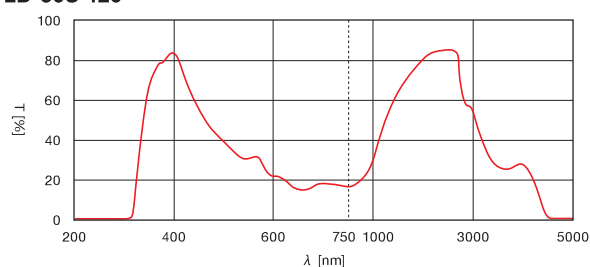
Typical Transmittance Data

T: Transmission

LA-50S-20



LB-50S-120

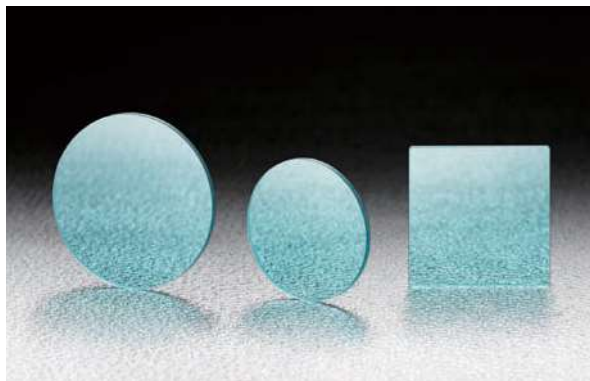


Compatible Optic Mounts

FHS-50 / FH-50

The filter that can simulate the sensing of a human eye which is similar the silicon pixel detector sensor with a wavelength located at a peak at the NIR range. It is also widely as a filter attached to a CCD sensor.

- Use the filter to correct the unnatural color taken with an IR camera.
- The CCF5000 can be used in natural environment or outside, the surface of the filter is tough and hard to burn.
- The CCF 500 and CCF 5000 have the same characteristics until 900nm, above 900nm the transmittance is different.
- The color of the ECM-500 is darker than the CCF-500 and CCF-5000 and is fit for use to cut off the NIR light.



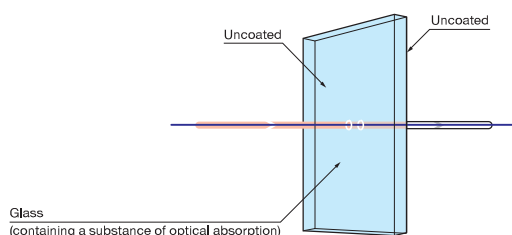
Guide

- We can produce custom sizes, please contact our Sales Division with your request.

Attention

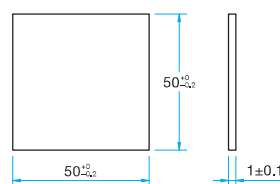
- The absorption wavelength range can not be used with high power laser and high energy pulsed laser.
- There is no coating on both surfaces of the filter resulting in about a 10% transmission loss.
- The ECM-500 and the CCF-500 are less resistance for an outside environment use and burn or smoke easier than the CCF-5000 over time.

Schematic



Outline Drawing

(in mm)

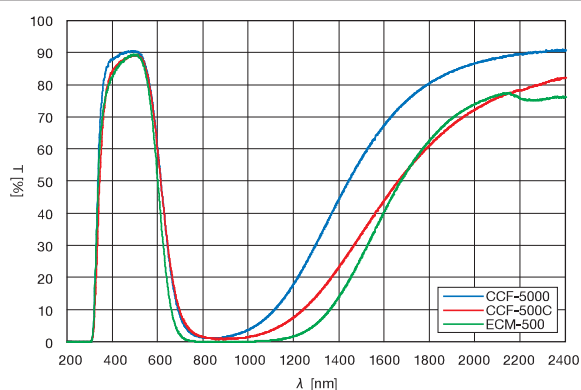


Specifications

Part Number	Average transmittance 400 – 600nm [%]	Transmittance at 600nm [%]	Transition wavelength [nm]	Absorption limit long wavelength [nm]	Transmittance at long absorption limit [%]	Average Transmittance (absorption limit long wavelength – 1200nm) [%]
CCF-50S-500C	84.2	About 60	654	829	<3.0	<5.0
CCF-50S-5000	85.7	About 60	651	803	<3.0	<7.0
ECM-50S-500	82.7	About 50	626	766	<0.3	<0.5

Typical Transmittance Data

T: Transmission



Compatible Optic Mounts

FHS-50 / FH-50

Contact sheet

Catalog Code W3811

Contact sheet for Custom-made Color Filter

☐ Estimation ☐ Order

Date

☐ To: Sigma Koki Co., Ltd. **FAX +81-3-5638-6550**

Affiliation (Organization Name)					
Department			Name		
TEL		FAX		E-mail	
Country/Address					
Name & Designation	(Tentative name is okay)				
Drawing Number			Estimate	☐ Yes: by Date ☐ No	
Desired Delivery Date			Budget	JP Yen	
Type	SCF, ITF, UTVAF, CCF, HAF, BLF, GRF			Pieces	
Filter Number				Heat strengthening	Yes · No
Outside dimension			φA	mm	
			a	mm	
			b	mm	
Others	* Write more detailed specifications here. (Rough illustration is acceptable.)				

Sigma Koki Co., Ltd.

General Catalog 02

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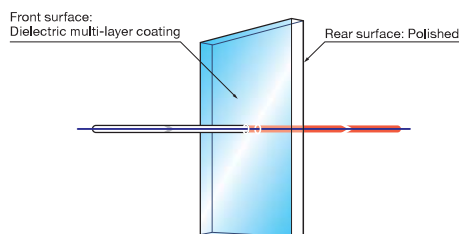
Etalon

The dielectric multi-layer coating offers a high optical performance.
Provides a wide range of visible color quality green, blue, red, yellow, magenta and cyan.

- The switching from reflecting and transmitting is steep; it is usable as a wavelength separation filter.
- Easy to be used as a variable wavelength filter by changing the angle of incident.
- Able to choose from a range of the six fundamental colors, fits perfectly for color vision experiments.

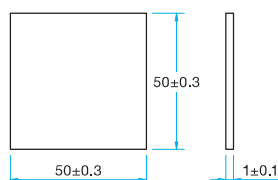


Schematic



Outline Drawing

(in mm)



Specifications

Material	B270® (SuperWhite Glass) or BK7
Incident angle	0°
Wavelength Range	400 – 700nm
Surface Quality (Scratch-Dig)	60-40
Clear aperture	90% of external dimension of the square inscription circle

Guide

- ▶ B270® is a registered trademark of SCHOTT AG Inc.
- ▶ Different size, wavelength and deviation ratio not mentioned on-line or in our catalog are available as custom products upon request.
- ▶ For a suitable filter holder, please contact our Sales Division.

Attention

- ▶ Do not use filter with high power laser and high energy pulsed laser. We can provide pulse laser use dichroic filters, please contact our Sales Division.
- ▶ If the reflecting light of the filter is used, the transmittance and the reflectance value may change in accordance to the angle of incident.
- ▶ The color may appear different than expected at 45 degrees angle of incidence, therefore to obtain the sharp color, please use it at 0 degree.

Specifications

Part Number	High transmittance range (normal incident) [nm]	Transmittance (normal incident) [%]	Cutoff range (normal incident) [nm]	Transmittance of cutoff range (normal incident) [%]	Wavelength at 50% [nm]
DIF-50S-BLE	400 – 470	>85	530 – 700	<1	495±10
DIF-50S-GRE	515 – 560	>85	400 – 460 630 – 700	<1	505±10 575±10
DIF-50S-RED	640 – 700	>85	400 – 565	<1	610±10
DIF-50S-YEL	550 – 700	>85	410 – 475	<1	520±10
DIF-50S-MAG	420 – 470 620 – 700	>80 >85	520 – 565	<1	495±10 605±10
DIF-50S-CYA	400 – 560	>85	640 – 700	<1	590±10

Compatible Optic Mounts

FHS-50 / CHA-60

Visible range dichroic filters | DIF

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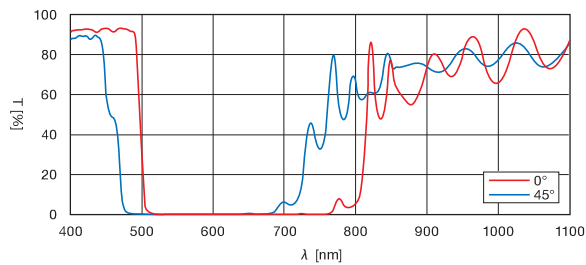
Dielectric Filters

Etalon

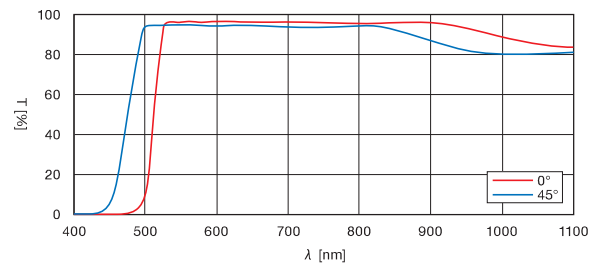
Typical Transmittance Data

T: Transmission

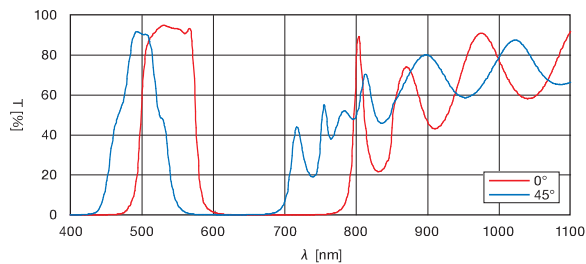
DIF-BLE



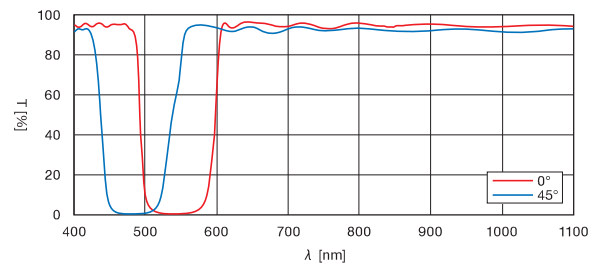
DIF-YEL



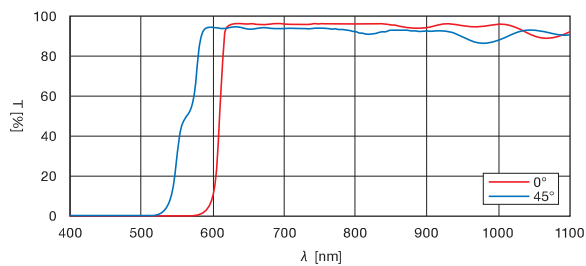
DIF-GRE



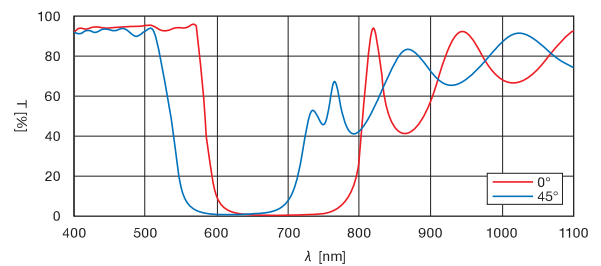
DIF-MAG



DIF-RED



DIF-CYA

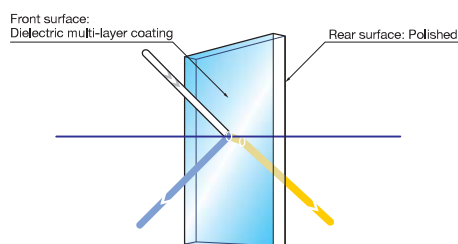


Mirrors of 3 fundamentals colors RGB for use in color separation. No absorption effects because of the dielectric optical coating, the transmitting and reflecting are applicable. For light transmitting, choose 2 colors out of the RGB dichroic mirror for color separation. (For example: DIM RED + DIM GRE = Reflect red, reflect green, and transmit blue)

- The switching from reflecting and transmitting is steep; it is usable as a wavelength separation filter.
- Easy to be used as a variable wavelength filter by changing the angle of incident.
- Use the 3 fundamentals colors RGB together, a white color can be obtained.



Schematic



Specifications

Material	B270® (SuperWhite Glass) or BK7
Incident angle	45°
Wavelength Range	400 – 700nm
Surface Quality (Scratch-Dig)	60–40
Clear aperture	90% of external dimension of the square inscription circle

Guide

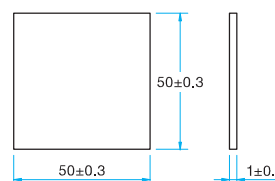
- ▶ B270® is a registered trademark of SCHOTT AG Inc.
- ▶ Different size, wavelength and deviation ratio not mentioned on-line or in our catalog are available as custom products upon request.
- ▶ For a suitable filter holder, please contact our Sales Division.

Attention

- ▶ Do not use it with high power laser and high energy pulsed laser. We can provide pulse laser use dichroic filters, please contact our Sales Division.
- ▶ Use the RGB color at 45 degrees to obtain the correct color separation.

Outline Drawing

(in mm)



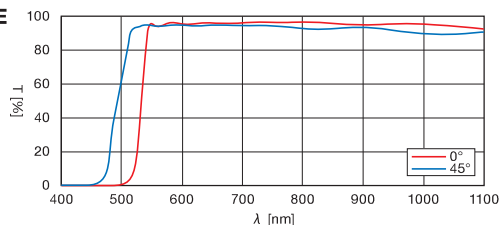
Specifications

Part Number	High transmittance range (45 degrees incident) [nm]	Transmittance (45 degrees incident) [%]	Cutoff range (45 degrees incident) [nm]	Transmittance of cutoff range (45 degrees incident) [%]	Wavelength at 50% [nm]
DIM-50S-BLE	535 – 700	>85	400 – 450	<5	490±10
DIM-50S-GRE	420 – 470 620 – 700	>80 >80	510 – 550	<5	500±10 580±10
DIM-50S-RED	420 – 550	>85	640 – 700	<5	590±10

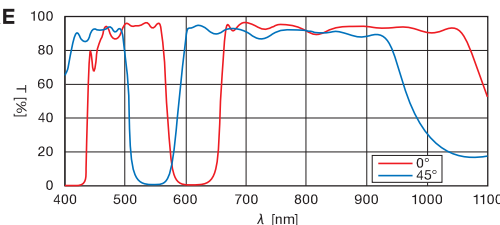
Typical Transmittance Data

T: Transmission

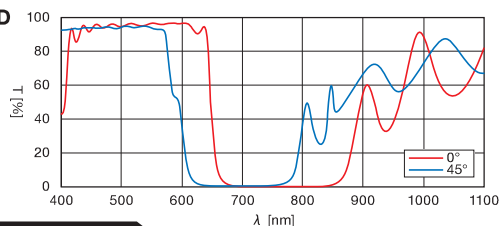
DIM-BLE



DIM-GRE



DIM-RED



Compatible Optic Mounts

FHS-50 / CHA-60

Cold Filters | CLDF

RoHS

Catalog
Code

W3115

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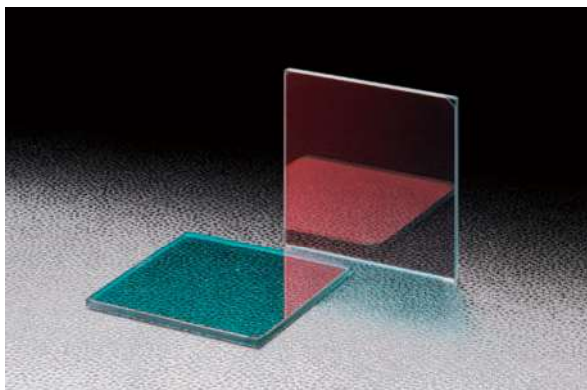
Colored Glass
Filters

Dielectric Filters

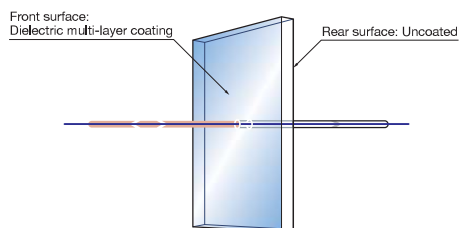
Etalon

The principle of the cold filter is similar to the glass that is used in a halogen lamp to protect the heat. It enables the visible range to transmit and cut-off the IR range (heat).

- The feature of the dielectric optical coating filter is to have a steep decline of transmittance from the visible range to IR range. In addition to this; the heat absorption filter is efficient for transmitting at the visible range and cutting off the IR range.
- It is frequently used as a IR cut filter on a CCD sensor.
- It is also used as a filter to cut-off the heat from the illumination in a biological microscope to avoid heating up the specimen.

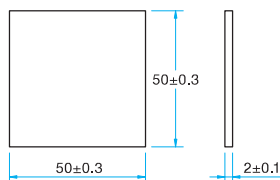


Schematic



Outline Drawing

(in mm)



Specifications

Part Number	High transmittance range (normal incident) [nm]	Transmittance (normal incident) [%]	Cutoff range (normal incident) [nm]	Transmittance of cutoff range (normal incident) [%]	Wavelength at 50% [nm]
CLDF-50S	400 – 600	>80	800 – 2000	<10	700±20

Specifications

Material	Heat-absorbing glass
Incident angle	0°
Wavelength Range	400 – 2000nm (Cut off more than 900nm)
Surface Quality (Scratch-Dig)	60–40
Clear aperture	90% of external dimension of the square inscription circle

Guide

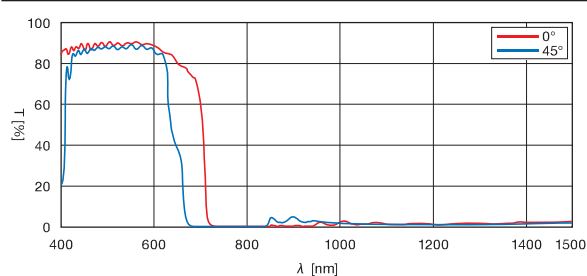
- Different size, wavelength and deviation ratio that are not mentioned on-line or in our catalog are available as custom products upon request.
- For a specific filter holder, please contact our Sales Division.

Attention

- The transmittance graph drops on the long side of the visible range when the incident angle is slightly slanting.
- When placing the filter too close to a light source, the heat absorption may damage the filter due to a rapid change of the temperature.
- The backside of the cold filter is not coated with AR. The absorption filter may have a backside reflectance value of 4%, a total of 20% of loss can occurred.

Typical Transmittance Data

T: Transmission

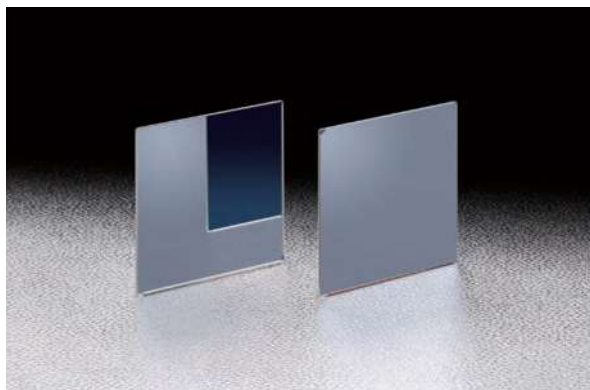


Compatible Optic Mounts

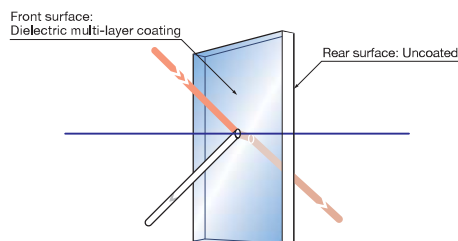
FHS-50 / CHA-60

The principle of the cold mirror is reflecting the visible range light and leave the UV range light to transmit. It can separate the visible and the UV (heat) of the sunlight.

- Low absorption with a dielectric multi-layer coating using high transmittance glass material and it can be resistant to rapid change in high temperature.
- Using this product it is possible to select IR light only.
- Can be used as a NIR filter by changing the angle of Incident.



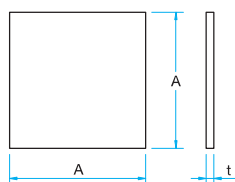
Schematic



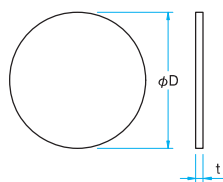
Outline Drawing

(in mm)

● Square



● Circle



Specifications	
Material	B270® (SuperWhite Glass) or BK7
Incident angle	45°
Wavelength Range	400 – 2000nm
Surface Quality (Scratch-Dig)	80-50, 60-40 (CLDM-50S)
Clear aperture	90% of external dimension of the square inscription circle

Guide

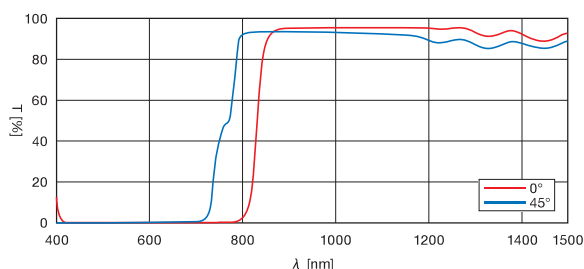
- ▶ B270® is a registered trademark of SCHOTT AG Inc.
- ▶ Different size, wavelength and deviation ratio not mentioned on-line or in our catalog are available as custom products upon request.
- ▶ For a suitable filter holder, please contact our Sales Division.

Attention

- ▶ Do not use cold mirror with high power laser and high energy pulsed laser. We can provide dichroic filters suitable for use with pulse lasers, please contact our Sales Division. [Reference](#) B020
- ▶ The backside of the cold mirror is not coated with AR, please use the dielectric coating side for visible light incident. The backside may have 10% of loss of energy and the ghost image may occur.
- ▶ The visible light is reflected, the UV (heat) is transmitted, avoid blocking the transmitted light by a reflective element which may hold the heat.
- ▶ The reflecting light may be mixed with infrared if the incident angle is other than 45 degrees.

Typical Transmittance Data

T: Transmission



Square							
Part Number	Length A [mm]	Thickness t [mm]	High transmittance range (45 degrees incident) [nm]	Transmittance (45 degrees incident) [%]	Cutoff range (45 degrees incident) [nm]	Transmittance of cutoff range (45 degrees incident) [%]	Wavelength at 50% [nm]
CLDM-25.4S3.3	25.4±0.5	3.3±0.3	800 – 2000	>75	420 – 700	>95	760±10
CLDM-50.8S3.3	50.8±0.5	3.3±0.3	800 – 2000	>75	420 – 700	>95	760±10
CLDM-50S	50.0±0.3	1.0±0.1	800 – 2000	>80	400 – 700	>90	760±10

Circle							
Part Number	Diameter φD [mm]	Thickness t [mm]	High transmittance range (45 degrees incident) [nm]	Transmittance (45 degrees incident) [%]	Cutoff range (45 degrees incident) [nm]	Transmittance of cutoff range (45 degrees incident) [%]	Wavelength at 50% [nm]
CLDM-25.4S3.3	φ25.4±0.5	3.3±0.3	800 – 2000	>75	420 – 700	>95	760±10
CLDM-50.8S3.3	φ50.8±0.5	3.3±0.3	800 – 2000	>75	420 – 700	>95	760±10

Compatible Optic Mounts

FHS-50 / CHA-60

Ultra-Violet Cut Filters | NHOTM

RoHS

Catalog
Code

W3223

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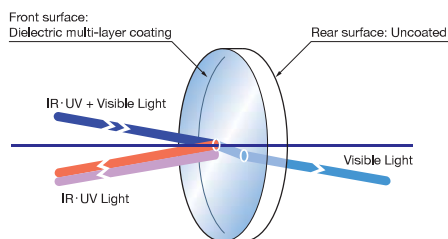
Etalon

Dichroic filter transmit only visible light and reject ultraviolet and infrared light. Filters are perfect for applications that require high reflectance in the infrared spectrum and excellent transmission in the visible.

- Excellent optic for survival in high temperature and high humidity environments.



Schematic



Specifications

Material	BK7
Surface flatness before Coating	3λ per φ25.4mm
Incident angle	0° – 15°
Coating	Dielectric multi-layer coating
Max temperature	300°C
Surface Quality (Scratch-Dig)	80-50

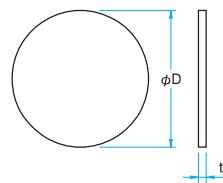
Attention

- Designed for incident angle of 0 to 15 degrees, use at more extreme angles will change wavelength characteristic of transmittance and not provide desired result.
- The backside of the filter is not coated with AR and may result in a ghost image.

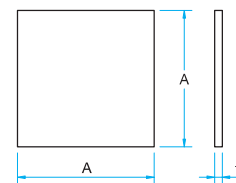
Outline Drawing

(in mm)

● Circle



● Square



- Tolerance
Diameter $\phi D \pm 0.5$, $A \pm 0.5$
Length $A \pm 0.5$
Thickness $t \pm 0.3$

Circle

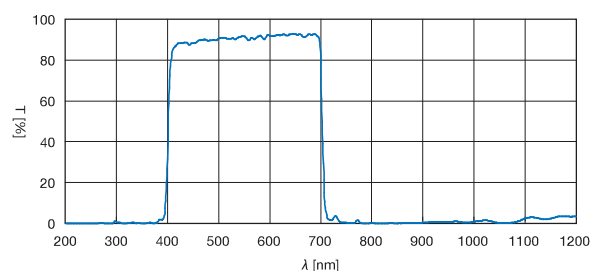
Part Number	Diameter ϕD [mm]	Thickness t [mm]	Transmittance (420 – 680nm) [%]	Transmittance (200 – 380nm) [%]	Transmittance (730 – 1500nm) [%]
NHOTM-25.4C3.3	$\phi 25.4$	3.3	>Average 85	<Average 1	<Average 5
NHOTM-50.8C3.3	$\phi 50.8$	3.3	>Average 85	<Average 1	<Average 5

Square

Part Number	Length A [mm]	Thickness t [mm]	Transmittance (420 – 680nm) [%]	Transmittance (200 – 380nm) [%]	Transmittance (730 – 1500nm) [%]
NHOTM-25.4S3.3	25.4	3.3	>Average 85	<Average 1	<Average 5
NHOTM-50.8S3.3	50.8	3.3	>Average 85	<Average 1	<Average 5

Typical Transmittance Data

T: Transmission



Compatible Optic Mounts

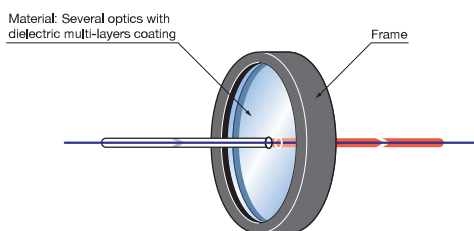
FHS-25, -50

Filters are designed to divide sharply the wavelength color by transmitting the short wavelength and cutting off the long wavelength. Fit for Bio-imaging and flow cytometry applications.

- In the range of blocking wavelength, it has an excellent light-blocking properties as OD5, and in the transmission range it is a filter with a transmittance of more than 90%.
- This filter has a transmittance of more than 90% in the transmission band. Because of the dielectric multilayer coating, there is almost no absorption of light by the coating.



Schematic



Specifications

Coating	Dielectric multi-layer coating
Incident angle	0°
Surface Quality (Scratch-Dig)	60-40

Guide

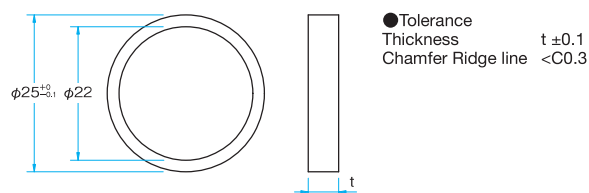
- ▶ Please contact our Sales Division for customized products. (customized of outer diameter, wavelength characteristic, etc.)
- ▶ Please contact our Sales Division if you require a wavelength characteristics of broadband data or more detailed data.

Attention

- ▶ If the light incident angle is other than 0 degrees, the transmittance characteristics may change. In normal use, when the incident angle changes, the wavelength may shift to the long wavelength side.

Outline Drawing

(in mm)



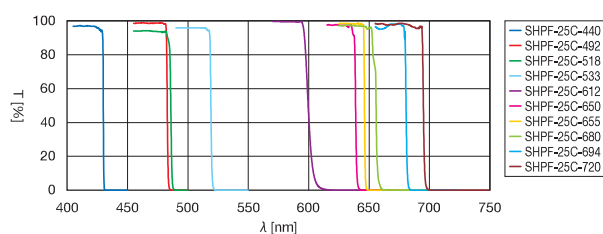
Specifications

Part Number	High transmittance range		Transition wavelength [nm]	Cutoff range		Thickness t [mm]
	wavelength [nm]	transmittance [%]		wavelength [nm]	optical density (average)	
SHPF-25C-440	380 - 427	> Average 93	430	440 - 1010	6	3.5
SHPF-25C-492	400 - 480	> Average 90	483	492 - 1120	6	3.5
SHPF-25C-518	445 - 485	> Average 90	488	518 - 750	5	3.5
SHPF-25C-533	380 - 520	> Average 90	522	533 - 760	6	3.5
SHPF-25C-612	509 - 591	> Average 90	599	612 - 730	4	3.5
SHPF-25C-650	360 - 634	> Average 85	638	650 - 1120	5	3.5
SHPF-25C-655	531 - 642	> Average 93	646	655 - 800	6	3.5
SHPF-25C-680	350 - 650	> Average 90	654	680 - 1080	6	3.5
SHPF-25C-694	481 - 676	> Average 93	681	694 - 955	5	3.5
SHPF-25C-720	350 - 690	> Average 90	698	720 - 1100	6	3.5
SHPF-25C-750	380 - 720	> Average 90	727	750 - 1100	6	3.5
SHPF-25C-770	380 - 740	> Average 90	747	770 - 1400	6	3.5
SHPF-25C-775	481 - 756	> Average 93	761	775 - 1120	6	3.5
SHPF-25C-790	380 - 760	> Average 90	765	790 - 1400	6	3.5
SHPF-25C-842	485 - 831	> Average 95	835	842 - 1050	6	3.5
SHPF-25C-890	380 - 860	> Average 90	875	890 - 1400	5	3.5
SHPF-25C-945	600 - 935	> Average 93	936	945 - 1120	6	3.5
SHPF-25C-950	430 - 908	> Average 90	912	950 - 1100	6	3.5

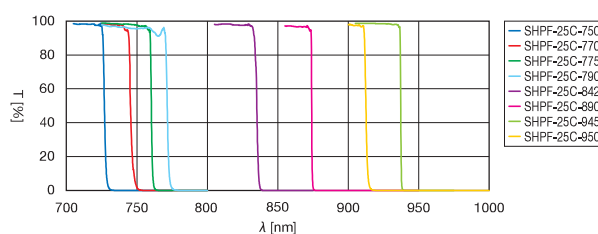
Typical Transmittance Data

T: Transmission

SHPF-440 - 720



SHPF-750 - 950



Long Pass Filters | LOPF

RoHS

Catalog
Code

W3207

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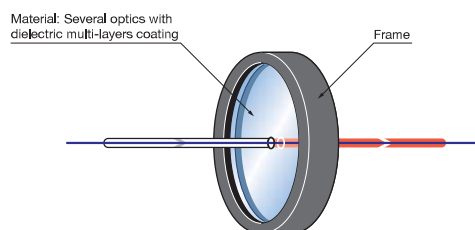
Etalon

Filters are designed to divide sharply the wavelength color by transmitting the short wavelength and cutting off the long wavelength. Fit for Bio-imaging and flow cytometry applications.

- In the range of blocking wavelength, it has an excellent light-blocking properties as OD5, and in the transmission range it is a filter with a transmittance of more than 90%.
- Because it is a dielectric multilayer coating, there is almost no absorption of light by the coating.



Schematic



Specifications

Coating	Dielectric multi-layer coating
Incident angle	0°
Surface Quality (Scratch-Dig)	60-40

Guide

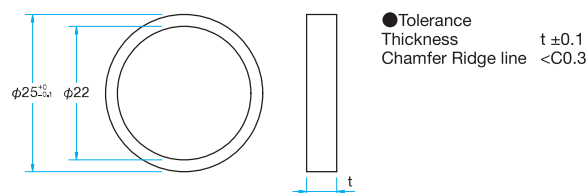
- ▶ Please contact our Sales Division for customized products. (customized of outer diameter, wavelength characteristic, etc.)
- ▶ Please contact our Sales Division if you require a wavelength characteristics of broadband data or more detailed data.

Attention

- ▶ If the light incident angle is other than 0 degrees, the transmittance characteristics may change. In normal use, when the incident angle changes, the wavelength may shift to the long wavelength side.

Outline Drawing

(in mm)



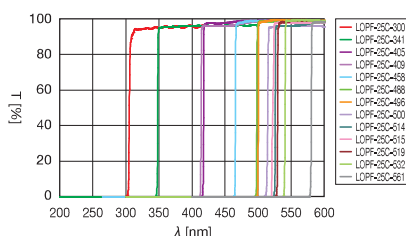
Specifications

Part Number	High transmittance range		Transition wavelength [nm]	Cutoff range		Thickness t [mm]
	wavelength [nm]	transmittance [%]		wavelength [nm]	optical density (average)	
LOPF-25C-300	308 – 420	> Average 85	306	200 – 300	5	5.0
LOPF-25C-341	350 – 500	> Average 90	347	200 – 341	5	3.5
LOPF-25C-405	421.5 – 900	> Average 93	418	270 – 405	5	3.5
LOPF-25C-409	417 – 1100	> Average 93	415	270 – 409	5	3.5
LOPF-25C-458	470.7 – 900	> Average 93	466	270 – 458	5	3.5
LOPF-25C-488	504.7 – 900	> Average 93	500	270 – 488	5	3.5
LOPF-25C-496	503 – 1100	> Average 93	501	270 – 496	5	3.5
LOPF-25C-500	519 – 700	> Average 90	515	300 – 500	5	3.5
LOPF-25C-514	529.4 – 900	> Average 93	526	270 – 514	5	3.5
LOPF-25C-515	525 – 800	> Average 90	522	340 – 515	6	3.5
LOPF-25C-519	534 – 653	> Average 92	530	300 – 519	6	3.5
LOPF-25C-532	546.9 – 900	> Average 93	542	280 – 532	5	3.5
LOPF-25C-561	577.1 – 900	> Average 93	572	300 – 561	6	3.5
LOPF-25C-593	604 – 1100	> Average 93	601	270 – 593	5	3.5
LOPF-25C-635	660 – 1200	> Average 93	655	300 – 635	6	3.5
LOPF-25C-715	725 – 1200	> Average 93	723	290 – 715	5	3.5
LOPF-25C-736	761 – 850	> Average 90	754	300 – 736	4	3.5
LOPF-25C-785	812.1 – 1200	> Average 93	805	270 – 785	5	3.5
LOPF-25C-800	815 – 915	> Average 90	812	635 – 800	6	3.5
LOPF-25C-834	842 – 935	> Average 97	840	790 – 834	5	3.5
LOPF-25C-1020	1064 – 1087	> Average 93	1057	400 – 1020	5	3.5

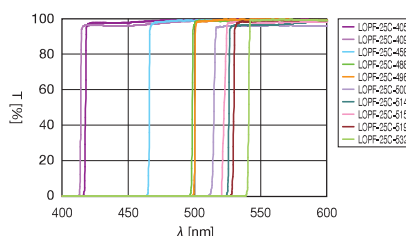
Typical Transmittance Data

T: Transmission

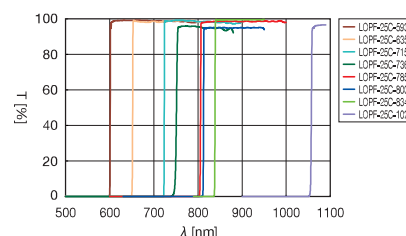
LOPF-267 – 561



LOPF-405 – 532 (Enlargement)



LOPF-593 – 1020

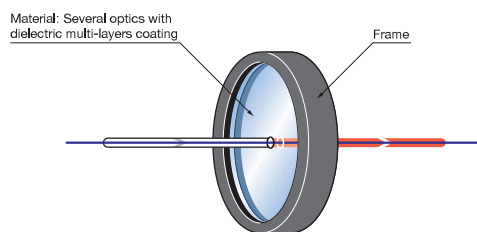


It is available to cut the excitation laser beam and extracted with high transmittance Raman shifted light on the longer wavelength side with a sharp rise.
It can be used to detect weak light of the Raman scattering.

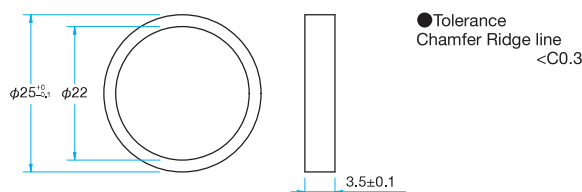
- At the wavelength of the laser specified it has excellent light-blocking properties of OD6 and in the transmission range it is a filter with a transmittance of more than 90%.
- Because it is a dielectric multilayer coating, there is almost no absorption of light by the coating.



Schematic



Outline Drawing



Specifications

Coating	Dielectric multi-layer coating
Incident angle	0°
Surface Quality (Scratch-Dig)	60-40

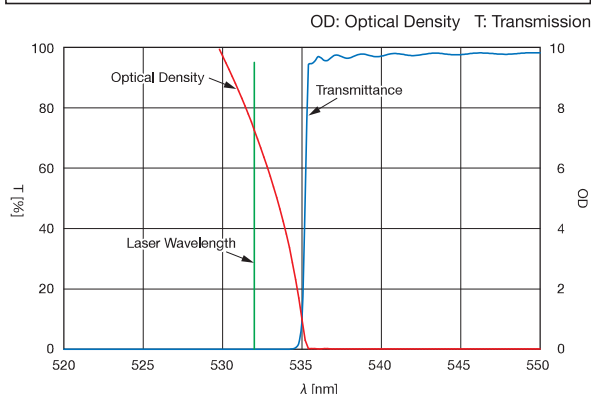
Guide

- ▶ Please contact our Sales Division for customized products. (customized of outer diameter, wavelength characteristic, etc.)
- ▶ Please contact our Sales Division if you require a wavelength characteristics of broadband data or more detailed data.

Attention

- ▶ If the light incident angle is other than 0 degrees, the transmittance characteristics may change. In normal use, when the incident angle changes, the wavelength may shift to the long wavelength side.

Typical Transmittance & Optical Density Data



Specifications

Part Number	High transmittance range		Blocking range	
	wavelength [nm]	transmittance [%]	laser wavelength [nm]	optical density (average)
RSF-25C-325RU	329.2 – 733.1	>80	325	6
RSF-25C-355RU	359.6 – 800.8	>90	355	6
RSF-25C-364RU	368.5 – 820.6	>90	363.8	6
RSF-25C-442RU	447.3 – 996.1	>90	441.6	6
RSF-25C-458RU	463.9 – 1032.9	>90	457.9	6
RSF-25C-473RU	479.1 – 683.9	>90	473	6
RSF-25C-488RU	494.3 – 1100.8	>90	488	6
RSF-25C-514RU	521.2 – 1160.5	>90	514.5	6
RSF-25C-532RU	538.9 – 1200.0	>90	532	6
RSF-25C-561RU	568.7 – 1266.3	>90	561.4	6
RSF-25C-568RU	575.6 – 1281.7	>90	568.2	6
RSF-25C-633RU	641.0 – 1427.4	>90	632.8	6
RSF-25C-647RU	655.5 – 1441.9	>90	647.1	6
RSF-25C-664RU	672.6 – 1497.7	>90	664	6
RSF-25C-780RU	790.1 – 1008.0	>90	780	6
RSF-25C-785RU	804.0 – 1500.0	>90	785	6
RSF-25C-808RU	818.5 – 1822.6	>90	808	6
RSF-25C-830RU	840.8 – 1872.2	>90	830	6
RSF-25C-980RU	992.7 – 2000.0	>90	980	6
RSF-25C-1064RU	1077.8 – 2000.0	>90	1064	6
RSF-25C-1319RU	1336.1 – 2000.0	>90	1319	6

Sharp Cut Dichroic Mirror | SDM

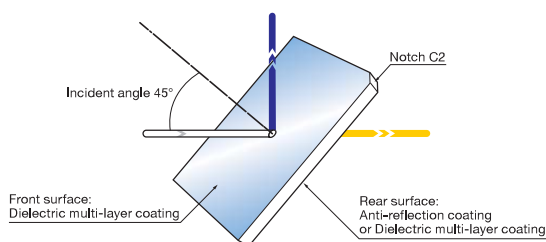
RoHS

Divides sharply the color of wavelength by reflecting the short wavelength and transmitting the long wavelength. Suitable for use in Bio-imaging and flow cytometry applications.

- The short wavelength has high reflectance, fits perfectly for use in excitation light and fluorescence imaging.
- The feature of the structure of this mirror is to maintain the distance of the edges of the P polarization and the S polarization to be close to each other. It narrows the gap of the reflective range and the transmission range to provide a steep rise.
- There is limited absorption due to the dielectric coating.

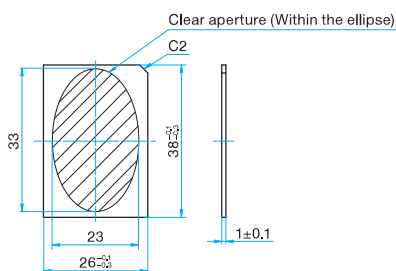


Schematic



Outline Drawing

(in mm)



Specifications

Material	Synthetic fused silica
Incident angle	45°
Surface flatness before coating	5λ (Optical flat)
Parallelism	20"
Polarization condition of incident beam	Unpolarized beam (or linear polarization of 45° azimuth circular polarization)
Surface Quality (Scratch-Dig)	40-20

Guide

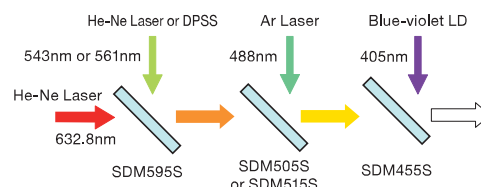
- ▶ Use the SDM mirror with interference filter as a pair for Bio-imaging applications.
- ▶ For specific mirror holder, please contact our Sales Division.
- ▶ Different size, wavelength and deviation ratio not mentioned on-line or in our catalog are available as custom products upon request.
- ▶ For aluminum mirror, dielectric mirror, TIRF Mirror (Total Internal Reflectance Fluorescence), please contact our Sales Division with your request.

Attention

- ▶ The transmittance characteristic of the mirror is a combination of the coating values of both sides of the mirror.
- ▶ Use the mirror other than at 45 degrees angle of incidence, the transmittance and the reflectance characteristics may be different than specified.
- ▶ The right reflecting surface appears when you see the notch on the upper right side of the mirror.

Sample of use with multi-wavelength of visible laser

This is a flow cytometry set up with a piling up of different laser beams.



Specifications

Part Number	Transmission spectral	Transition [nm]	High reflectance range [nm]	Reflectance [%]	High transmittance range [nm]	Transmittance [%]
SDM410S		410	340 – 360 360 – 395	>90 >99	419 – 660 430 – 520	>80 >87
SDM455S		455	390 – 443	>99	465 – 560 560 – 700	> Average 92 > Average 88
SDM490S		490	450 – 482	>99	499 – 630 630 – 655	> Average 90 >75
SDM505S		505	455 – 497	>99	514 – 550 550 – 700	>85 >60
SDM515S		515	462 – 504	>99	522 – 660 660 – 700	> Average 90 >75
SDM570S		570	520 – 558	>99	579 – 620 620 – 700	>85 >60
SDM595S		595	520 – 585	>99	605 – 700 700 – 880	> Average 92 >75

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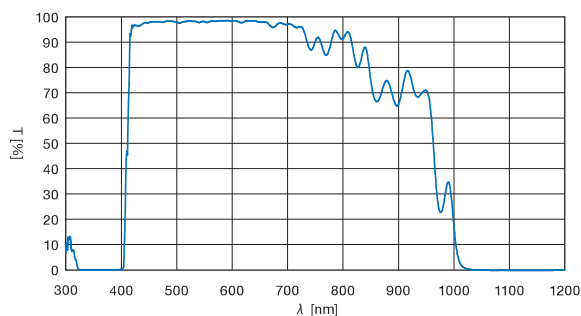
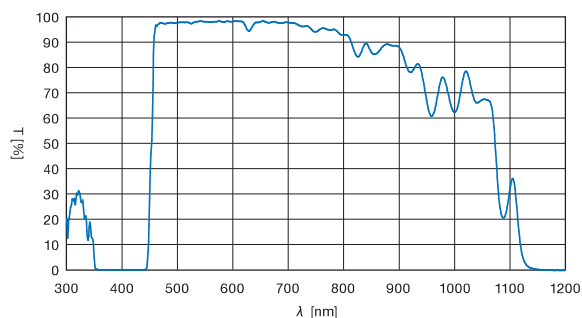
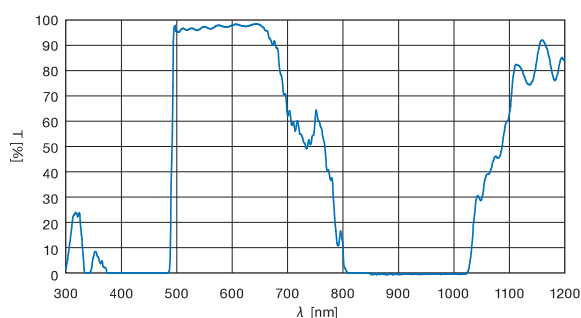
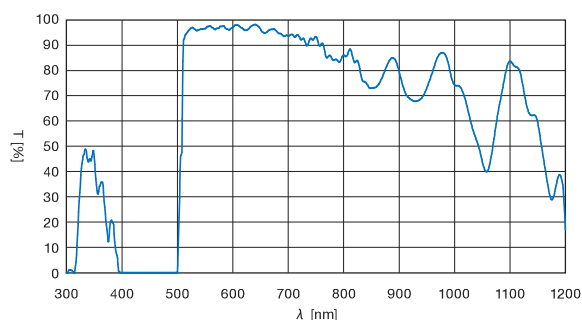
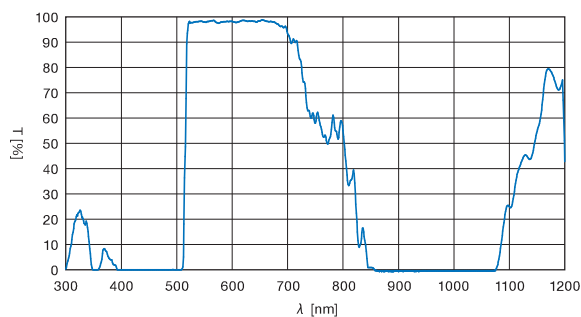
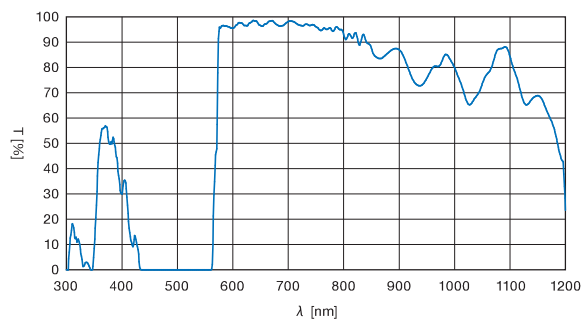
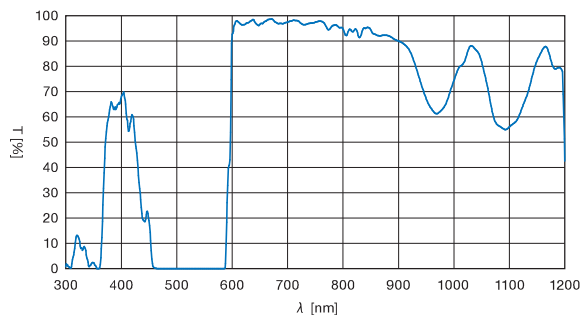
Colored Glass Filters

Dielectric Filters

Etalon

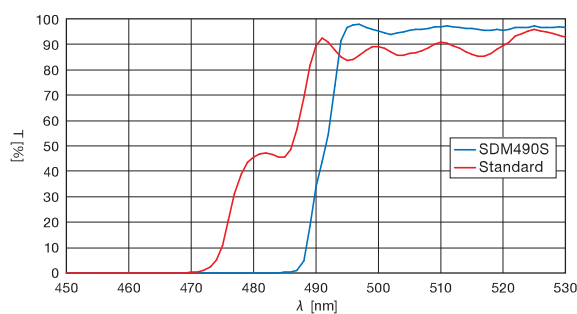
Typical Transmittance Data

T: Transmission

SDM410S**SDM455S****SDM490S****SDM505S****SDM515S****SDM570S****SDM595S****Sharp cutting characteristics value (Reference data)**

T: Transmission

The polarization of the SDM mirror was realized with a special coating design to obtain a sharper rise graph than usual. It shows advantage for use in extracting the excitation light for fluorescence imaging application.

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Laser Line Filter | VPFHT

RoHS

Catalog Code

W3209

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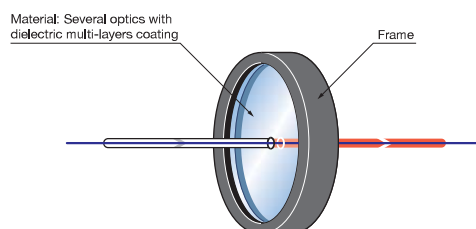
Etalon

This filter can extract light in a specific wavelength range. Very high transmittance can be obtained in the transmission range. Outside the specified transmission wavelength range the transmission decrease is steep and light is not transmitted almost close to the transmission range.

- Since the coating is a dielectric multilayer the absorption is small and transmittance is high. It enables the separation of the wavelength specified light efficiently.
- The filters are metallically framed which make it easy to be mounted into a holder.
- Large choice of spectrum, range from UV 325nm to IR 1064nm are available.

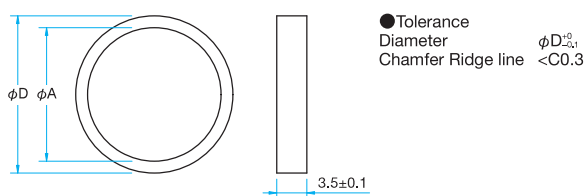


Schematic



Outline Drawing

(in mm)



325nm – 561nm

Part Number	Center wavelength [nm]	Diameter φD [mm]	Half bandwidth [nm]	Short wavelength Blocking range OD5 Range (OD6 Range) [nm]	Long wavelength Blocking range OD5 Range (OD6 Range) [nm]
VPFHT-12.5C-3250	325	φ12.5	1.75±0.55	291.0 – 321.8 (299.0 – 320.1)	328.3 – 380.7 (329.9 – 357.5)
VPFHT-25C-3250	325	φ25	1.9±0.6	314.8 – 351.8 (326.6 – 349.7)	358.6 – 422.5 (360.3 – 390.5)
VPFHT-12.5C-3550	355	φ12.5	1.95±0.55	321.7 – 360.2 (334.7 – 358.3)	367.4 – 435.0 (369.3 – 400.2)
VPFHT-25C-3550	355	φ25	2.0±0.6	328.1 – 368.3 (342.0 – 366.4)	375.7 – 446.8 (377.6 – 409.2)
VPFHT-12.5C-3638	364	φ12.5	2.4±0.7	381.0 – 437.2 (406.3 – 435.0)	446.0 – 551.1 (448.2 – 485.8)
VPFHT-25C-3638	364	φ25	2.45±0.75	393.1 – 453.3 (421.3 – 451.0)	462.5 – 576.7 (464.8 – 503.7)
VPFHT-12.5C-3720	488	φ12.5	2.65±0.75	415.1 – 483.1 (449.0 – 480.7)	492.9 – 625.3 (495.3 – 536.8)
VPFHT-25C-3720	488	φ25	2.65±0.75	417.2 – 486.1 (451.7 – 483.6)	495.9 – 630.3 (498.4 – 540.1)
VPFHT-12.5C-4416	491	φ12.5	2.8±0.8	434.1 – 509.4 (473.3 – 506.8)	519.6 – 669.5 (522.2 – 566.0)
VPFHT-25C-4416	491	φ25	2.87±0.85	447.0 – 527.0 (489.0 – 524.0)	537.0 – 699.0 (540.0 – 585.0)
VPFHT-12.5C-5145	544	φ12.5	2.95±0.85	454.6 – 538.1 (500.0 – 535.3)	548.9 – 719.5 (551.7 – 597.9)
VPFHT-25C-5145	544	φ25	3.0±0.9	467.0 – 555.8 (516.5 – 553.0)	567.0 – 751.2 (569.8 – 617.5)

Specifications

Coating	Dielectric multi-layer coating
Incident angle	0°
Maximum transmittance rate	T≥90% T≥80% (VPFHT-3250, -3550) T≥85% (VPFHT-3638, -3720)
Clear aperture	φ8.5mm (φD=φ12.5mm) φ22mm (φD=φ25mm)
Surface Quality (Scratch-Dig)	60-40

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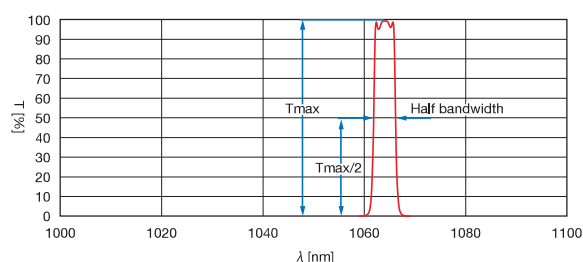
- ▶ Please contact our Sales Division for customized products. (customized outer diameter, wavelength characteristic, etc.)
- ▶ We also offer interference filters VPF with cutting range that is broad. [Reference](#) B254

Attention

- ▶ Characteristics of the interference filter is depending on the incident angle. If it is tilted from the optical axis, then the center transmitting wavelength is shifted toward the short wavelength, and transmittance also decreases. Please make sure to incident at 0 degrees collimated light or close to collimated (parallel) light to the optical axis. Angle dependence will increase as half-width range of transmittance becomes narrow.

Typical Transmittance Data

T: Transmission



568nm – 1064nm

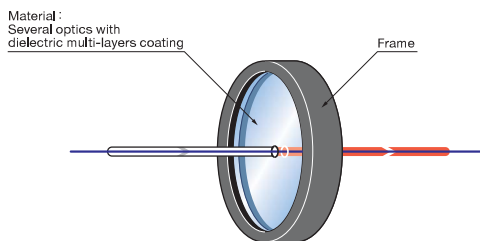
Part Number	Center wavelength [nm]	Diameter φD [mm]	Half bandwidth [nm]	Short wavelength Blocking range OD5 Range (OD6 Range) [nm]	Long wavelength Blocking range OD5 Range (OD6 Range) [nm]
VPFHT-12.5C-5682	568	φ12.5	3.1±0.9	471.7 – 562.5 (522.7 – 559.7)	573.9 – 763.4 (576.7 – 625.0)
VPFHT-25C-5682	568	φ25	3.4±1.0	515.4 – 626.5 (582.2 – 623.3)	639.1 – 884.7 (642.3 – 696.1)
VPFHT-12.5C-6328	633	φ12.5	3.5±1.0	524.8 – 640.6 (595.3 – 637.4)	653.6 – 912.9 (656.8 – 711.8)
VPFHT-25C-6328	633	φ25	3.65±1.05	540.4 – 664.3 (617.3 – 660.9)	677.7 – 961.2 (681.1 – 738.1)
VPFHT-12.5C-6471	647	φ12.5	4.25±1.25	609.0 – 772.2 (717.6 – 768.3)	787.8 – 1201.8 (791.7 – 858.0)
VPFHT-25C-6471	647	φ25	4.25±1.27	612.0 – 777.0 (722.0 – 773.0)	793.0 – 1214.0 (797.0 – 864.0)
VPFHT-12.5C-6710	780	φ12.5	4.6±1.4	625.9 – 799.9 (743.4 – 795.9)	816.1 – 1039.4 (820.1 – 888.8)
VPFHT-25C-6710	780	φ25	4.6±1.4	639.1 – 821.7 (763.6 – 817.6)	838.3 – 1067.9 (842.5 – 913.0)
VPFHT-12.5C-7800	830	φ12.5	5.25±1.55	652.0 – 843.5 (783.8 – 839.2)	860.5 – 1106.6 (864.8 – 937.2)
VPFHT-25C-7800	830	φ25	5.25±1.55	663.3 – 1036.6 (796.3 – 1031.4)	1057.6 – 1398.6 (1062.8 – 1151.8)
VPFHT-12.5C-8520	852	φ12.5	5.75±1.71	672.2 – 966.2 (897.9 – 961.4)	985.8 – 1325.2 (990.6 – 1073.6)
VPFHT-25C-8520	852	φ25	5.75±1.71	684.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-12.5C-9760	976	φ12.5	5.65±1.65	722.2 – 966.2 (897.9 – 961.4)	985.8 – 1325.2 (990.6 – 1073.6)
VPFHT-25C-9760	976	φ25	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-12.5C-9800	980	φ12.5	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-25C-9800	980	φ25	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-12.5C-10471	1047	φ12.5	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-25C-10471	1047	φ25	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-12.5C-10640	1064	φ12.5	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-25C-10640	1064	φ25	5.65±1.65	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)

YIF is a filter that can extract a selected light from the wavelength range. Its primary feature is the ability to pick out a high transmittance wavelength at the same time cutting off a wavelength.

- The filters are made by Ion Beam assisted dielectric coating process which can assure an extremely high environment resistance and high stability.
- Using high absorption glass material and heat absorption optical coating, it assures a low deterioration with any types of light-source.
- The filters were designed as the BP type light blocking characteristics of high OD7 at the long wavelength side than the pass band and the BA type light blocking characteristics of high OD7 at the short wavelength side of than the transmission bandwidth.
- The filters can be used to cut the non-irradiated light wavelength excitation in fluorescence observation and cut the non fluorescence wavelength excitation light in sample observation.
- In addition to the BP type filter and the BA type filter, there are broadband type and narrowband type that can be chosen according to your application.



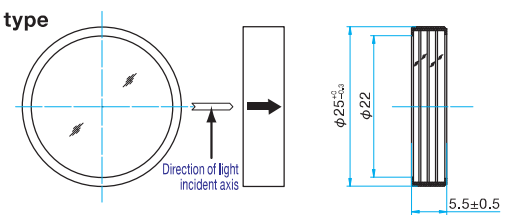
Schematic



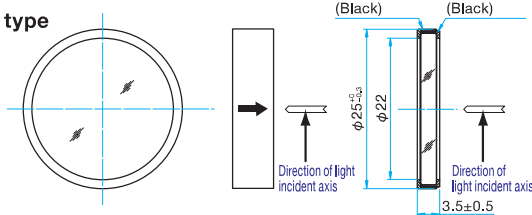
Outline Drawing

(in mm)

●BP type



●BA type



Specifications

Material	B270® (SuperWhite Glass) or Synthetic fused silica
Incident angle	0°
Surface Quality (Scratch-Dig)	40-20

Guide

- ▶ B270® is registered trademark of Schott AG.
- ▶ For a suitable filter holder, please contact our Sales Division.
- ▶ Different size, wavelength and deviation ratio not mentioned on-line or in our catalog are available as custom products upon request

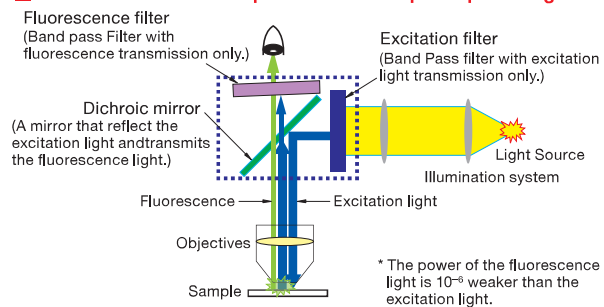
Attention

- ▶ The filter transmittance wavelength characteristics are on the surface and the backside of the filter. It is a multi-filter with different coating characteristics combined together and mounted into a optics frame.
- ▶ If the light incident angle is other than 0 degrees, the transmittance characteristics may change. In the normal situation, when the incident angle changes, the wavelength may shift to the long wavelength side.
- ▶ An arrow indicating the light incident direction of the BP filter and the BA filter is different.
- ▶ The filters are made for use in high temperature environment but for usage of high power exposure UV lamp, the stability and the efficiency of the filters are not guaranteed.

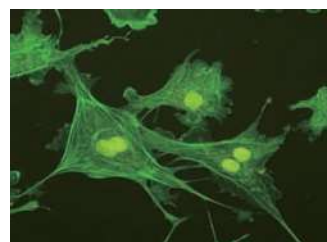
Sample of use of the Bio-imaging

Irradiation with excitation light onto a bound biological fluorescent reagent. A weak fluorescence light appears and the reaction of the biological specimen is visible.

■ Fluorescence microscope observation optical path diagram



■ Fluorescent observation image



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Catalog Code W3118

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BP broadband type

Part Number	Transmission spectral	Short wavelength cutoff range		High transmittance range		Long wavelength cutoff range	
		wavelength [nm]	transmittance [%]	wavelength [nm]	transmittance [%]	wavelength [nm]	optical density
YIF-BP340-390S		300	<0.01	360 – 380	>75 > Average 80	414 – 800	>OD7
YIF-BP400-440S		300 – 383	<0.01	403 – 436	>80 > Average 85	460 – 800 800 – 960	>OD7 >OD6
YIF-BP460-495S		300 – 442	<0.01	464 – 489	>80 > Average 85	514 – 800 800 – 960	>OD7 >OD6
YIF-BP540-585S		300 – 522	<0.01	545 – 579	>80 > Average 85	600 – 800 800 – 960	>OD7 >OD6

BP narrowband type

Part Number	Transmission spectral	Short wavelength cutoff range		High transmittance range		Long wavelength cutoff range	
		wavelength [nm]	transmittance [%]	wavelength [nm]	transmittance [%]	wavelength [nm]	optical density
YIF-BP360-370S		300 – 340	<0.01	365	>78	414 – 800	>OD7
YIF-BP400-410S		300 – 383	<0.01	403 – 407	>80 > Average 85	435 – 800 800 – 960	>OD7 >OD6
YIF-BP460-480S		300 – 448	<0.01	465 – 476	>80 > Average 85	493 – 800 800 – 960	>OD7 >OD6
YIF-BP470-495S		300 – 453	<0.01	478 – 489	>80 > Average 85	514 – 800 800 – 960	>OD7 >OD6
YIF-BP490-500S		300 – 475	<0.01	492 – 498	>80 > Average 85	516 – 800 800 – 960	>OD7 >OD6
YIF-BP530-550S		300 – 514	<0.01	538 – 547	>80 > Average 85	582 – 800 800 – 960	>OD7 >OD6
YIF-BP540-550S		300 – 522	<0.01	546	>80	582 – 800 800 – 960	>OD7 >OD6
YIF-BP565-585S		300 – 545	<0.01	572 – 579	>80 > Average 85	600 – 800 800 – 960	>OD7 >OD6

BA broadband type

Part Number	Transmission spectral	Short wavelength cutoff range		High transmittance range		Long wavelength cutoff range	
		wavelength [nm]	optical density	wavelength [nm]	transmittance [%]	wavelength [nm]	transmittance [%]
YIF-BA420IFS		340 – 380 380 – 390	>OD7 >OD6	430 – 520	>90 > Average 95	—	—
YIF-BA460IFS		400 – 440	>OD7	470 – 650	>90 > Average 95	—	—
YIF-BA510IFS		420 – 488	>OD7	517 – 700	>90 > Average 95	—	—
YIF-BA575IFS		546 – 550	>OD7	580 – 700	>90 > Average 95	—	—
YIF-BA600IFS		535 – 582	>OD7	607 – 700	>90 > Average 95	—	—

BA narrowband type

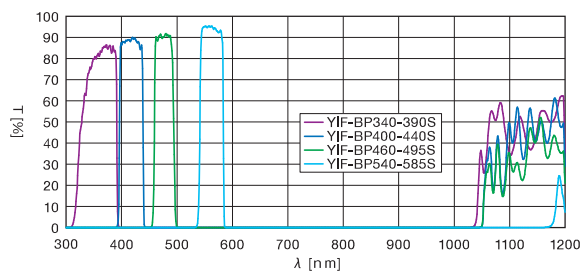
Part Number	Transmission spectral	Short wavelength cutoff range		High transmittance range		Long wavelength cutoff range	
		wavelength [nm]	optical density	wavelength [nm]	transmittance [%]	wavelength [nm]	transmittance [%]
YIF-BA420-460S		340 – 380 380 – 390	>OD7 >OD6	430 – 460	>88 > Average 93	495 – 620	<0.1
YIF-BA460-510S		400 – 442	>OD7	470 – 503	>90 > Average 95	529 – 650	<0.1
YIF-BA495-540S		410 – 480	>OD7	499 – 535	>90 > Average 95	565 – 680	<0.1
YIF-BA510-550S		420 – 488	>OD7	517 – 542	>90 > Average 95	569 – 705	<0.1
YIF-BA515-560S		420 – 502	>OD7	522 – 552	>90 > Average 95	577 – 700	<0.1
YIF-BA575-625S		546 – 550	>OD7	580 – 618	>90 > Average 95	640 – 780	<0.1
YIF-BA600-690S		535 – 582	>OD7	607 – 680	>90 > Average 95	703 – 880	<0.1

Typical Transmittance Data

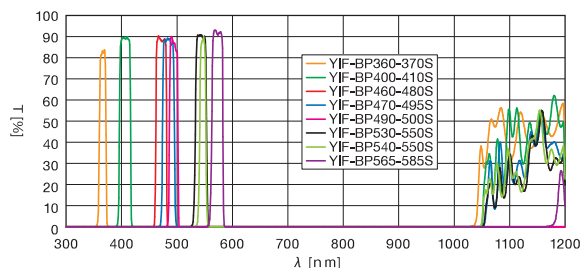
T: Transmission

■BP type

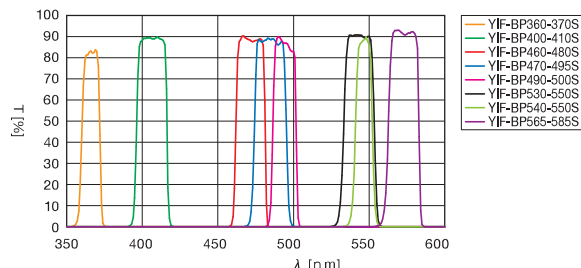
Broadband type (300 – 1200nm)



Narrowband type (300 – 1200nm)

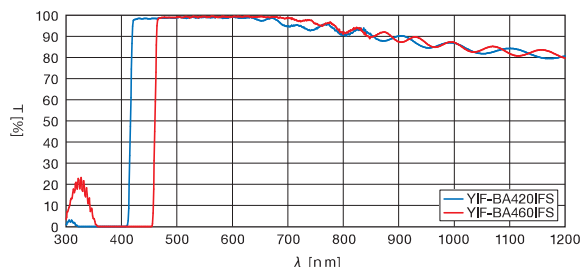


Enlargement of Narrowband type (350 – 600nm)

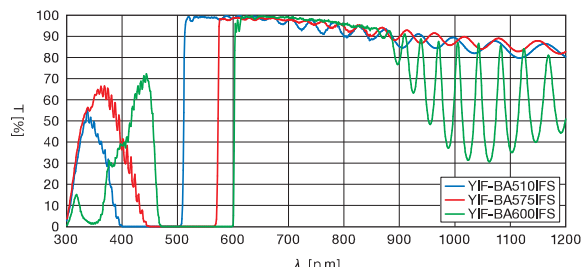


■BA type

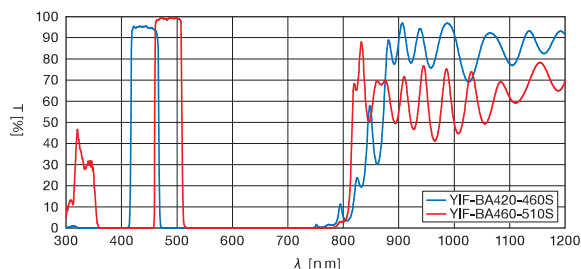
Broadband type 1 (300 – 1200nm)



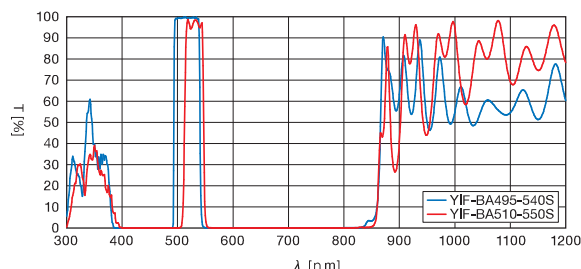
Broadband type 2 (300 – 1200nm)



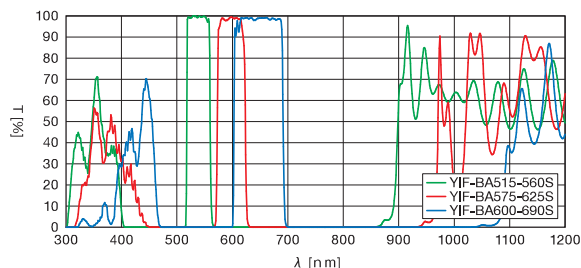
Narrowband type 1 (300 – 1200nm)



Narrowband type 2 (300 – 1200nm)



Narrowband type 3 (300 – 1200nm)



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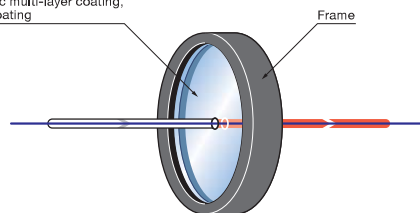
VPF can transmit a specified wavelength range at a spectrum width (half-width) as precise as 1nm to 40nm. It is used to select spectral line from light-sources range from discharge lamp to different lasers wavelength.

- The filters are made of dielectric coating and metallic coating which assure a steep rise and a sharp cut-off spectrum.
- The filters are metallically framed which make it easy to be mounted into a holder.
- Large choice of spectrum, range from UV 214nm to IR 1550nm.



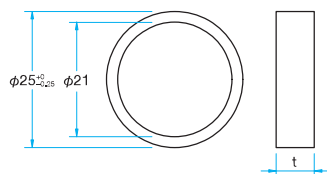
Schematic

Material:
Several optics with
dielectric multi-layer coating,
Metal coating



Outline Drawing

(in mm)



Specifications

Blocking range	<0.01% (1nm – 3.0 μ m)
Surface Quality (Scratch-Dig)	80-50
Incident angle	0°
Coating	Dielectric multi-layer coating, Metal coating

Guide

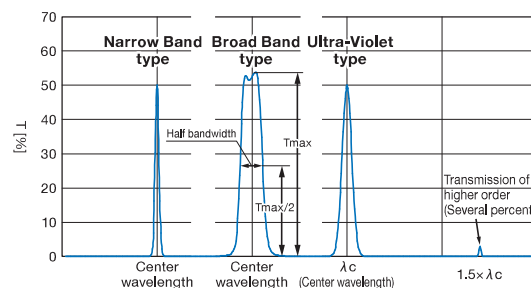
- For filter size of 50 mm, please see VPF-50S [Reference](#) B257 or see the high transmittance filter interference filter, [Reference](#) B251
- For custom sizes or center wavelengths or specified spectrum half-width which are not mentioned on-line or in this catalog, please contact our Sales Division.

Attention

- The filters characteristic depends on the angle of incident. If the angle of the light axis inclines, the center wavelength switches to shorter wavelength side and the transmittance may decrease. The selected spectrum width is precise more the inclination tolerance is small. Make sure that the incident angle is set at 0 degrees for an efficient experiment.
- The filter usage temperature of environment is set at 23°C (Celsius), increased temperature moves the center wavelength longer wavelength side.
- Therefore a high precision set up is required for obtaining an efficient experiment each filter thickness is different.
- Interference filters are heat absorptive, therefore they are not fit to use with high power laser and high energy pulsed laser.

Explanation about spectrum half bandwidth

The feature of a band pass filter is valued by Spectrum half-width as an index. It is shown on the graph located at the right side. It exist in 3 different types; the narrow band, the broadband and the UV spectrum.



Compatible Optic Mounts

MHG-MP25-NL

214.0nm – 647.1nm						
Part Number	Center wavelength [nm]	Laser or Emission line spectrum	Half bandwidth [nm]	Maximum transmittance [%]	Thickness t [mm]	Type
VPF-25C-10-12-21400	214.0 ^{+3.0} _{-0.0}	Zn	10.0±2.0	>12	<4	UV
VPF-25C-10-15-22800	228.0 ^{+3.0} _{-0.0}	Cd	10.0±2.0	>15	<4	UV
VPF-25C-10-15-23200	232.0 ^{+3.0} _{-0.0}	Ni	10.0±2.0	>15	<4	UV
VPF-25C-10-15-23900	239.0 ^{+3.0} _{-0.0}	Co	10.0±2.0	>15	<4	UV
VPF-25C-10-12-25370	253.7 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>12	<4	UV
VPF-25C-10-12-26500	265.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>12	<4	UV
VPF-25C-10-12-28000	280.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>12	<4	UV
VPF-25C-10-15-28900	289.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>15	<4	UV
VPF-25C-10-15-29670	296.7 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>15	<4	UV
VPF-25C-10-15-30710	307.1 ^{+3.0} _{-0.0}	Zn	10.0±2.0	>15	<4	UV
VPF-25C-10-15-31300	313.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>15	<4	UV
VPF-25C-10-25-32600	326.0 ^{+3.0} _{-0.0}	Cd	10.0±2.0	>25	<8	Broad Band
VPF-25C-10-25-33400	334.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>25	<8	Broad Band
VPF-25C-03-20-33710	337.1 ^{+0.5} _{-0.0}	N ₂	3.0±0.5	>20	<7	Narrow Band
VPF-25C-10-25-33710	337.1 ^{+3.0} _{-0.0}	N ₂	10.0±2.0	>25	<7	Broad Band
VPF-25C-10-25-35000	350.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>25	<7	Broad Band
VPF-25C-40-25-35000	350.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>25	<7	Broad Band
VPF-25C-10-25-35500	355.0 ^{+3.0} _{-0.0}	YAG3 ω	10.0±2.0	>25	<7	Broad Band
VPF-25C-10-25-36500	365.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>25	<7	Broad Band
VPF-25C-10-40-40000	400.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>40	<7	Broad Band
VPF-25C-40-40-40000	400.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>40	<7	Broad Band
VPF-25C-10-40-40470	404.7 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>40	<7	Broad Band
VPF-25C-10-40-43580	435.8 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>40	<7	Broad Band
VPF-25C-01-30-44160	441.6 ^{+0.2} _{-0.0}	He-Cd	1.0±0.2	>30	<8.5	Narrow Band
VPF-25C-03-35-44160	441.6 ^{+0.5} _{-0.0}	He-Cd	3.0±0.5	>35	<8.5	Narrow Band
VPF-25C-10-45-44160	441.6 ^{+3.0} _{-0.0}	He-Cd	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-45000	450.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>45	<7	Broad Band
VPF-25C-40-50-45000	450.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-10-45-45550	455.5 ^{+3.0} _{-0.0}	Cs	10.0±2.0	>45	<7	Broad Band
VPF-25C-01-30-45790	457.9 ^{+0.2} _{-0.0}	Ar	1.0±0.2	>30	<8.5	Narrow Band
VPF-25C-03-35-45790	457.9 ^{+0.5} _{-0.0}	Ar	3.0±0.5	>35	<8.5	Narrow Band
VPF-25C-10-45-45790	457.9 ^{+3.0} _{-0.0}	Ar	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-48610	486.1 ^{+3.0} _{-0.0}	H	10.0±2.0	>45	<7	Broad Band
VPF-25C-01-40-48800	488.0 ^{+0.2} _{-0.0}	Ar	1.0±0.2	>40	<8.5	Narrow Band
VPF-25C-03-45-48800	488.0 ^{+0.5} _{-0.0}	Ar	3.0±0.5	>45	<8.5	Narrow Band
VPF-25C-10-50-48800	488.0 ^{+3.0} _{-0.0}	Ar	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-50000	500.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>50	<7	Broad Band
VPF-25C-40-50-50000	500.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-10-50-50850	508.5 ^{+3.0} _{-0.0}	Cd	10.0±2.0	>50	<7	Broad Band
VPF-25C-01-40-51450	514.5 ^{+0.2} _{-0.0}	Ar	1.0±0.2	>40	<8.5	Narrow Band
VPF-25C-03-45-51450	514.5 ^{+0.5} _{-0.0}	Ar	3.0±0.5	>45	<8.5	Narrow Band
VPF-25C-10-50-51450	514.5 ^{+3.0} _{-0.0}	Ar	10.0±2.0	>50	<7	Broad Band
VPF-25C-01-40-53200	532.0 ^{+0.2} _{-0.0}	YAG2 ω	1.0±0.2	>40	<8.5	Narrow Band
VPF-25C-03-45-53200	532.0 ^{+0.5} _{-0.0}	YAG2 ω	3.0±0.5	>45	<8.5	Narrow Band
VPF-25C-10-50-53200	532.0 ^{+3.0} _{-0.0}	YAG2 ω	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-53500	535.0 ^{+3.0} _{-0.0}	Ti	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-54610	546.1 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-55000	550.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>50	<7	Broad Band
VPF-25C-40-50-55000	550.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-10-50-57700	577.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-58930	589.3 ^{+3.0} _{-0.0}	Na	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-60000	600.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>50	<7	Broad Band
VPF-25C-40-50-60000	600.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-01-40-63280	632.8 ^{+0.2} _{-0.0}	He-Ne	1.0±0.2	>40	<8.5	Narrow Band
VPF-25C-03-45-63280	632.8 ^{+0.5} _{-0.0}	He-Ne	3.0±0.5	>45	<8.5	Narrow Band
VPF-25C-10-50-63280	632.8 ^{+3.0} _{-0.0}	He-Ne	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-63620	636.2 ^{+3.0} _{-0.0}	Zn	10.0±2.0	>50	<7	Broad Band
VPF-25C-03-45-64710	647.1 ^{+0.5} _{-0.0}	Kr	3.0±0.5	>45	<8.5	Narrow Band
VPF-25C-10-50-64710	647.1 ^{+3.0} _{-0.0}	Kr	10.0±2.0	>50	<7	Broad Band

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Bandpass Interference Filters | VPF

650.0nm – 1550.0nm						
Part Number	Center wavelength [nm]	Laser or Emission line spectrum	Half bandwidth [nm]	Maximum transmittance [%]	Thickness t [mm]	Type
VPF-25C-10-50-65000	650.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>50	<7	Broad Band
VPF-25C-40-50-65000	650.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-10-50-65630	656.3 ^{+3.0} _{-0.0}	H	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-67000	670.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-69430	694.3 ^{+3.0} _{-0.0}	Ruby	10.0±2.0	>50	<7	Broad Band
VPF-25C-10-50-70000	700.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>50	<7	Broad Band
VPF-25C-40-50-70000	700.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-10-45-75000	750.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>45	<7	Broad Band
VPF-25C-40-40-75000	750.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>40	<7	Broad Band
VPF-25C-10-45-76650	766.5 ^{+3.0} _{-0.0}	K	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-78000	780.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-79470	794.7 ^{+3.0} _{-0.0}	Rb	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-80000	800.0 ^{+3.0} _{-0.0}	—	10.0±2.0	>45	<7	Broad Band
VPF-25C-40-45-80000	800.0 ^{+10.0} _{-0.0}	—	40.0±8.0	>45	<7	Broad Band
VPF-25C-10-45-81000	810.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-83000	830.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-45-90500	905.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>45	<7	Broad Band
VPF-25C-10-40-10140	1014.0 ^{+3.0} _{-0.0}	Hg	10.0±2.0	>40	<8.5	Broad Band
VPF-25C-01-30-10640	1064.0 ^{+0.2} _{-0.0}	YAG	1.0±0.2	>30	<8.5	Narrow Band
VPF-25C-03-35-10640	1064.0 ^{+0.5} _{-0.0}	YAG	3.0±0.5	>35	<8.5	Narrow Band
VPF-25C-10-40-10640	1064.0 ^{+3.0} _{-0.0}	YAG	10.0±2.0	>40	<8.5	Broad Band
VPF-25C-10-35-13000	1300.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>35	<8.5	Narrow Band
VPF-25C-10-30-15000	1500.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>30	<8.5	Narrow Band
VPF-25C-10-30-15500	1550.0 ^{+3.0} _{-0.0}	LD	10.0±2.0	>30	<8.5	Narrow Band

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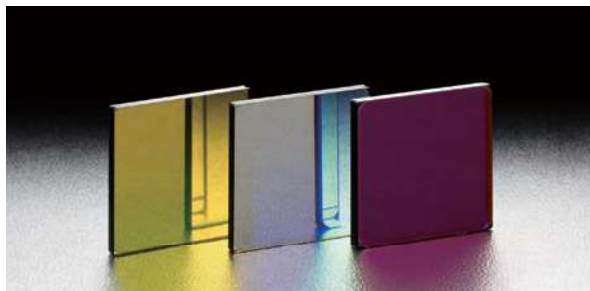
Dielectric Filters

Etalon

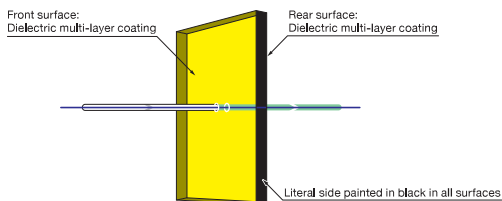
VPF band pass filter with effective diameter at 45mm square.

Fit for experimentation that needs large collimated light incident on sample or on a large diverges light which requires a larger size band pass filter.

- The filters are made of dielectric multilayer coating and metallic coating which assure a steep rise and a sharp cut-off spectrum.
- A selection of filter from the spectrum half-width from 10nm to 12nm, the center spectrum from 400nm to 900nm with 10nm increments.
- The whole lateral side of the filter is painted in black to avoid scattered light effects.

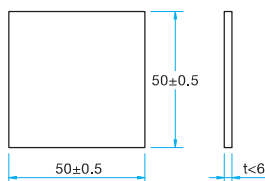


Schematic



Outline Drawing

(in mm)



400nm – 650nm

Part Number	Center wavelength [nm]	Half bandwidth [nm]	Maximum transmittance [%]
VPF-50S-10-45-40000	400±2	10±2	>45
VPF-50S-10-45-41000	410±2	10±2	>45
VPF-50S-10-45-42000	420±2	10±2	>45
VPF-50S-10-45-43000	430±2	10±2	>45
VPF-50S-10-45-44000	440±2	10±2	>45
VPF-50S-10-50-45000	450±2	10±2	>50
VPF-50S-10-50-46000	460±2	10±2	>50
VPF-50S-10-50-47000	470±2	10±2	>50
VPF-50S-10-50-48000	480±2	10±2	>50
VPF-50S-10-50-49000	490±2	10±2	>50
VPF-50S-10-55-50000	500±2	10±2	>55
VPF-50S-10-55-51000	510±2	10±2	>55
VPF-50S-10-55-52000	520±2	10±2	>55
VPF-50S-10-55-53000	530±2	10±2	>55
VPF-50S-10-55-54000	540±2	10±2	>55
VPF-50S-10-60-55000	550±2	10±2	>60
VPF-50S-10-60-56000	560±2	10±2	>60
VPF-50S-10-60-57000	570±2	10±2	>60
VPF-50S-10-60-58000	580±2	10±2	>60
VPF-50S-10-60-59000	590±2	10±2	>60
VPF-50S-12-60-60000	600±2	12±2	>60
VPF-50S-12-60-61000	610±2	12±2	>60
VPF-50S-12-60-62000	620±2	12±2	>60
VPF-50S-12-60-63000	630±2	12±2	>60
VPF-50S-12-60-64000	640±2	12±2	>60
VPF-50S-12-60-65000	650±2	12±2	>60

Specifications

Material	Optical Glass
Clear aperture	≥45×45mm
Blocking range	0.01% (1 – 1200nm)
Incident angle	0°
Coating	Dielectric multi-layer coating

Guide

- ▶ For filter size of diameter 25mm, please see VPF-25C [Reference](#) B254 or see the high transmittance filter interference filter(YIF). [Reference](#) B251
- ▶ For custom sizes or form which are not mentioned on-line or in this catalog or for any specific holder for this filter, please contact our Sales Division.

Attention

- ▶ Heatproof temperature at 80°C (Celsius) as maximum, please avoid using it with higher temperature light-source.
- ▶ The filters are heat absorptive, therefore they are not fit to use with high power laser and high energy pulsed laser.
- ▶ The filters characteristic depends on the angle of incident. If the angle of the light axis inclines, the center wavelength shifts to shorter wavelength side and the transmittance may decrease. More the selected spectrum width is precise more the inclination tolerance is small. Make sure that the incident angle is set at 0 degrees for an efficient experiment.
- ▶ The filters usage temperature of environment is set at 23°C (Celsius), more the temperature is high more the center wavelength shifts to the longer wavelength side.
- ▶ Therefore a high precision set up is required for obtaining an efficient experiment each filter thickness is different.

660nm – 900nm

Part Number	Center wavelength [nm]	Half bandwidth [nm]	Maximum transmittance [%]
VPF-50S-12-60-66000	660±2	12±2	>60
VPF-50S-12-60-67000	670±2	12±2	>60
VPF-50S-12-60-68000	680±2	12±2	>60
VPF-50S-12-60-69000	690±2	12±2	>60
VPF-50S-12-65-70000	700±2	12±3	>65
VPF-50S-12-65-71000	710±3	12±3	>65
VPF-50S-12-65-72000	720±3	12±3	>65
VPF-50S-12-65-73000	730±3	12±3	>65
VPF-50S-12-65-74000	740±3	12±3	>65
VPF-50S-12-65-75000	750±3	12±3	>65
VPF-50S-12-65-76000	760±3	12±3	>65
VPF-50S-12-65-77000	770±3	12±3	>65
VPF-50S-12-65-78000	780±3	12±3	>65
VPF-50S-12-65-79000	790±3	12±3	>65
VPF-50S-12-65-80000	800±3	12±3	>65
VPF-50S-12-65-81000	810±3	12±3	>65
VPF-50S-12-65-82000	820±3	12±3	>65
VPF-50S-12-65-83000	830±3	12±3	>65
VPF-50S-12-65-84000	840±3	12±3	>65
VPF-50S-12-65-85000	850±3	12±3	>65
VPF-50S-12-65-86000	860±3	12±3	>65
VPF-50S-12-65-87000	870±3	12±3	>65
VPF-50S-12-65-88000	880±3	12±3	>65
VPF-50S-12-65-89000	890±3	12±3	>65
VPF-50S-12-65-90000	900±3	12±3	>65

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Notch Filter | NF

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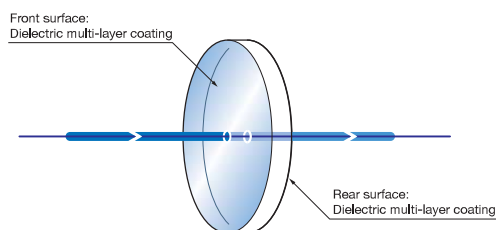
Etalon

Notch filter is a filter that cuts only a specific wavelength. It is not the same as the interference filter which transmits only a specific wavelength. By using a dielectric multilayer coating the product has very high stability and has environmental resistance.

- Four types are available 355nm, 532nm, 633nm and 1064nm.
- Because it is a dielectric multilayer coating, there is almost no absorption by the coating.
- By using in combination with other filters, it can also be used as filter sets for Bio-Imaging.

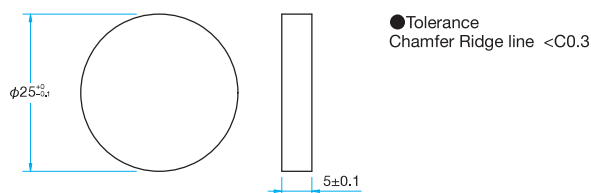


Schematic



Outline Drawing

(in mm)



Specifications

Material	Synthetic fused silica, BK7
Coating	Dielectric multi-layer coating
Incident angle	0°
Surface Quality (Scratch-Dig)	60-40
Clear aperture	90% of Actual Aperture

Guide

- Please contact our Sales Division for customized products.
(customized on outer diameter, wavelength characteristic, etc.)

Attention

- If the light incident angle is other than 0 degrees, the transmittance characteristics may change. In the normal situation, when the incident angle changes, the wavelength may shift to the long wavelength side.
- Notch filter has a durable structure to the high temperature, but if it is put close to the lamp that emits a powerful heat ray (e.g. mercury lamp), it will not be guaranteed for the performance of the filter and safety.

Specifications

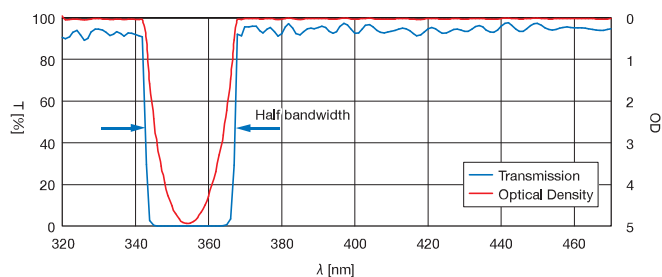
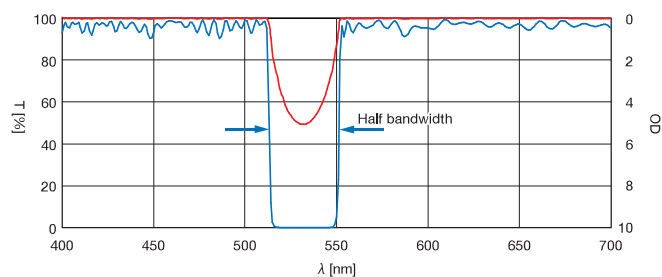
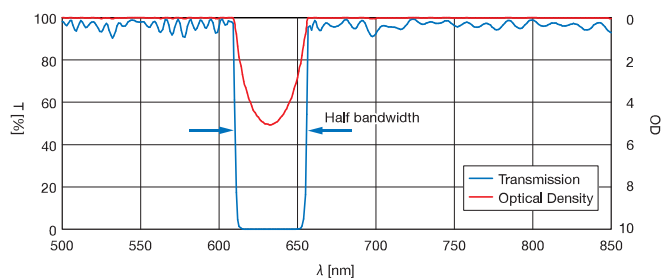
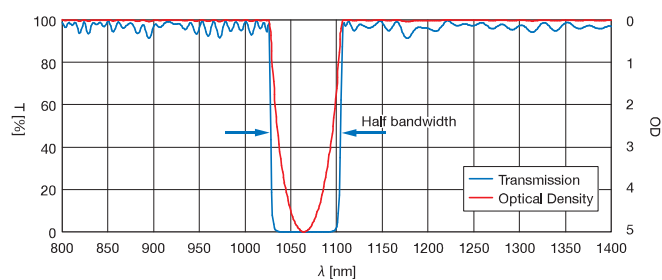
Part Number	Cutoff wavelength [nm]	Optical density OD	Half bandwidth [nm]	Transmittance wavelength ranges [nm]		Transmittance [%]	Material
NF-25C05-27-355	355	>4	27±2.7	320 – 335	375 – 500	Average 90	Synthetic fused silica
NF-25C05-40-532	532	>4	40±4.0	400 – 502	562 – 700	Average 90	BK7
NF-25C05-47-633	633	>4	47±4.7	475 – 597	669 – 850	Average 90	BK7
NF-25C05-80-1064	1064	>4	80±8.0	800 – 1004	1124 – 1400	Average 90	BK7

Compatible Optic Mounts

MHG-MP25-NL

Typical Transmittance & Optical Density Data

OD: Optical Density T: Transmission

NF-25C05-27-355**NF-25C05-40-532****NF-25C05-47-633****NF-25C05-80-1064**Application
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Coatings**Opto-
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Etalon

Contact Sheet

Catalog Code W3812

Filter Case

Catalog Code W3218

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Etalon



Please contact to our Sales Division for a convenient filter case for storage of catalog filter products.

Specifications

Part Number	Compatible Optics Size	Maximum number of filters	Size [mm]
Case-25C-20-SET	$\phi 25\text{mm}$, $\square 25\text{mm}$	20 pieces	(W)240 × (D)100 × (H)67
Case-50S-15-SET	$\phi 50\text{mm}$, $\square 50\text{mm}$	15 pieces	(W)240 × (D)100 × (H)67

Contact sheet for Custom-made Interference Filter

☐ Estimation ☐ Order

Date

☐ To: Sigma Koki Co., Ltd. **FAX +81-3-5638-6550**

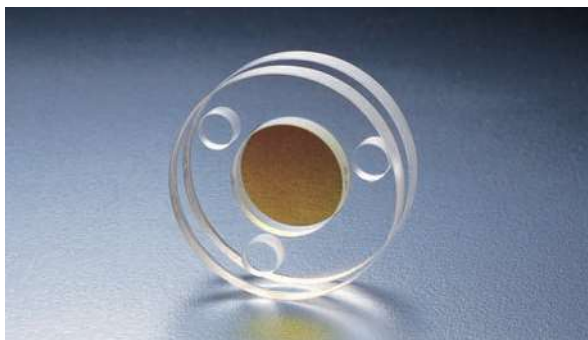
Affiliation (Organization Name)					
Department		Name			
TEL		FAX		E-mail	
Country/Address					
Name & Designation		(Tentative name is okay)			
Drawing Number		Estimate	☐ Yes: by Date ☐ No		
Desired Delivery Date		Budget	JP Yen		
Mount	☐ Yes ☐ No		Pieces		
Central wavelength	nm		Half bandwidth	nm	
Transmittance Range		nm		Optical Density	%
Outside dimension				ϕA	mm
				a	mm
				b	mm
Others	* Write more detailed specifications here. (Rough illustration is acceptable.)				

Sigma Koki Co., Ltd.

General Catalog 02

Etalon is made of two parallel high reflecting mirrors and used as a narrow band filter. Widely used in astronomical observation and interferometer measurement.

- The etalons are customized according to your application; we are proposing 4 basic choices. Please see the illustrations.
- Please fill your requirement details onto the following inquiry form; our Sales Division will contact you with a quotation.



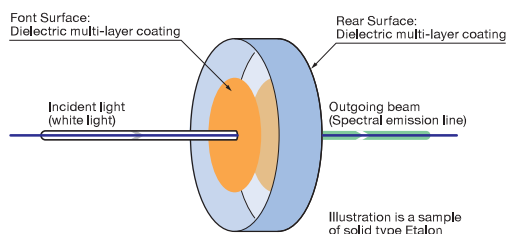
Specifications

Material	Synthetic fused silica
Surface flatness of substrate	$<\lambda/20$ ($\lambda=632.8\text{nm}$)
Incident angle	0°

Attention

- ▶ If the angle of incident is not correctly set the transmittance wavelength may be displaced or the light does not transmit as planned.
- ▶ Question about the characteristic of the finesse or the transmission of the Etalon, please contact our International Sales Division.
- ▶ The lead time of some model are expected to be long for further information, please contact our International Sales Division.

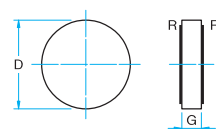
Schematic



Outline Drawing

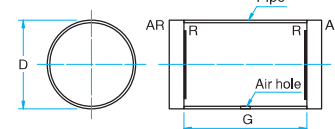
(in mm)

●Solid Etalon



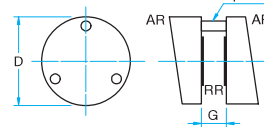
Simple structure and easy to use but the characteristic depends on the refractive index of the glass.

●Tube type: pair Etalon



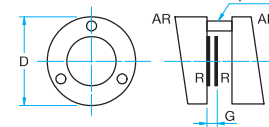
Air spaced with no effects from refractivity of the glass. The resonator is covered, less noise effects from outside.

●3 pieces pair Etalon



Air spaced with no effects from refractivity of the glass. The resonator is uncovered, easy to be effected by noise.

●4 pieces pair Etalon



Air spaced with no effects from refractivity of the glass. The resonator length is narrow which enable to get a wider FSR (Free Spectral Range).

R = Dielectric multi-layer coating (high reflectance) AR = Anti-reflective coating

Contact sheet for Etalon

☐ Estimation ☐ Order

Date

☐ To: Sigma Koki Co., Ltd. **FAX +81-3-5638-6550**

Affiliation (Organization Name)							
Department		Name					
TEL		FAX		E-mail			
Country/ Address							
Name & Designation		(Tentative name is okay)					
Drawing Number			Estimate	☐ Yes: by Date ☐ No			
Desired Delivery Date			Budget	JP Yen			
Type							
Wavelength	nm	Diameter (D)	mm	Quantity	piece		
Reflectance	%	Incident beam	mm	Space	mm		
Others	* Write more detailed specifications here. (Rough illustration is acceptable.)						