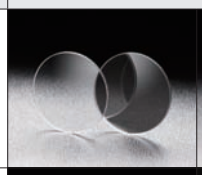
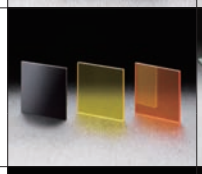
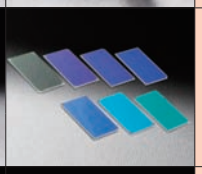
Filters

Filters INDEX

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 Contrast tuning of interference fringes A proper brightness adjustment Laser security measure			**Absorption ND filter** Reference B213 **Reflectance ND filter** Reference B219 **Variable ND filter** Reference B224	Low cost High power laser, wide wavelength Continuously variable
Choice of wavelength (color)	Fluorescence observation Select a single color light Infrared and Ultraviolet observation			**Color glass filter** Reference B230 – B237 **Dichroic filter** Reference B239 – B248 **Bandpass filter** Reference B250 – B257	Low cost, low ripple and high light cut-off High transmittance High steep of reflectance and transmittance switching Small bandwidth wavelength selection
Attenuate the scattered light	Uniformize the light Illumination for Observation Screen			**Beam shaping diffuser** Reference B227 **Diffuser plate** Reference B228	Low lost One direction emission Low cost The selection of proportion of Transmition and Diffusion

Selective wavelength filter

Long-pass filter

Wavelength [nm]	Part Number	Reference
306	LOPF-25C-300	B246
327	RSF-25C-325RU	B247
347	LOPF-25C-341	B246
359	RSF-25C-355RU	B247
367	RSF-25C-364RU	B247
370	SCF-50S-37L	B230
380	SCF-50S-38L	B230
390	SCF-50S-39L	B230
410	SDM410S	B249
415	LOPF-25C-409	B246
416	YIF-BA420IFS	B253
418	LOPF-25C-405	B246
420	SCF-50S-42L	B230
440	SCF-50S-44Y	B230
445	RSF-25C-442RU	B247
455	SDM455S	B249
460	YIF-BA460IFS	B253
463	RSF-25C-458RU	B247
466	LOPF-25C-458	B246
476	RSF-25C-473RU	B247
480	SCF-50S-48Y	B230
490	SDM490S	B249
490	DIM-50S-BLE	B241
491	RSF-25C-488RU	B247
500	SCF-50S-50Y	B230
500	LOPF-25C-488	B246
501	LOPF-25C-496	B246
505	SDM505S	B249
511	YIF-BA510IFS	B253
515	SDM515S	B249
515	LOPF-25C-500	B246
518	RSF-25C-514RU	B247
520	SCF-50S-52Y	B230
520	DIF-50S-YEL	B240
522	LOPF-25C-515	B246
526	LOPF-25C-514	B246
530	LOPF-25C-519	B246
535	RSF-25C-532RU	B247
540	SCF-50S-54O	B230
542	LOPF-25C-532	B246
560	SCF-50S-56O	B230
567	RSF-25C-561RU	B247
570	SDM570S	B249
572	LOPF-25C-561	B246
573	YIF-BA575IFS	B253
574	RSF-25C-568RU	B247
580	SCF-50S-58O	B230
595	SDM595S	B249
600	SCF-50S-60R	B230
601	LOPF-25C-593	B246
602	YIF-BA600IFS	B253
610	DIF-50S-RED	B240
620	SCF-50S-62R	B230
637	RSF-25C-633RU	B247
640	SCF-50S-64R	B230
654	RSF-25C-647RU	B247
655	LOPF-25C-635	B246
660	SCF-50S-66R	B230
671	RSF-25C-664RU	B247
700	SCF-50S-70R	B230
720	SCF-50S-72R	B230
723	LOPF-25C-715	B246
754	LOPF-25C-736	B246
760	ITF-50S-76IR	B231
760	CLDM	B243
788	RSF-25C-780RU	B247
791	RSF-25C-785RU	B247
800	ITF-50S-80IR	B231
805	LOPF-25C-785	B246
812	LOPF-25C-800	B246
812	RSF-25C-808RU	B247
830	ITF-50S-83IR	B231
838	RSF-25C-830RU	B247
840	LOPF-25C-834	B246
850	ITF-50S-85IR	B231
985	ITF-50S-100RM	B231
986	RSF-25C-980RU	B247
1057	LOPF-25C-1020	B246
1071	RSF-25C-1064RU	B247
1326	RSF-25C-1319RU	B247

Short-pass filter

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

Nocth type

Wavelength [nm]	Part Number	Reference
355	NF-25C05-27-355	B258
532	NF-25C05-40-532	B258
540	DIM-50G-GRE	B241
550	DIF-50S-MAG	B240
633	NF-25C05-47-633	B258
1064	NF-25C05-80-1064	B258

Filters Selection Guide

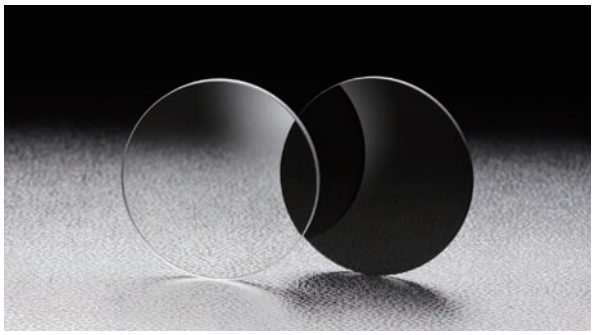
Band-pass type

Wavelength [nm]	Part Number	Reference
200		
214	**VPF-25C-10-12-21400**	B254
228	**VPF-25C-10-15-22800**	B254
232	**VPF-25C-10-15-23200**	B254
239	**VPF-25C-10-15-23900**	B254
250		
254	**VPF-25C-10-12-25370**	B254
265	**VPF-25C-10-12-26500**	B254
280	**VPF-25C-10-12-28000**	B254
289	**VPF-25C-10-15-28900**	B254
297	**VPF-25C-10-15-29670**	B254
300		
307	**VPF-25C-10-15-30710**	B254
313	**VPF-25C-10-15-31300**	B254
317	**UTVAF-50S-33U**	B232
325	**VPFHT-3250**	B250
	UTVAF-50S-34U	B232
326	**VPF-25C-10-25-32600**	B254
334	**VPF-25C-10-25-33400**	B254
337	**VPF-25C-03-20-33710**	B254
	VPF-25C-10-25-33710	B254
350 350	**VPF-25C-10-25-35000**	B254
	VPF-25C-40-25-35000	B254
	UTVAF-50S-36U	B232
355	**VPF-25C-10-25-35500**	B254
	VPFHT-3550	B250
364	**VPFHT-3638**	B250
365	**VPF-25C-10-25-36500**	B254
	YIF-BP360-370S	B253
370	**BLF-50S-370B**	B234
	YIF-BP340-390S	B253
372	**VPFHT-3720**	B250
390	**BLF-50S-390B**	B234
400 400	**VPF-25C-10-40-40000**	B254
	VPF-25C-40-40-40000	B254
	VPF-50S-10-45-40000	B257
405	**YIF-BP400-410S**	B253
	VPF-25C-10-40-40470	B254
410	**BLF-50S-410B**	B234
	VPF-50S-10-45-41000	B257
420	**YIF-BP400-440S**	B253
	VPF-50S-10-45-42000	B257
430	**VPF-50S-10-45-43000**	B257
436	**VPF-25C-10-40-43580**	B254
440	**BLF-50S-440B**	B234
	VPF-50S-10-45-44000	B257
442	**VPF-25C-01-30-44160**	B254
	VPF-25C-03-35-44160	B254
	VPF-25C-10-45-44160	B254
	VPFHT-4416	B250
445	**YIF-BA420-460S**	B253
450 450	**VPF-25C-10-45-45000**	B254
	VPF-25C-40-50-45000	B254
	VPF-50S-10-50-45000	B257
456	**VPF-25C-10-45-45550**	B254
458	**VPF-25C-01-30-45790**	B254
	VPF-25C-03-35-45790	B254
	VPF-25C-10-45-45790	B254
	VPFHT-4579	B250
460	**BLF-50S-460B**	B234
	VPF-50S-10-50-46000	B257
470	**VPF-50S-10-50-47000**	B257
471	**YIF-BP460-480S**	B253
477	**YIF-BP460-495S**	B253
480	**VPF-50S-10-50-48000**	B257
484	**YIF-BP470-495S**	B253
486	**VPF-25C-10-45-48610**	B254
487	**YIF-BA460-510S**	B253
488	**VPF-25C-01-40-48800**	B254
	VPF-25C-03-45-48800	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
500 500	**VPF-25C-10-50-50000**	B254
	VPF-25C-40-50-50000	B254
509	**VPF-25C-10-50-50850**	B254
510	**VPF-50S-10-55-51000**	B257
515	**VPF-25C-01-40-51450**	B254
	VPF-25C-03-45-51450	B254
	VPF-25C-10-50-51450	B254
	VPFHT-5145	B250
517	**YIF-BA495-540S**	B253
520	**VPF-50S-10-55-52000**	B257
526	**GRF-50S-530G**	B234
530	**YIF-BA510-550S**	B253
	VPF-50S-10-55-53000	B257
532	**VPF-25C-01-40-53200**	B254
	VPF-25C-03-45-53200	B254
	VPF-25C-10-50-53200	B254
	VPFHT-5320	B250
533	**GRF-50S-533G**	B234
535	**VPF-25C-10-50-53500**	B254
537	**YIF-BA515-560S**	B253
540	**VPF-50S-10-55-54000**	B257
	DIF-50S-GRE	B240
541	**GRF-50S-545G**	B234
543	**YIF-BP530-550S**	B253
544	**VPFHT-5435**	B250
546	**YIF-BP540-550S**	B253
	VPF-25C-10-50-54610	B254
548	**GRF-50S-550G**	B234
550 550	**VPF-25C-10-50-55000**	B254
	VPF-25C-40-50-55000	B254
	VPF-50S-10-60-55000	B257
560	**VPF-50S-10-60-56000**	B257
561	**VPFHT-5614**	B250
562	**YIF-BP540-585S**	B253
568	**VPFHT-5682**	B250
570	**VPF-50S-10-60-57000**	B257
576	**YIF-BP565-585S**	B253
577	**VPF-25C-10-50-57700**	B254
580	**VPF-50S-10-60-58000**	B257
589	**VPF-25C-10-50-58930**	B254
590	**VPF-50S-10-60-59000**	B257
599	**YIF-BA575-625S**	B253
600 600	**VPF-25C-10-50-60000**	B254
	VPF-25C-40-50-60000	B254
	VPF-50S-12-60-60000	B257
610	**VPF-50S-12-60-61000**	B257
620	**VPF-50S-12-60-62000**	B257
630	**VPF-50S-12-60-63000**	B257
633	**VPF-25C-01-40-63280**	B254
	VPF-25C-03-45-63280	B254
	VPF-25C-10-50-63280	B254
	VPFHT-6328	B250
636	**VPF-25C-10-50-63620**	B254
640	**VPF-50S-12-60-64000**	B257
644	**YIF-BA600-690S**	B253
647	**VPF-25C-03-45-64710**	B254
	VPF-25C-10-50-64710	B254
	VPFHT-6471	B250
650 650	**VPF-25C-10-50-65000**	B254
	VPF-25C-40-50-65000	B254
	VPF-50S-12-60-65000	B257
656	**VPF-25C-10-50-65630**	B254
660	**VPF-50S-12-60-66000**	B257
670	**VPF-25C-10-50-67000**	B254
	VPF-50S-12-60-67000	B257
671	**VPFHT-6710**	B250
680	**VPF-50S-12-60-68000**	B257
690	**VPF-50S-12-60-69000**	B257
694	**VPF-25C-10-50-69430**	B254
700 700	**VPF-25C-10-50-70000**	B254
	VPF-25C-40-50-70000	B254
	VPF-50S-12-65-70000	B257
710	**VPF-50S-12-65-71000**	B257
720	**VPF-50S-12-65-72000**	B257
730	**VPF-50S-12-65-73000**	B257
740	**VPF-50S-12-65-74000**	B257
750 750	**VPF-25C-10-45-75000**	B254
	VPF-25C-40-40-75000	B254
	VPF-50S-12-65-75000	B257
760	**VPF-50S-12-65-76000**	B257
766	**VPF-25C-10-45-76650**	B254
770	**VPF-50S-12-65-77000**	B257
780	**VPF-25C-10-45-78000**	B254
	VPF-50S-12-65-78000	B257
	VPFHT-7800	B250
785	**VPFHT-7850**	B250
790	**VPF-50S-12-65-79000**	B257
	ITF-50S-83RT	B231
795	**VPF-25C-10-45-79470**	B254
800 800	**VPF-25C-10-45-80000**	B254
	VPF-25C-40-45-80000	B254
	VPF-50S-12-65-80000	B257
808	**VPFHT-8080**	B250
810	**VPF-25C-10-45-81000**	B254
	VPF-50S-12-65-81000	B257
820	**VPF-50S-12-65-82000**	B257
830	**VPF-25C-10-45-83000**	B254
	VPF-50S-12-65-83000	B257
	VPFHT-8300	B250
840	**VPF-50S-12-65-84000**	B257
850 850	**VPF-50S-12-65-85000**	B257
852	**VPFHT-8520**	B250
860	**VPF-50S-12-65-86000**	B257
870	**VPF-50S-12-65-87000**	B257
880	**VPF-50S-12-65-88000**	B257
890	**VPF-50S-12-65-89000**	B257
900	**VPF-50S-12-65-90000**	B257
900 905	**VPF-25C-10-45-90500**	B254
976	**VPFHT-9760**	B250
980	**VPFHT-9800**	B250
1000		
1014	**VPF-25C-10-40-10140**	B254
1047	**VPFHT-10471**	B250
1050		
1064	**VPF-25C-01-30-10640**	B254
	VPF-25C-03-35-10640	B254
	VPF-25C-10-40-10640	B254
	VPFHT-10640	B251
1100		
1300	**VPF-25C-10-35-13000**	B254
1500	**VPF-25C-10-30-15000**	B254
1550	**VPF-25C-10-30-15500**	B254

Absorptive Neutral Density Filter (Mounted and Unmounted) | AND/ANDY/MAN/MANY RoHS

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

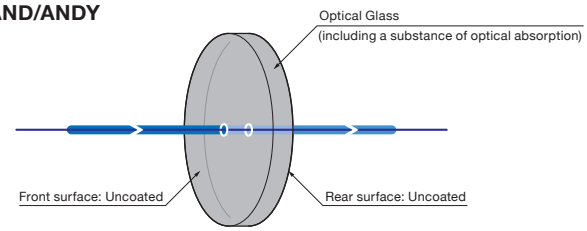
- Different size, wavelength and deviation ratio which is not listed on-line or in our catalog is available as custom product upon the request.
- Absorptive ND filter placed near to a light-source can be broken by the sudden high temperature. The filter must be treated with thermal reinforcement for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

Attention

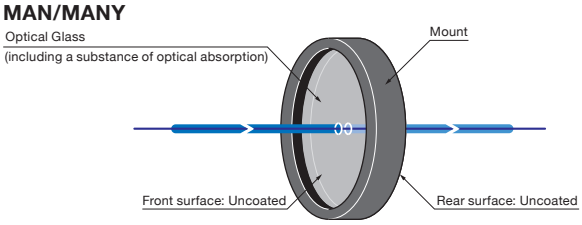
- Do not use with high power laser, the filter can be damaged. In that case, please try our Reflective type of ND filter (model FND).
- To obtain a better transmittance characteristic, the thickness of the filter can be changed. For this reason the thickness of each filter is different. For filter with 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 wave-length is wider than a specified wavelength.
- ND filter does not have Anti Reflection coating so there is 4% reflection loss.

Schematic

AND/ANDY

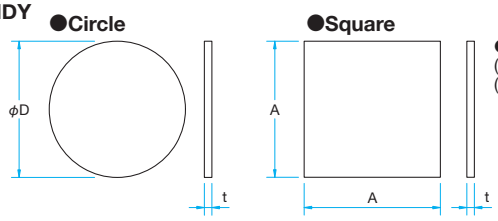


MAN/MANY



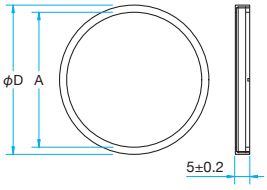
Outline Drawing (in mm)

AND/ANDY



●Tolerance
(Circle) Diameter $\phi D^{+0}_{-0.1}$
(Square) Length $A^{+0}_{-0.1}$ (A≦40)
$A^{+0}_{-0.2}$ (A=50)

MAN/MANY



●Tolerance
Mount outer diameter ϕD±0.1

Strengthened glass

Glass can be broken under sudden heat effection. 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.

Absorptive Neutral Density Filter (Mounted and Unmounted) | AND/ANDY/MAN/MANY Catalog Code W3093

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	15	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

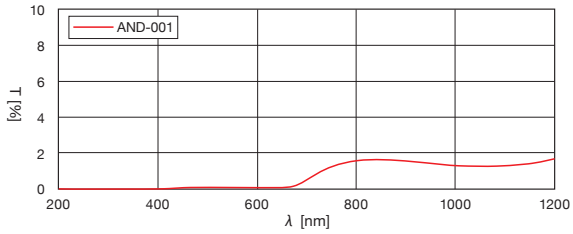
Compatible Optic Mounts

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

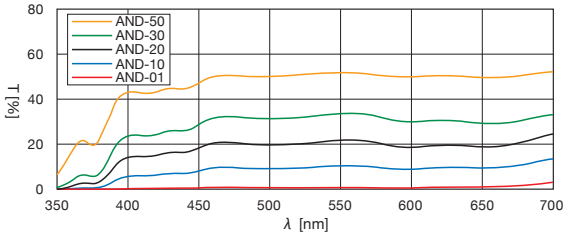
Typical Transmittance Data

T: Transmission

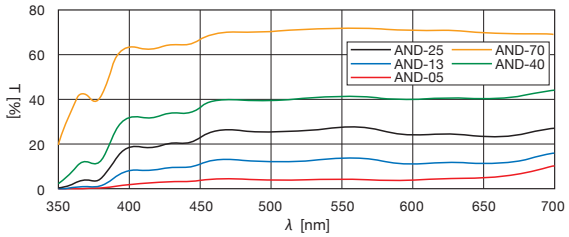
AND-001



AND-01 · 10 · 20 · 30 · 50



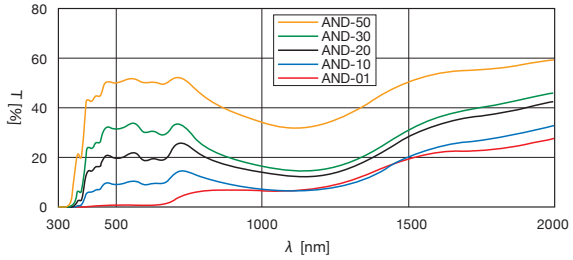
AND-05 · 13 · 25 · 40 · 70



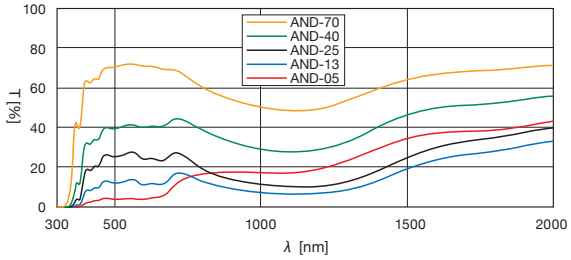
Typical Transmittance Data (300 – 2000nm)

T: Transmission

AND-01 · 10 · 20 · 30 · 50



AND-05 · 13 · 25 · 40 · 70



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 appromiate 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

Absorptive Neutral Density Filter (Mounted and Unmounted) | AND/ANDY/MAN/MANY

Catalog Code W3096

YAG Laser · Circle (ϕ10 – ϕ30 and ϕ50)

Part Number	Diameter ϕD [mm]	Transmittance (1064nm) [%]
ANDY-10C-05	ϕ10	5
ANDY-10C-10	ϕ10	10
ANDY-10C-15	ϕ10	15
ANDY-10C-20	ϕ10	20
ANDY-10C-25	ϕ10	25
ANDY-10C-30	ϕ10	30
ANDY-10C-50	ϕ10	50
ANDY-15C-05	ϕ15	5
ANDY-15C-10	ϕ15	10
ANDY-15C-15	ϕ15	15
ANDY-15C-20	ϕ15	20
ANDY-15C-25	ϕ15	25
ANDY-15C-30	ϕ15	30
ANDY-15C-50	ϕ15	50
ANDY-20C-05	ϕ20	5
ANDY-20C-10	ϕ20	10
ANDY-20C-15	ϕ20	15
ANDY-20C-20	ϕ20	20
ANDY-20C-25	ϕ20	25
ANDY-20C-30	ϕ20	30
ANDY-20C-50	ϕ20	50
ANDY-25C-05	ϕ25	5
ANDY-25C-10	ϕ25	10
ANDY-25C-15	ϕ25	15
ANDY-25C-20	ϕ25	20
ANDY-25C-25	ϕ25	25
ANDY-25C-30	ϕ25	30
ANDY-25C-50	ϕ25	50
ANDY-30C-05	ϕ30	5
ANDY-30C-10	ϕ30	10
ANDY-30C-15	ϕ30	15
ANDY-30C-20	ϕ30	20
ANDY-30C-25	ϕ30	25
ANDY-30C-30	ϕ30	30
ANDY-30C-50	ϕ30	50
ANDY-50C-05	ϕ50	5
ANDY-50C-10	ϕ50	10
ANDY-50C-15	ϕ50	15
ANDY-50C-20	ϕ50	20
ANDY-50C-25	ϕ50	25
ANDY-50C-30	ϕ50	30
ANDY-50C-50	ϕ50	50

Catalog Code W3097

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

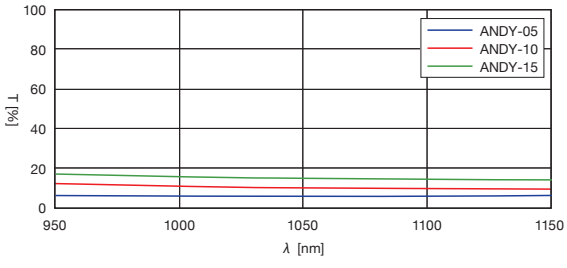
Part Number	Mount outer diameter ϕD [mm]	Clear aperture ϕA [mm]	Transmittance (1064nm) [%]
MANY-25-5	ϕ25	ϕ17	5
MANY-25-10	ϕ25	ϕ17	10
MANY-25-15	ϕ25	ϕ17	15
MANY-25-20	ϕ25	ϕ17	20
MANY-25-25	ϕ25	ϕ17	25
MANY-25-30	ϕ25	ϕ17	30
MANY-25-50	ϕ25	ϕ17	50
MANY-30-5	ϕ30	ϕ22	5
MANY-30-10	ϕ30	ϕ22	10
MANY-30-15	ϕ30	ϕ22	15
MANY-30-20	ϕ30	ϕ22	20
MANY-30-25	ϕ30	ϕ22	25
MANY-30-30	ϕ30	ϕ22	30
MANY-30-50	ϕ30	ϕ22	50
MANY-52-5	ϕ52	ϕ47	5
MANY-52-10	ϕ52	ϕ47	10
MANY-52-15	ϕ52	ϕ47	15
MANY-52-20	ϕ52	ϕ47	20
MANY-52-25	ϕ52	ϕ47	25
MANY-52-30	ϕ52	ϕ47	30
MANY-52-50	ϕ52	ϕ47	50

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

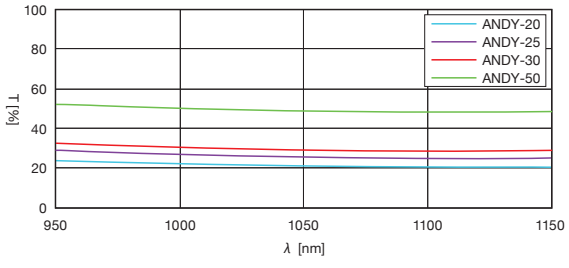
Typical Transmittance Data

T: Transmission

ANDY-05 · 10 · 15

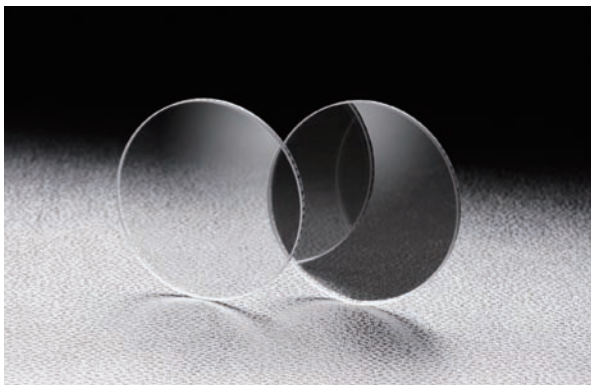


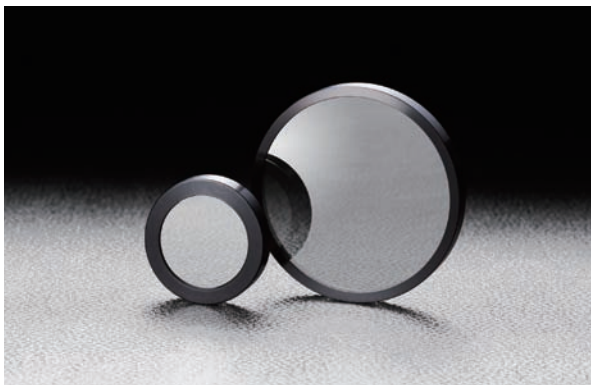
ANDY-20 · 25 · 30 · 50



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 extremly 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 +/–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: ϕ30mm)	
Surface Quality (Scratch–Dig)	60–40	
Mount (MFND/MFDNU)	Material: Aluminum Finishing: Black anodized	
Clear aperture	90% of Actual Aperture	

Guide

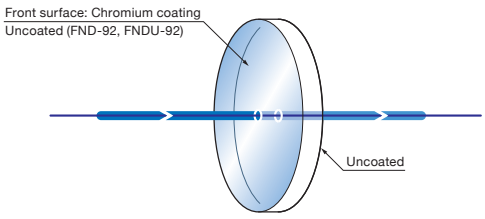
- Different size, wavelength and deviation not mentioned on-line or in our catalog are available as custom product upon on request.

Attention

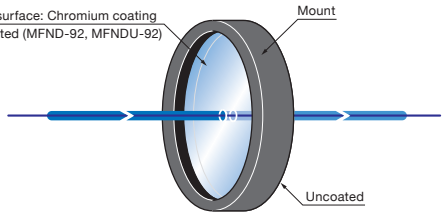
- Chrome coating is an absorptive material and can not be used with high power pulsed laser.
- The thermal lens effect may happen on filter with high power laser, for high power laser or high energy laser, please use our variable beamsplitter (model VBS). Reference B062
- The reflected light off of the 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 unstability 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

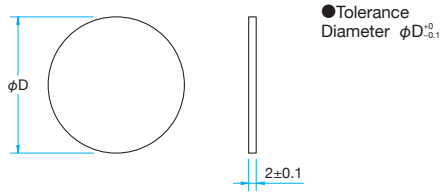


MFND/MFNDU

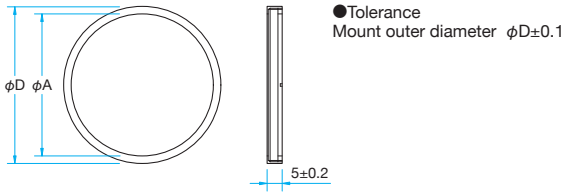


Outline Drawing (in mm)

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

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

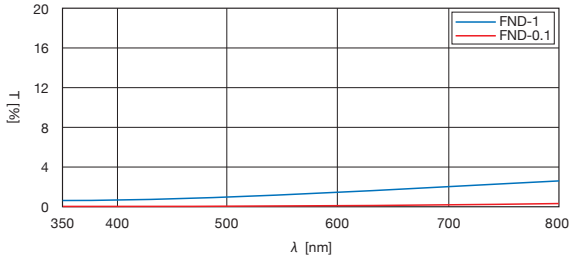
Part Number	Mount outer diameter ϕD [mm]	Clear aperture ϕA [mm]	Transmittance (550nm) [%]
MFND-25-0.1	ϕ25	ϕ17	0.1
MFND-25-1	ϕ25	ϕ17	1
MFND-25-5	ϕ25	ϕ17	5
MFND-25-10	ϕ25	ϕ17	10
MFND-25-20	ϕ25	ϕ17	20
MFND-25-30	ϕ25	ϕ17	30
MFND-25-40	ϕ25	ϕ17	40
MFND-25-50	ϕ25	ϕ17	50
MFND-25-60	ϕ25	ϕ17	60
MFND-25-70	ϕ25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

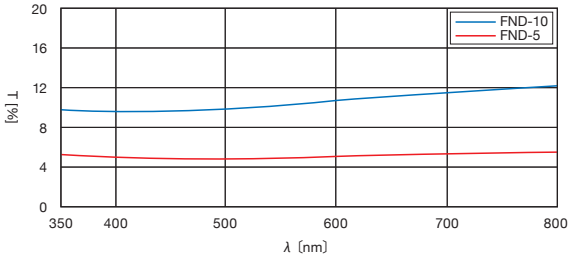
Typical Transmittance Data

T: Transmission

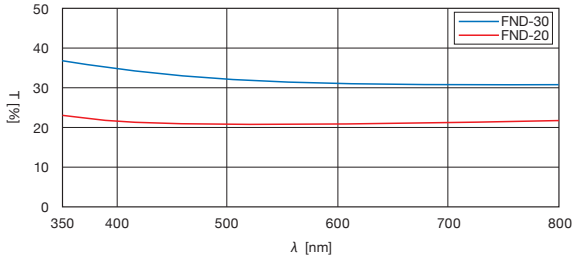
FND-0.1 · 1



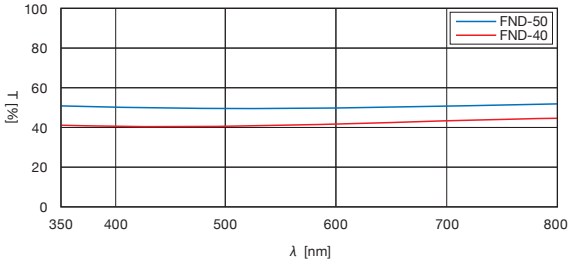
FND-5 · 10



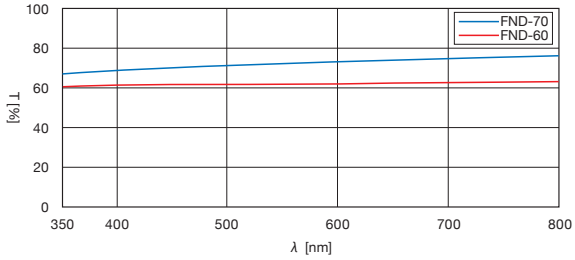
FND-20 · 30



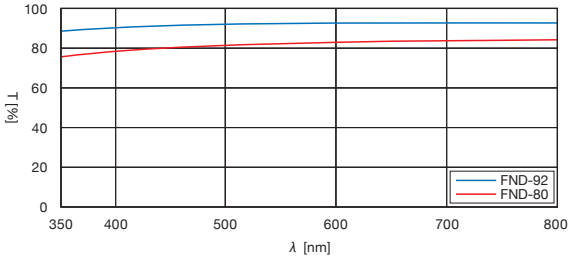
FND-40 · 50



FND-60 · 70



FND-80 · 92



Reflective Neutral Density Filter (Mounted and Unmounted) | FND/MFND/FNDU/MFNDU Catalog Code W3099

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

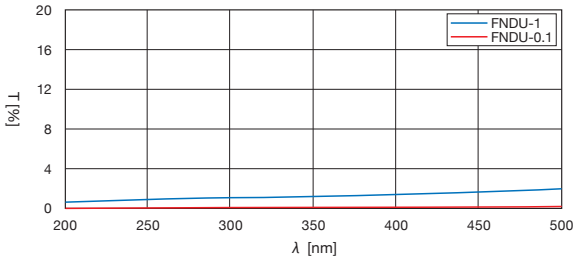
Part Number	Mount outer diameter ϕD [mm]	Clear aperture ϕA [mm]	Transmittance (300nm) [%]
MFNDU-25-0.1	ϕ25	ϕ17	0.1
MFNDU-25-1	ϕ25	ϕ17	1
MFNDU-25-5	ϕ25	ϕ17	5
MFNDU-25-10	ϕ25	ϕ17	10
MFNDU-25-20	ϕ25	ϕ17	20
MFNDU-25-30	ϕ25	ϕ17	30
MFNDU-25-40	ϕ25	ϕ17	40
MFNDU-25-50	ϕ25	ϕ17	50
MFNDU-25-60	ϕ25	ϕ17	60
MFNDU-25-70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

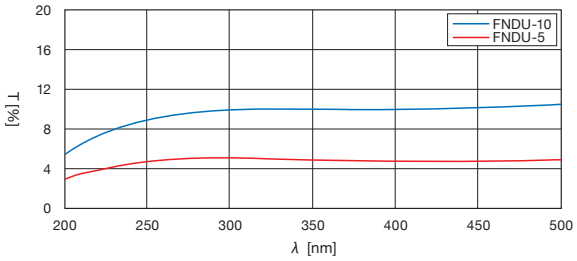
Typical Transmittance Data

T: Transmission

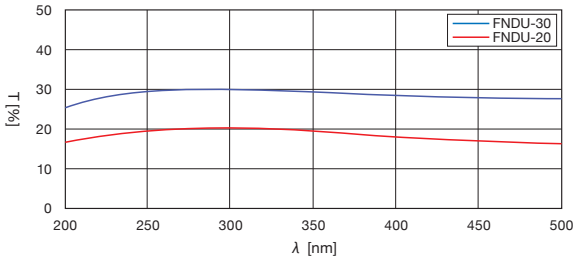
FNDU-0.1 · 1



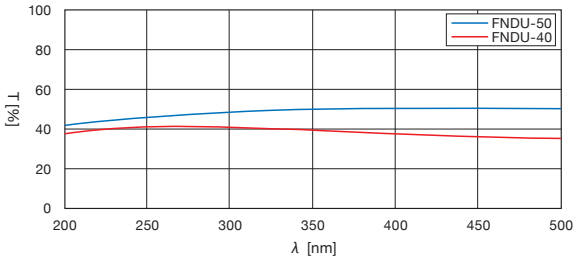
FNDU-5 · 10



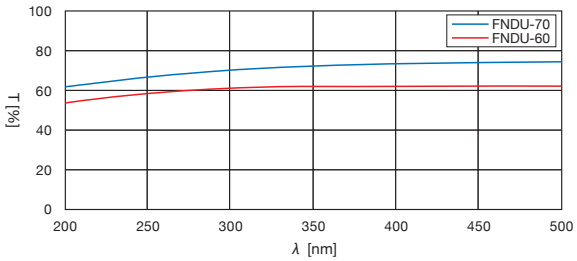
FNDU-20 · 30



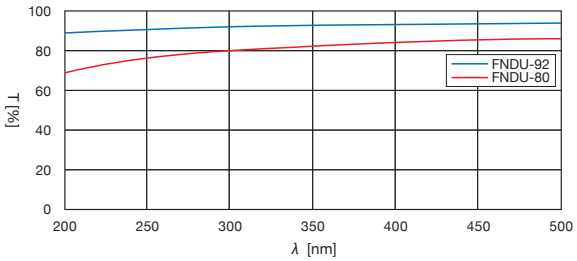
FNDU-40 · 50



FNDU-60 · 70



FNDU-80 · 92



Variable Reflective ND Filter
Rotating Variable Reflective ND Filter Holder

VND
NDHN

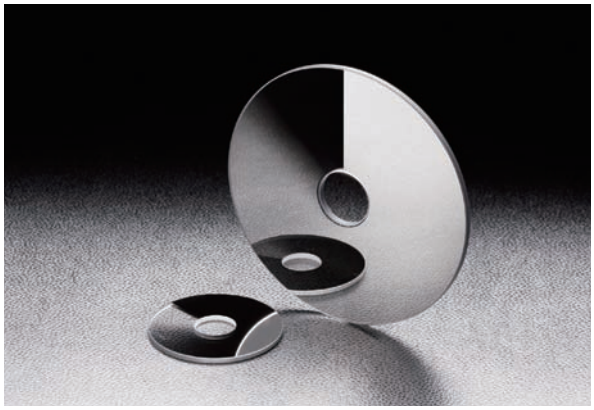
RoHS
RoHS

VND

Catalog Code W3100

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: ϕ30mm)
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

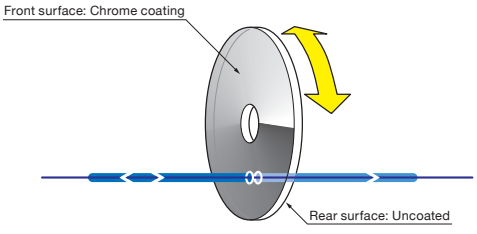
- For AOI (Angle of Incident) changing, the transmittance can be also changed. We recommand to use with the VBS, Variable Beam Splitter. Reference B062

Attention

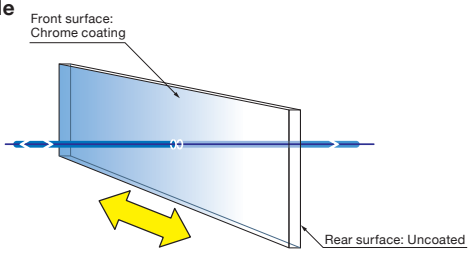
- The round shape variable ND filter is very fragile. The bore is made of glass. Do not force on one surface of the bore when fixed in a holder, it could be broken. For a compatible ND filter holder (NDHN) for your optics replacement on to the holder, please contact our Sales Division for assistance.
- The Chromium film coating is absortive, please avoid to use with high power laser.
- High power laser light can have themal 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 prapared 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 sutation 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



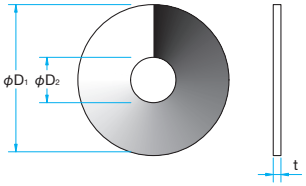
●Rectangle



Outline Drawing

(in mm)

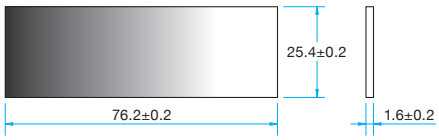
●Circle



●Tolerance

ϕ50	
Diameter	$\phi D_{1}{}^{+0}_{-0.1}$
Inner diameter	$\phi D_{2}{}^{+0.1}_{-0}$
Thickness	t ±0.1
ϕ100	
Diameter	$\phi D_{1}{}^{+0}_{-0.2}$
Inner diameter	$\phi D_{2}{}^{+0.1}_{-0}$
Thickness	t ±0.2

●Rectangle

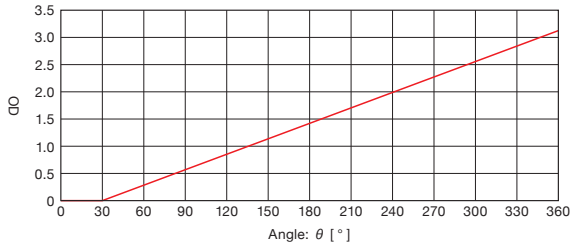


Circle				
Part Number	Wavelength Range [nm]	ϕD_1 [mm]	ϕD_2 [mm]	t [mm]
VND-50	400 – 2000	ϕ50	ϕ15	2
VND-100	400 – 2000	ϕ100	ϕ20	3
VND-50U	200 – 2000	ϕ50	ϕ15	2
VND-100U	200 – 2000	ϕ100	ϕ20	3

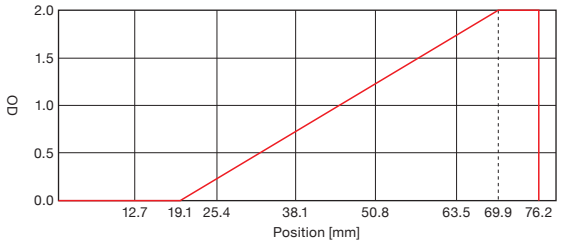
Rectangle	
Part Number	**VND-13**

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 degres without break
- NDHN-U is used with VND-U, the Ultraviolet ND filter.

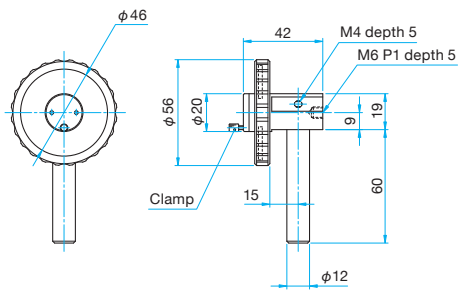
Attention

▶For ND filter change, please contact our Sales Divsion.

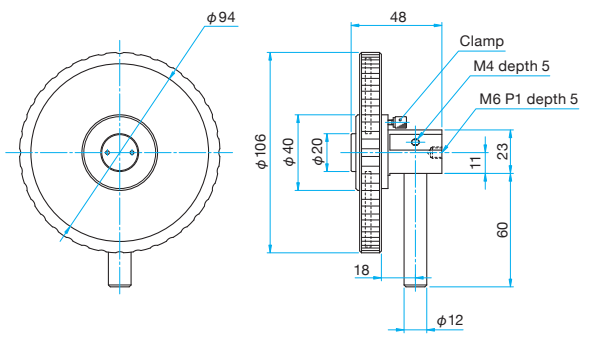
Specifications		Primary material: Aluminum Finish: Black Anodized
Part Number	ND filter parts number	Weight [kg]
NDHN-50	VND-50	0.09
NDHN-100	VND-100	0.2
NDHN-U50	VND-50U	0.09
NDHN-U100	VND-100U	0.2

Outline Drawing (in mm)

NDHN-50/U50 M6 P1



NDHN-100/U100 M6 P1

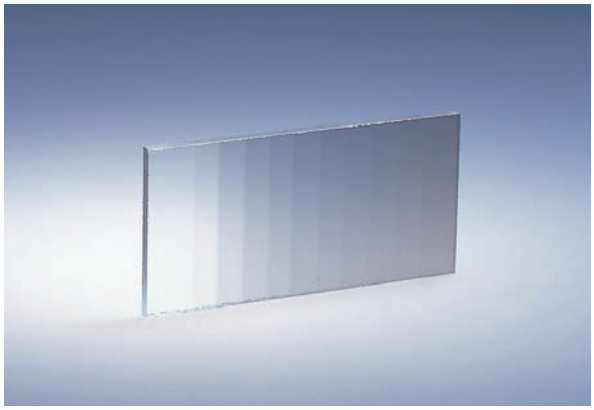


Reflective Stepping Variable ND Filter | SND

RoHS | Catalog Code W3102

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.



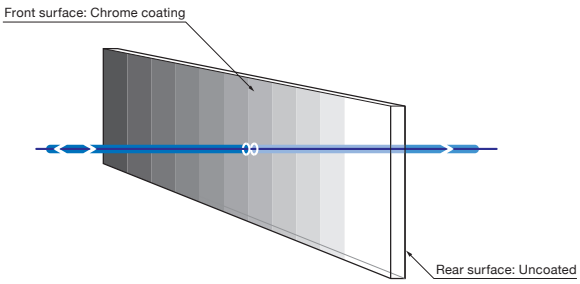
Specifications

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

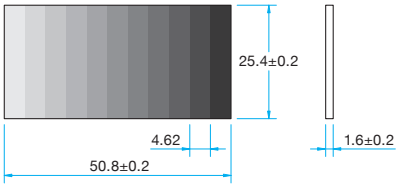
Attention

- 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.

Schematic



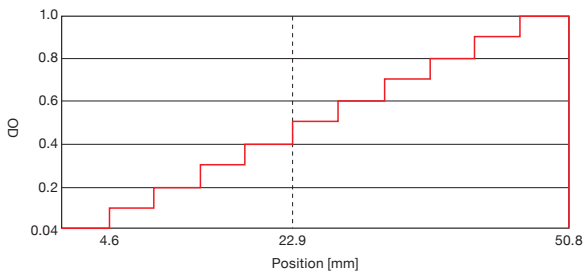
Outline Drawing (in mm)



Transmittance: Divided by 11 strp

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

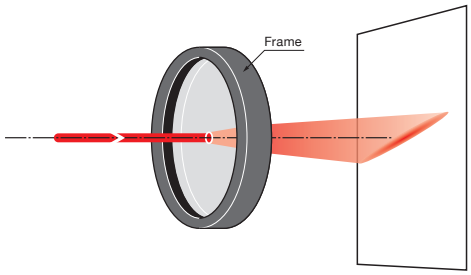
Beam Shaping Diffuser | MDFPC

RoHS Catalog Code W3103

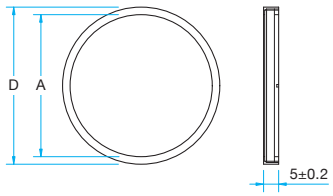
This product is a high transmittance diffuser compared to the other products and we can obtain a wide diffusion light in a single direction.
It is fit for fluid observation, used as a light panel and laser marking system.

- 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.

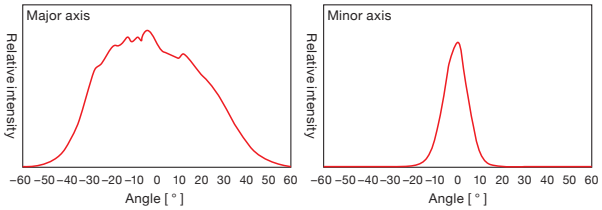
Attention

- ▶Can be used for laser light but the diffused light can not be returned to one focused spot.
- ▶Clean the optics with approriate 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.

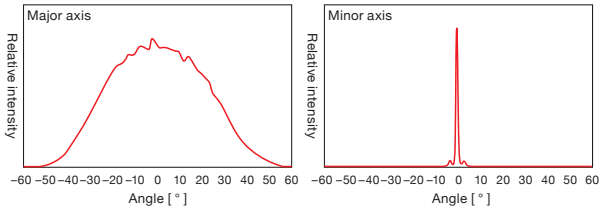
Part Number	Mount outer diameter ϕD [mm]	Clear aperture ϕA [mm]	Elliptic diffusion angle (major axis × minor axis) [°]
MDFPC-30-60/10D	ϕ30	ϕ22	60×10
MDFPC-30-60/1D	ϕ30	ϕ22	60×1
MDFPC-30-40/0.2D	ϕ30	ϕ22	40×0.2
MDFPC-30-30/5D	ϕ30	ϕ22	30×5
MDFPC-52-60/10D	ϕ52	ϕ47	60×10
MDFPC-52-60/1D	ϕ52	ϕ47	60×1
MDFPC-52-40/0.2D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

Diffusion Angle Characteristics (Reference data)

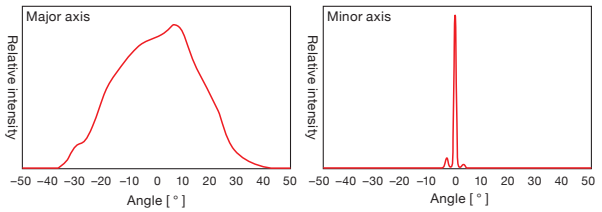
MDFPC-60/10D



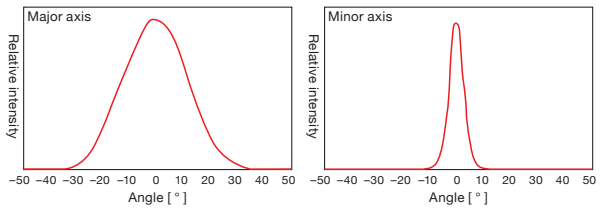
MDFPC-60/1D



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

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 recommand Synthetic fused sillica substrates.

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

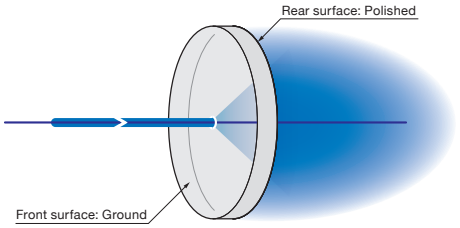
Guide

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

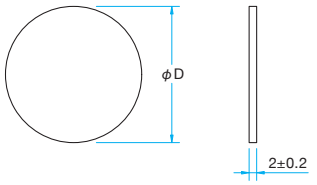
Attention

▶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.

Schematic



Outline Drawing (in mm)



●Tolerance
Diameter $\phi D^{+0}_{-0.1}$

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

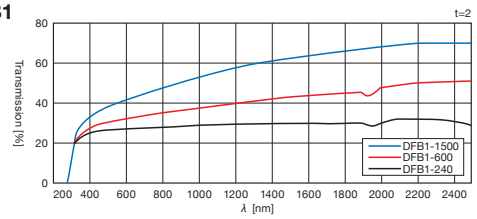
Compatible Optic Mounts

FHS-25, -50 / LHA-60

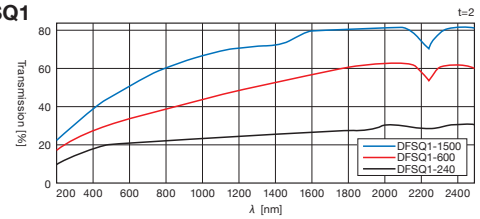
■Diffuser characteristics

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

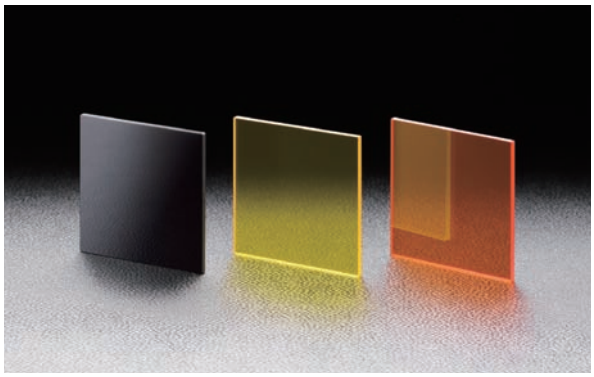


Short Wave Cutoff Filters | SCF

RoHS Catalog Code W3106

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 experiements.

- 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.



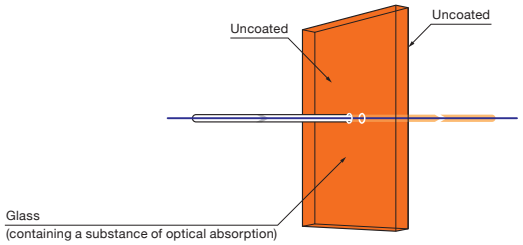
Guide

- 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.

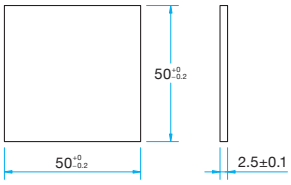
Attention

- 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%.

Schematic



Outline Drawing (in mm)



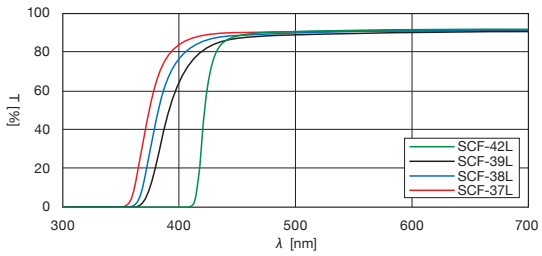
370 – 720nm

Part Number	Transition wavelength λT [nm]	Transition Interval Δλ [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

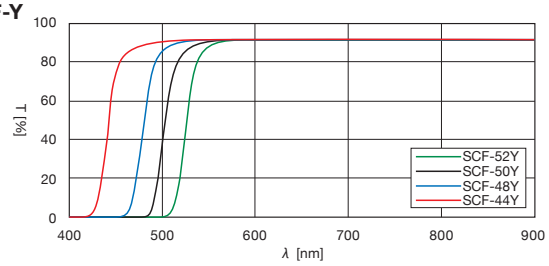
Typical Transmittance Data

T: Transmission

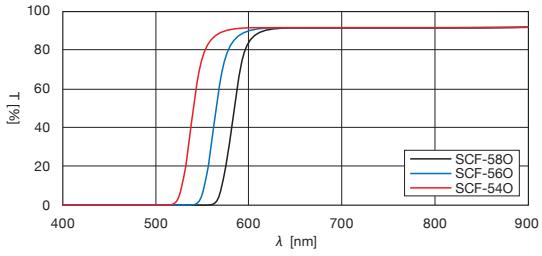
SCF-L



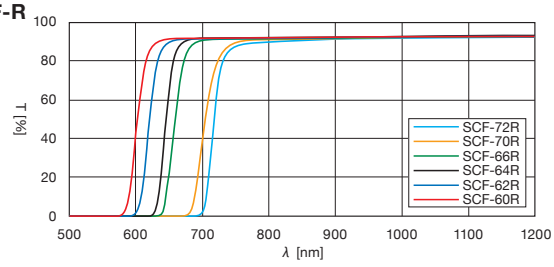
SCF-Y



SCF-O



SCF-R

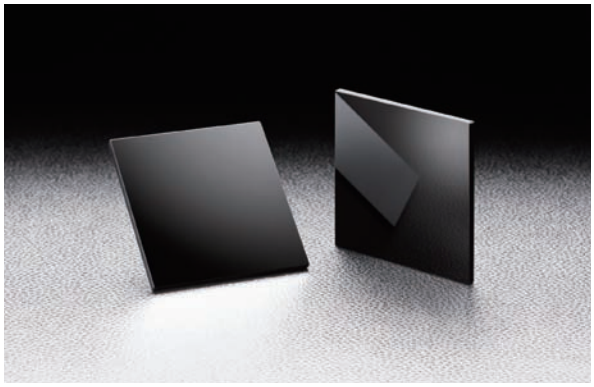


Compatible Optic Mounts

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.



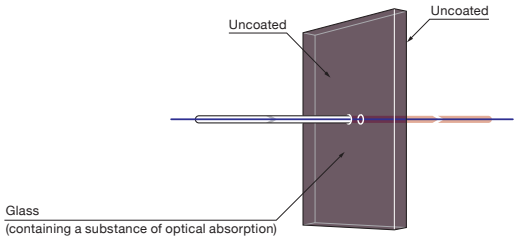
Guide

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

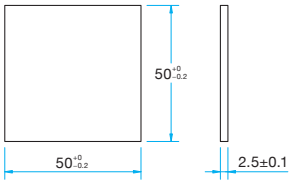
Attention

- 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%.

Schematic



Outline Drawing (in mm)



760 – 985nm

Part Number	Transition wavelength λT [nm]	Transition Interval Δλ [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

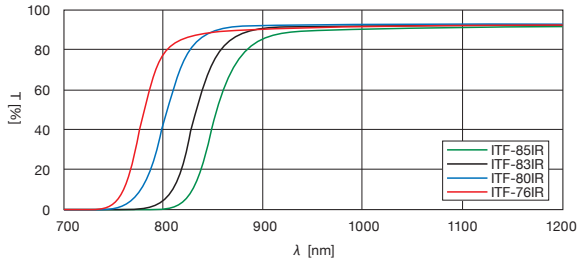
830nm

Part Number	Transition wavelength λT [nm]	Transition Interval Δλ [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

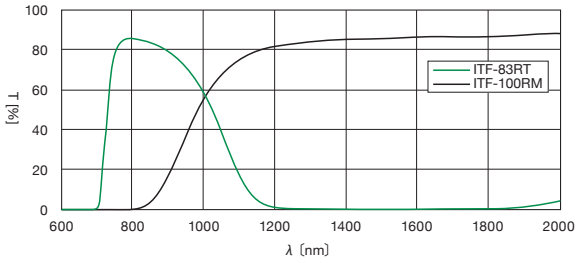
Typical Transmittance Data

T: Transmission

ITF-76IR・80IR・83IR・85IR



ITF-100RM・83RT



Compatible Optic Mounts

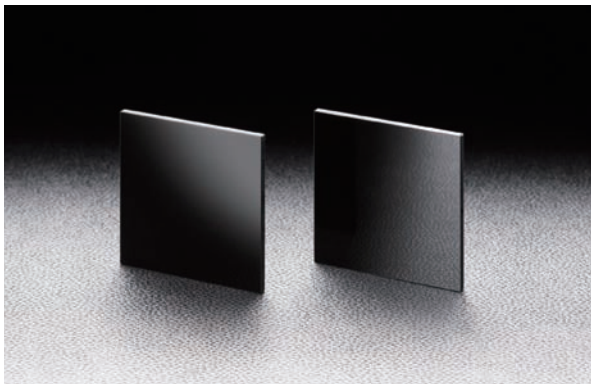
FHS-50 / FH-50

UV Transmitting Filters | UTVAF

RoHS Catalog Code W3108

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 selecion 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.



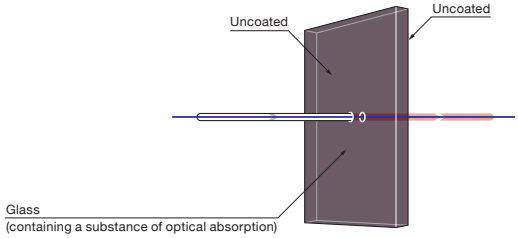
Guide

- 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.

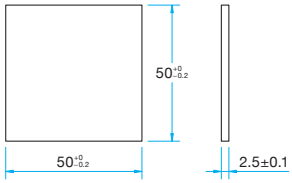
Attention

- 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%.

Schematic



Outline Drawing (in mm)



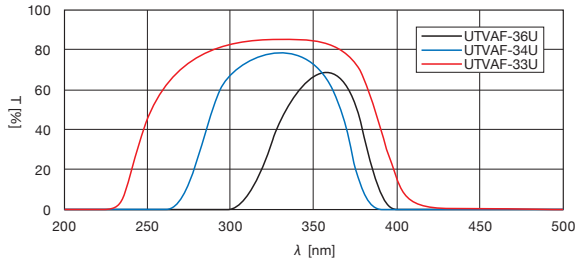
Specifications

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

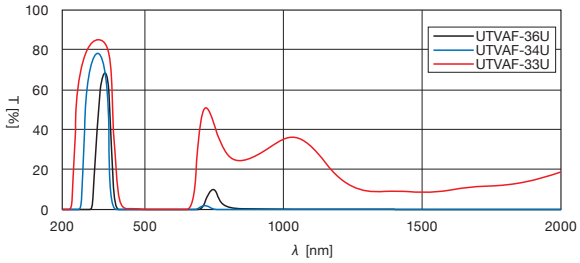
Typical Transmittance Data

T: Transmission

UTVAF (200nm – 500nm)



UTVAF (200nm – 2000nm)

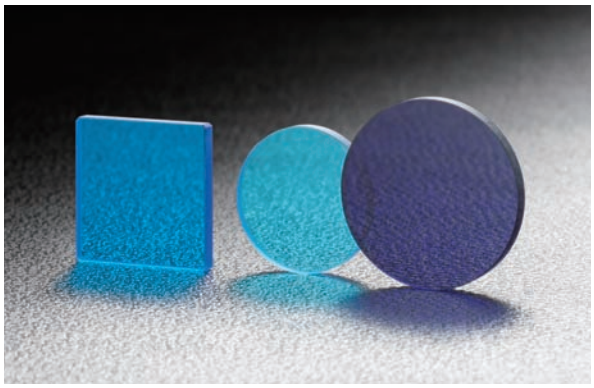


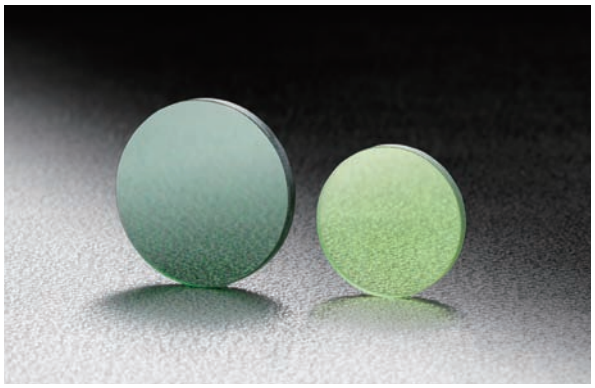
Compatible Optic Mounts

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.

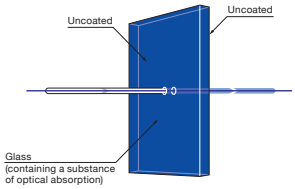
- A selection of different type of main wavelength and bandwidth from 370nm to 550nm.
- To select a wavelength from a large bandwidth light.
- By insertion of the filter into microscope or CCD camera will provide better contrast in a vision experiment.



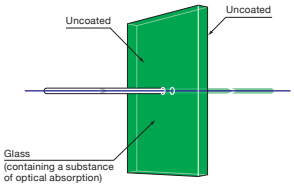


Schematic

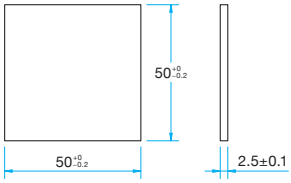
●Blue Filter



●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

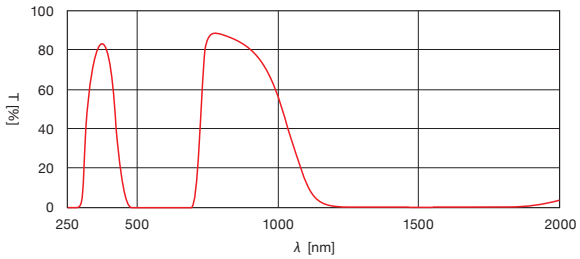
Compatible Optic Mounts

FHS-50 / FH-50

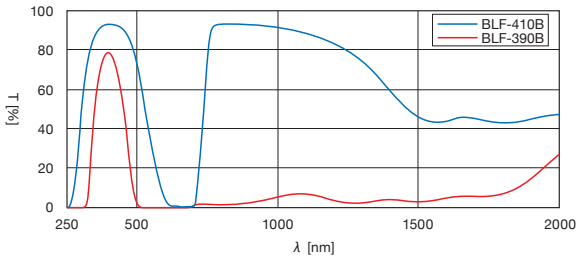
Blue and Green Filters | BLF/GRF

Typical Transmittance Data T: Transmission

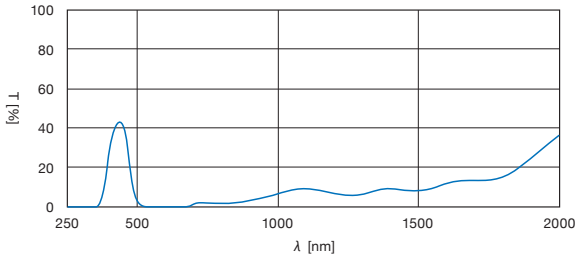
BLF-370B



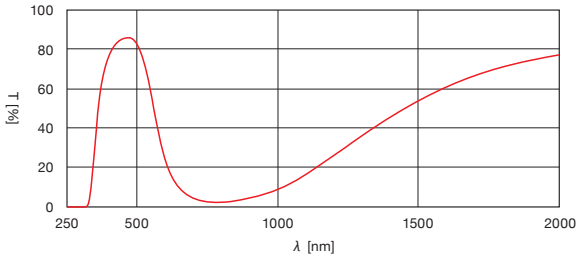
BLF-390B · 410B



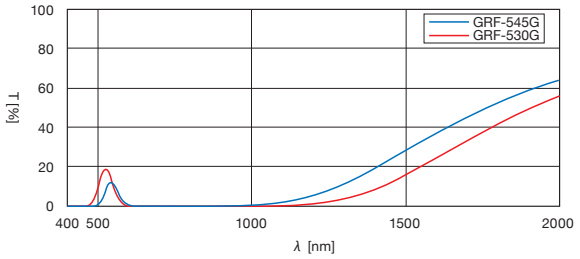
BLF-440B



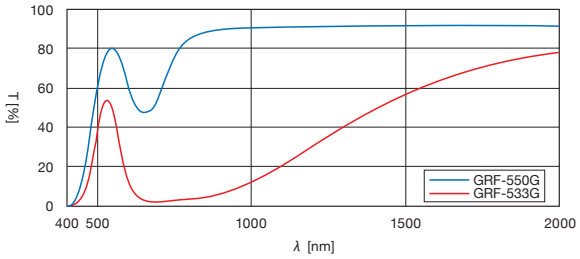
BLF-460B



GRF-530G · 545G



GRF-533G · 550G

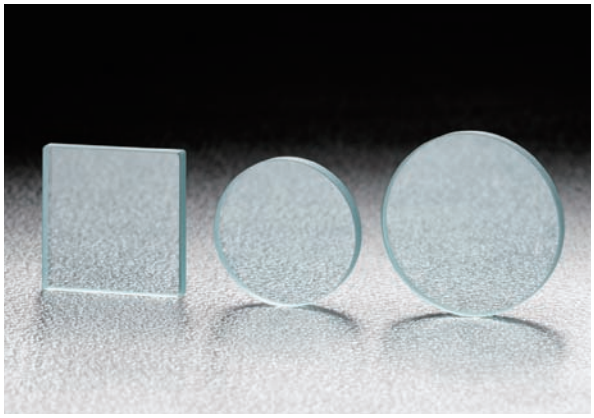


Heat Absorbing Filters | HAF

RoHS Catalog Code W3110

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 throught the filter does not darken the high transmitted visible light.



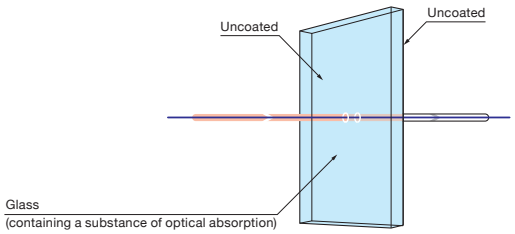
Guide

- 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 customs specification which are not mentioned on-line or in our catalog, please contact our Sales Divsion with your request.

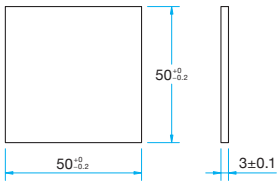
Attention

- 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%.

Schematic



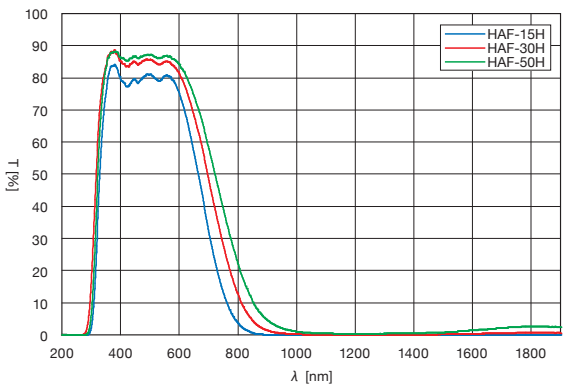
Outline Drawing (in mm)



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

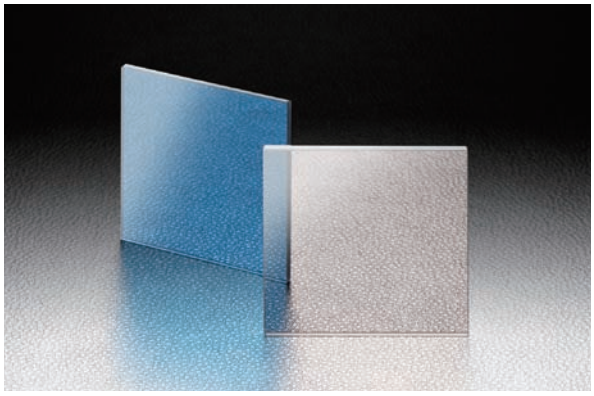
FHS-50 / FH-50

Color Temperature Conversion Filter | LA/LB

RoHS Catalog Code W3111

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.



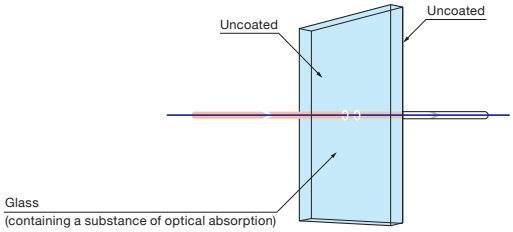
Guide

- 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.

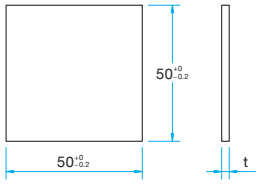
Attention

- 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)



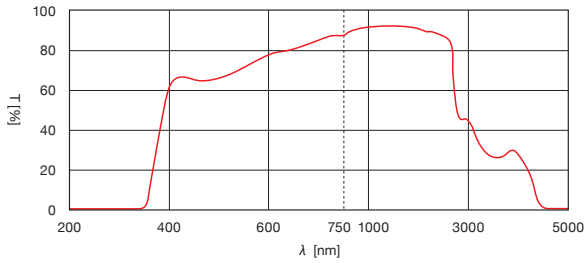
Specifications

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

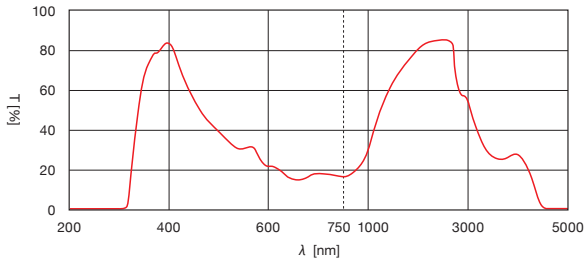
Typical Transmittance Data

T: Transmission

LA-50S-20



LB-50S-120



Compatible Optic Mounts

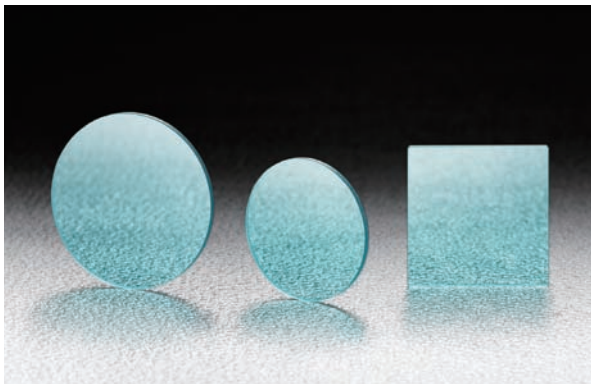
FHS-50 / FH-50

Color Correction Filter | CCF/ECM

RoHS Catalog Code W3112

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.



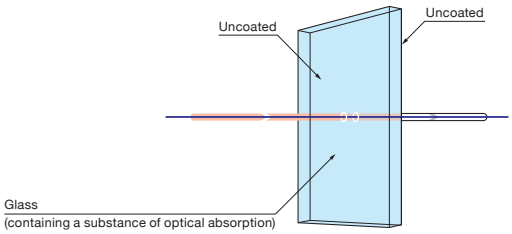
Guide

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

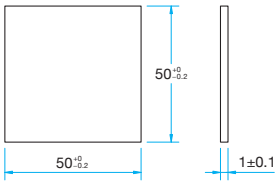
Attention

- 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% transmittion 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



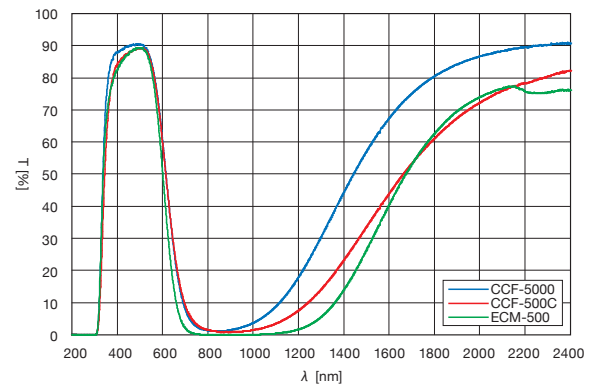
Outline Drawing (in mm)



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

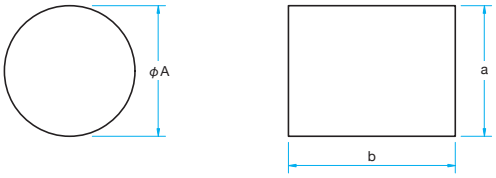
Contact sheet

Catalog Code W3811

Contact sheet for Custom-made Color Filter ■Estimation ■Order

Date

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

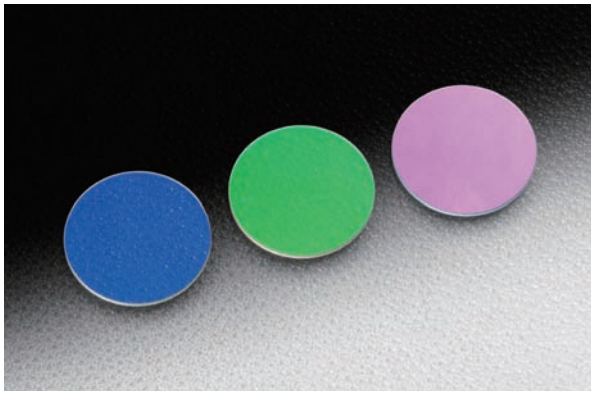
Affiliation (Organization Name)					
Department		Name			
TEL		FAX		E-mail	
Country/Address					
Name & Designation	(Tentative name is okay)				
Drawing Number		Estimate	☐ Yes: by Date	☐ No	
Desired Delivery Date		Budget	JP Yen		
Type	SCF, ITF, UTVAF, CCF, HAF, BLF, GRF		Pieces		
Filter Number			Heat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

Visible Dichroic Filters | DIF

RoHS Catalog Code W3113

The dielectric multi-layer coating offers a high optical performance.
Provides a wide range of visable 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.



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

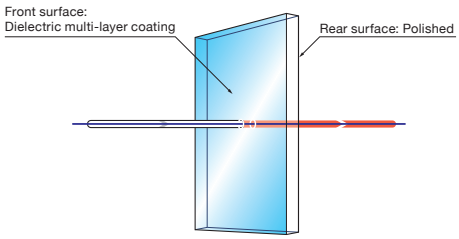
Guide

- ▶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 on request.
- ▶For a suitable filter holder, please contact our Sales Division.

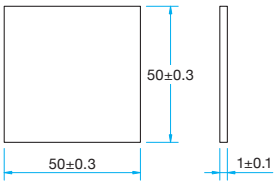
Attention

- ▶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 appears different than expected at 45 degrees angle of incidence, therefore to obtain the sharp color, please use it a 0 degree.

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]
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

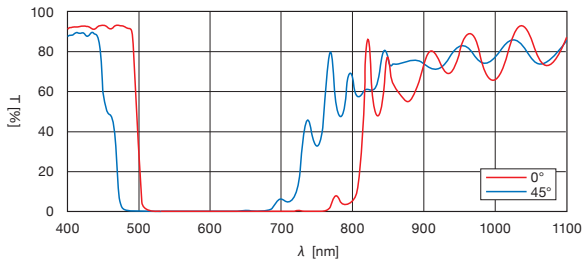
Compatible Optic Mounts

FHS-50 / CHA-60

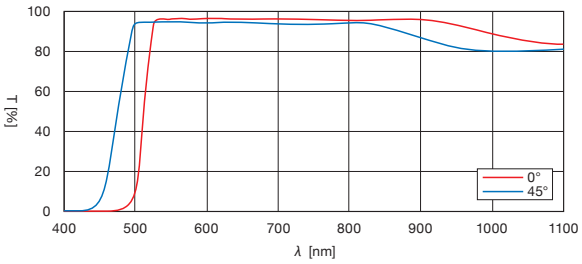
Visible range dichroic filters | DIF

Typical Transmittance Data T: Transmission

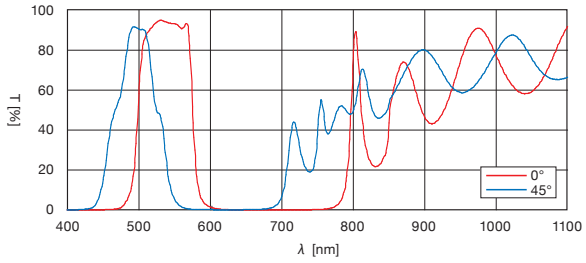
DIF-BLE



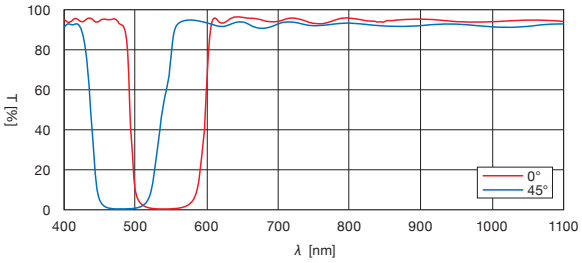
DIF-YEL



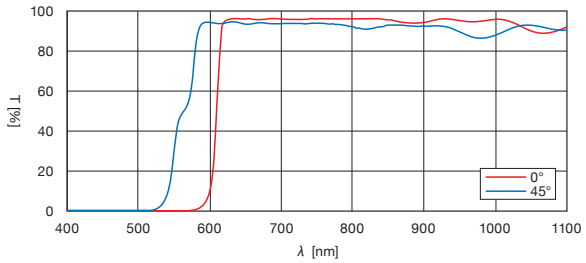
DIF-GRE



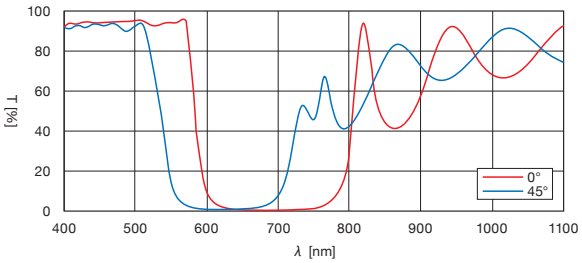
DIF-MAG



DIF-RED



DIF-CYA

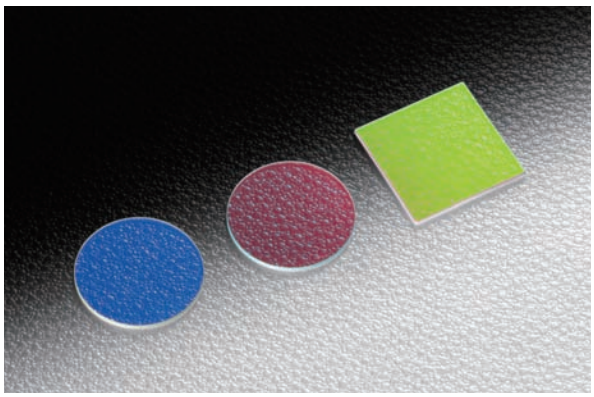


Visible Dichroic Filters | DIM

RoHS Catalog Code W3114

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 bleu)

- 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.



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

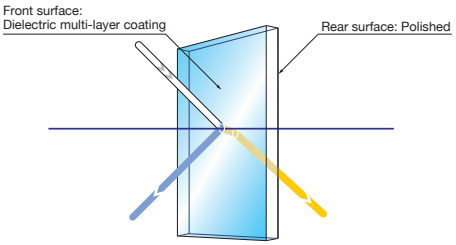
Guide

- 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 on request.
- For a suitable filter holder, please contact our Sales Division.

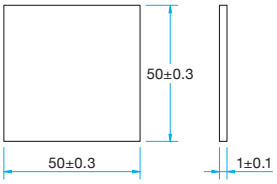
Attention

- 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.

Schematic



Outline Drawing (in mm)



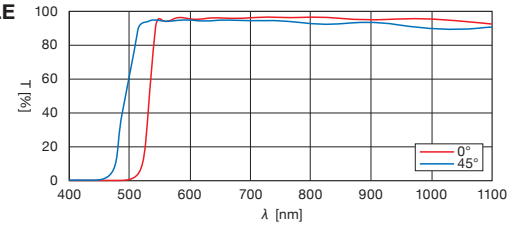
Specifications

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

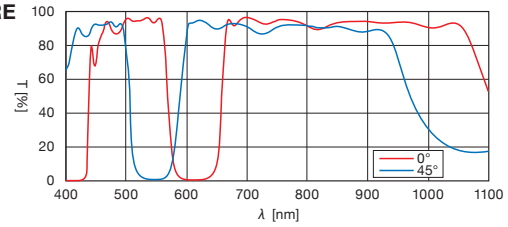
Typical Transmittance Data

T: Transmission

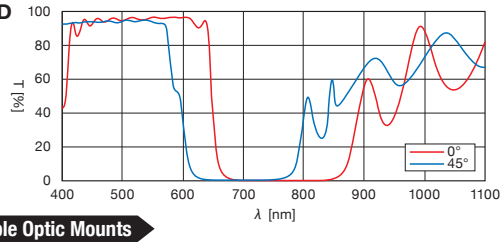
DIM-BLE



DIM-GRE



DIM-RED



Compatible Optic Mounts

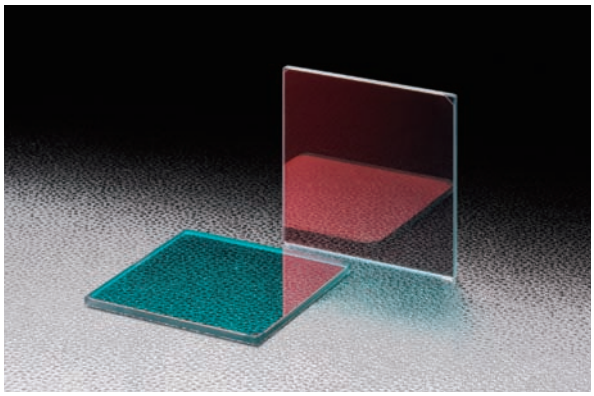
FHS-50 / CHA-60

Cold Filters | CLDF

RoHS Catalog Code W3115

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.



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

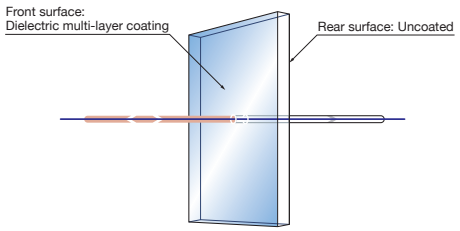
Guide

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

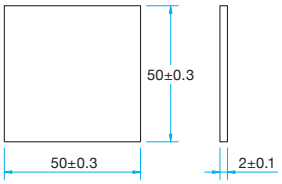
Attention

- 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.

Schematic



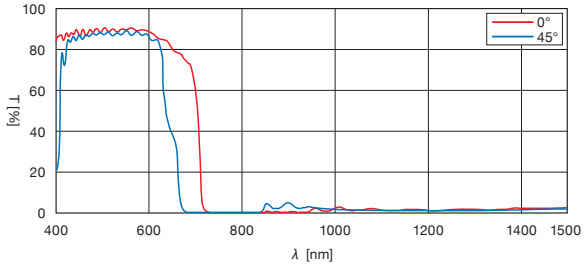
Outline Drawing (in mm)



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

Typical Transmittance Data T: Transmission

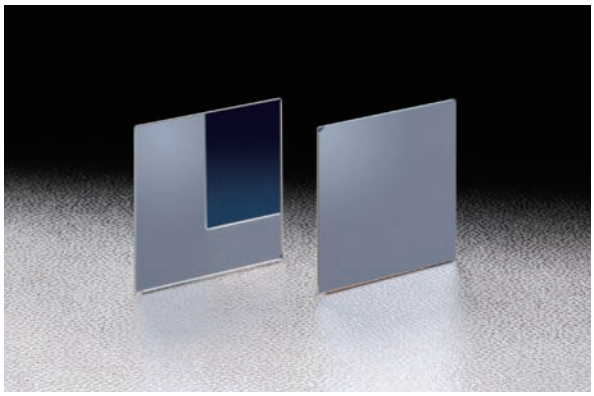


Compatible Optic Mounts

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 produt it is possible to select IR light only.
- Can be used as a NIR filter by changing the angle of Incident.



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

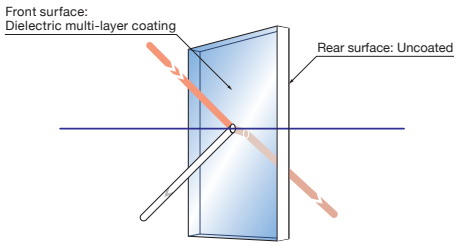
Guide

- 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 on request.
- For a suitable filter holder, please contact our Sales Division.

Attention

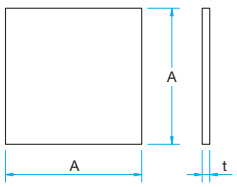
- Do not use cold mirror with high power laser and high energy pulsed laser. We can provide dichroic filters suitable for use with pulse lasers, please contact our Sales Division. Reference B020
- The backside of the cold mirror is not coated with AR, please use the dielectric coating side for visible 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.

Schematic

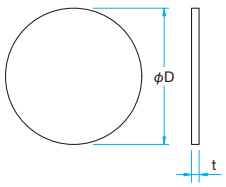


Outline Drawing (in mm)

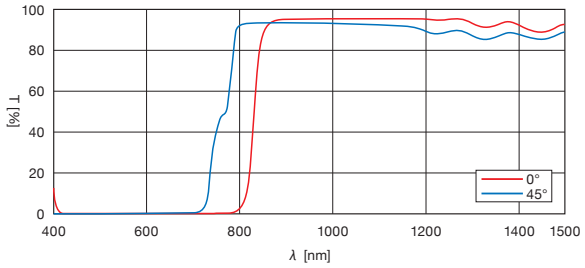
●Square



●Circle



Typical Transmittance Data T: Transmission



Square

Part Number	Lerght 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	Diamefer 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

Dichroic filter transmit only visible light and reject ultraviolet and infrared light. Fitlers 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.

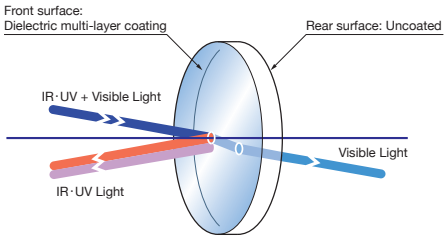
Specifications

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

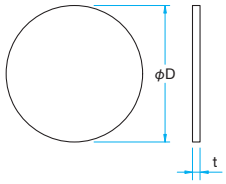
- Designed for incident angle of 0 to 15 degrees, use at more extreme angles will change wavelength characteristic of transmittance and reflectance and not provide desired ressult.
- The backside of the filter is not coated with AR and may result in a ghost image.

Schematic

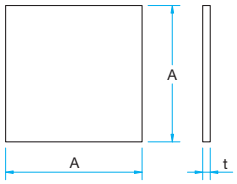


Outline Drawing (in mm)

●Circle



●Square



●Tolerance

Diameter	ϕD±0.5, A±0.5
Length	A±0.5
Thickness	t ±0.3

Circle

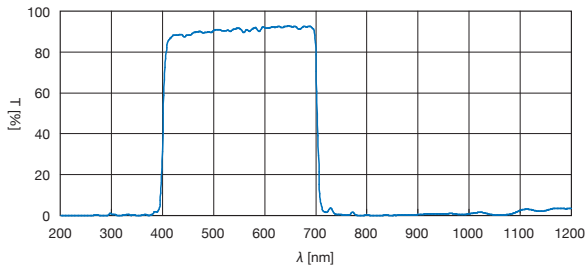
Part Number	Diameter ϕD [mm]	Thickness t [mm]	Transmittance (420 – 680nm) [%]	Transmittance (200 – 380nm) [%]	Transmittance (730 – 1500nm) [%]
NHOTM-25.4C3.3	ϕ25.4	3.3	>Average 85	<Average 1	<Average 5
NHOTM-50.8C3.3	ϕ50.8	3.3	>Average 85	<Average 1	<Average 5

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.

Specifications

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

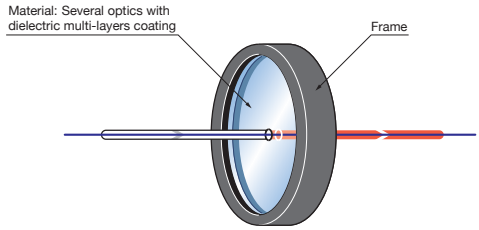
Guide

- 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.

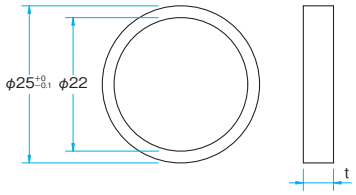
Attention

- 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.

Schematic



Outline Drawing (in mm)



●Tolerance
Thickness t ±0.1
Chamfer Ridge line <C0.3

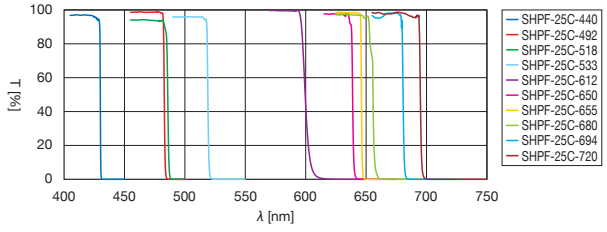
Specifications

Part Number	High transmittance range wavelength [nm]	High transmittance range transmittance [%]	Transition wavelength [nm]	Cutoff range wavelength [nm]	Cutoff range optical density (average)	Thickness t [mm]
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

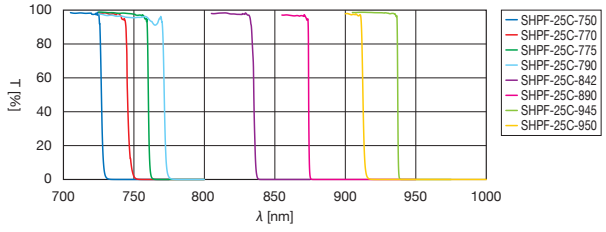
Typical Transmittance Data

T: Transmission

SHPF-440 – 720



SHPF-750 – 950



Long Pass Filters | LOPF

RoHS Catalog Code W3207

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 a 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.

Specifications

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

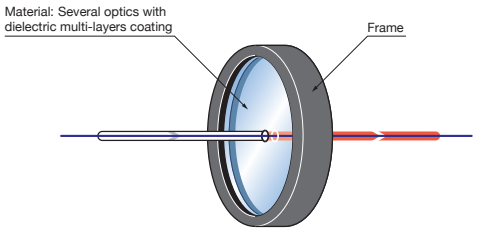
Guide

- 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.

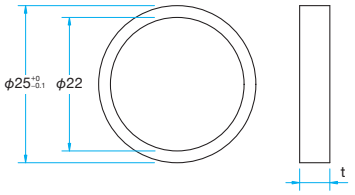
Attention

- 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.

Schematic



Outline Drawing (in mm)



●Tolerance
Thickness t ±0.1
Chamfer Ridge line <C0.3

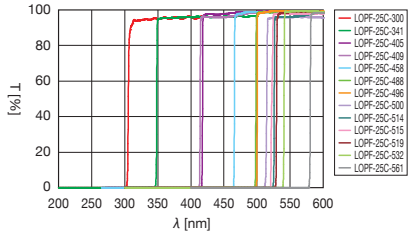
Specifications

Part Number	High transmittance range wavelength [nm]	High transmittance range transmittance [%]	Transition wavelength [nm]	Cutoff range wavelength [nm]	Cutoff range optical density (average)	Thickness t [mm]
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

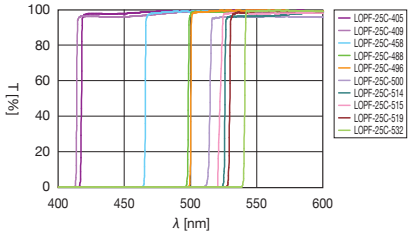
Typical Transmittance Data

T: Transmission

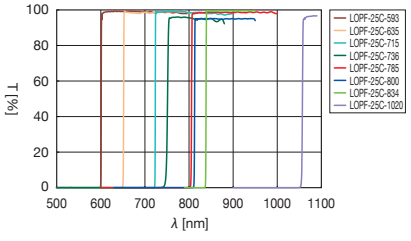
LOPF-267 – 561



LOPF-405 – 532 (Enlargement)



LOPF-593 – 1020



Raman Long Pass Edge Filters | RSF

RoHS Catalog Code W3208

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.

Specifications

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

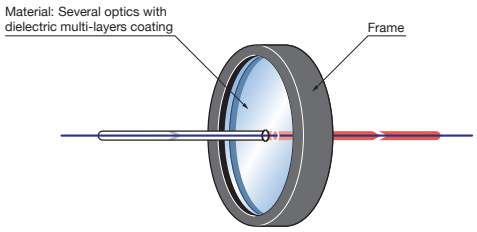
Guide

- 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.

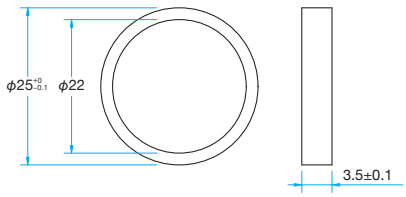
Attention

- 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.

Schematic



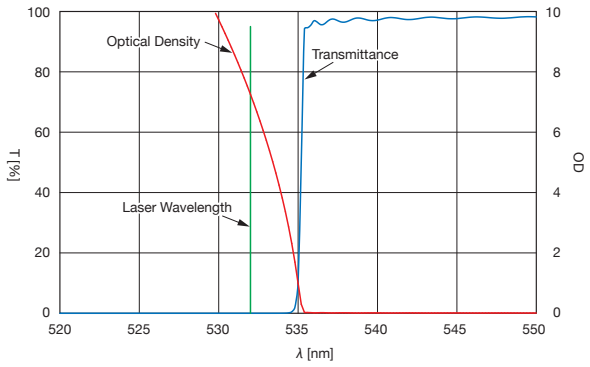
Outline Drawing (in mm)



●Tolerance
Chamfer Ridge line
<C0.3

Typical Transmittance & Optical Density Data

OD: Optical Density T: Transmission



Specifications

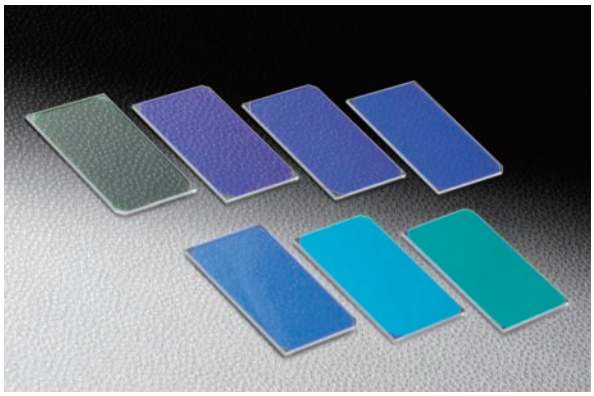
Part Number	High transmittance range		Blocking range	
	wavelength [nm]	transmittance [%]	laser wavelength [nm]	optical density (average)
RSF-25C-325RU	329.2 – 733.1	>80	325	6
RSF-25C-355RU	359.6 – 800.8	>90	355	6
RSF-25C-364RU	368.5 – 820.6	>90	363.8	6
RSF-25C-442RU	447.3 – 996.1	>90	441.6	6
RSF-25C-458RU	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

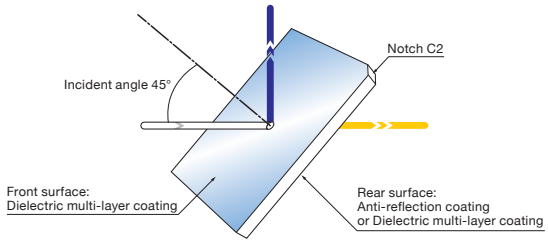
RoHS

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.

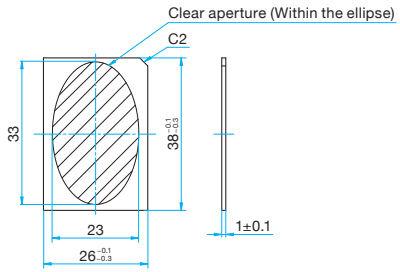
- The short wavelength has high reflectance, fits perfectly for use in excitation light and fluorescence imaging.
- The feature of the structure of this mirror is to maintain the distance of the edges of the P polarization and the S polarization to be close to each other. It narrows the gap of the reflective 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

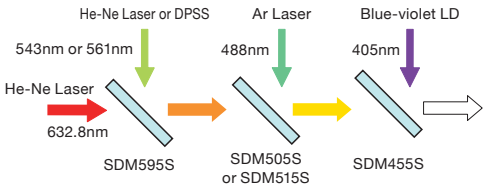
- Use the SDM mirror with interference filter as a pair for Bio-imaging applications.
- For specific mirror holder, please contact our Sales Division.
- Different size, wavelength and deviation ratio not mentioned on-line or in our catalog are available as custom products upon on request.
- For aluminum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



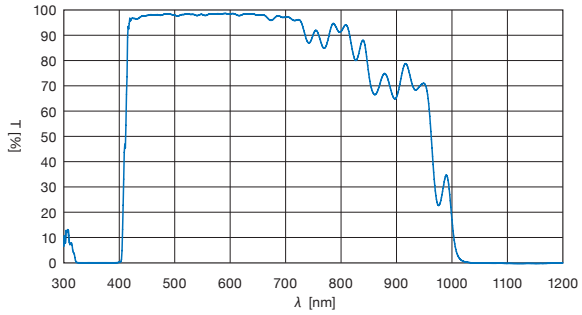
Specifications

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

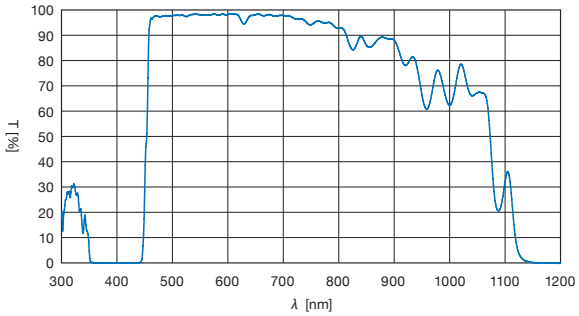
Typical Transmittance Data

T: Transmission

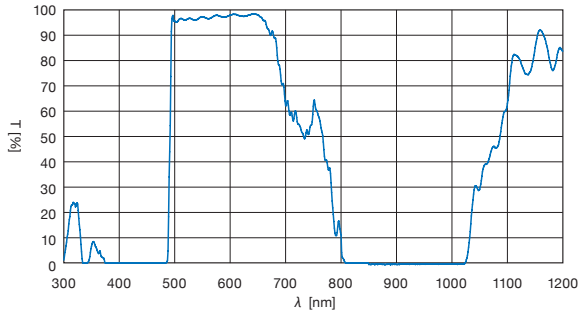
SDM410S



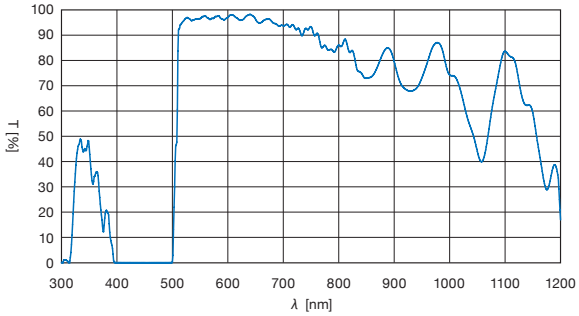
SDM455S



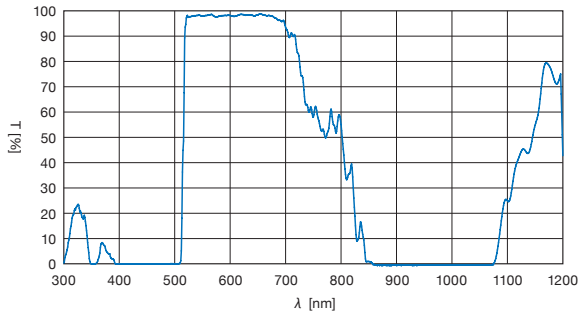
SDM490S



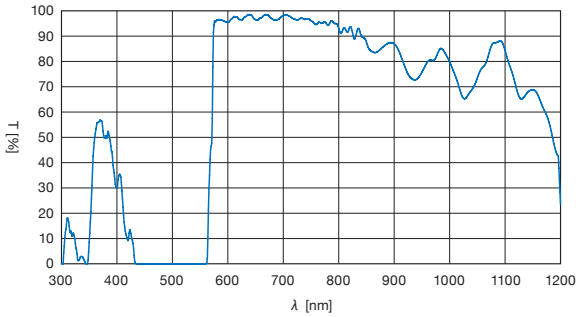
SDM505S



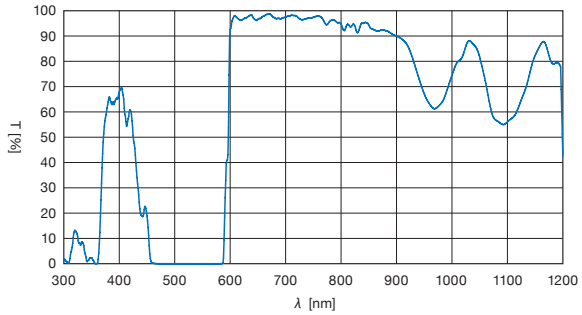
SDM515S



SDM570S



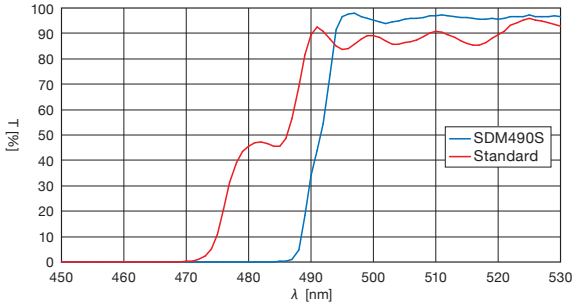
SDM595S



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.

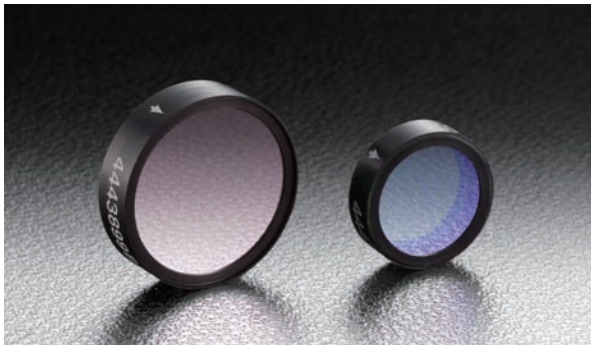


Laser Line Filter | VPFHT

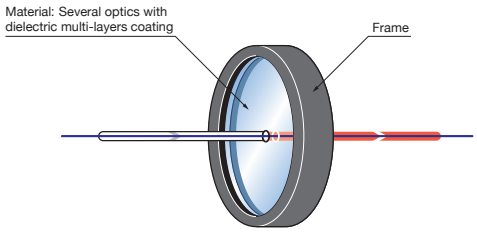
RoHS Catalog Code W3209

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.

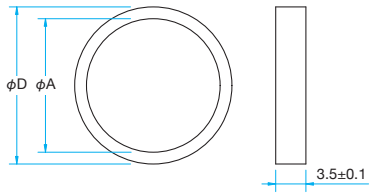
- Since the coating is a dielectric multilayer the absorption is small and transmittance is high. It enables the separation of the wavelength specified light efficiently.
- The filters are metallically framed which make it easy to be mounted into a holder.
- Large choice of spectrum, range from UV 325nm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



Schematic



Outline Drawing (in mm)



●Tolerance
Diameter $\phi D^{+0}_{-0.1}$
Chamfer Ridge line <C0.3

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

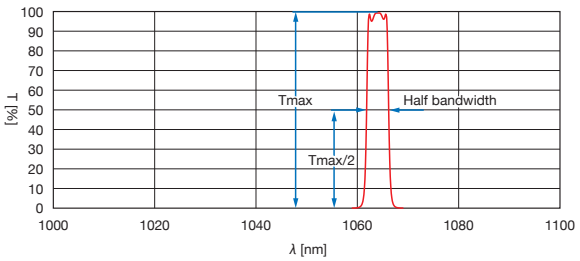
Guide

- 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



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			
VPFHT-12.5C-3550	355	ϕ12.5	1.9± 0.6	314.8 – 351.8 (326.6 – 349.7)	358.6 – 422.5 (360.3 – 390.5)
VPFHT-25C-3550	355	ϕ25			
VPFHT-12.5C-3638	364	ϕ12.5	1.95±0.55	321.7 – 360.2 (334.7 – 358.3)	367.4 – 435.0 (369.3 – 400.2)
VPFHT-25C-3638	364	ϕ25			
VPFHT-12.5C-3720	372	ϕ12.5	2.0±0.6	328.1 – 368.3 (342.0 – 366.4)	375.7 – 446.8 (377.6 – 409.2)
VPFHT-25C-3720	372	ϕ25			
VPFHT-12.5C-4416	442	ϕ12.5	2.4±0.7	381.0 – 437.2 (406.3 – 435.0)	446.0 – 551.1 (448.2 – 485.8)
VPFHT-25C-4416	442	ϕ25			
VPFHT-12.5C-4579	458	ϕ12.5	2.45±0.75	393.1 – 453.3 (421.3 – 451.0)	462.5 – 576.7 (464.8 – 503.7)
VPFHT-25C-4579	458	ϕ25			
VPFHT-12.5C-4880	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-4880	488	ϕ25			
VPFHT-12.5C-4910	491	ϕ12.5	2.65±0.75	417.2 – 486.1 (451.7 – 483.6)	495.9 – 630.3 (498.4 – 540.1)
VPFHT-25C-4910	491	ϕ25			
VPFHT-12.5C-5145	515	ϕ12.5	2.8±0.8	434.1 – 509.4 (473.3 – 506.8)	519.6 – 669.5 (522.2 – 566.0)
VPFHT-25C-5145	515	ϕ25			
VPFHT-12.5C-5320	532	ϕ12.5	2.87±0.85	447.0 – 527.0 (489.0 – 524.0)	537.0 – 699.0 (540.0 – 585.0)
VPFHT-25C-5320	532	ϕ25			
VPFHT-12.5C-5435	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-5435	544	ϕ25			
VPFHT-12.5C-5614	561	ϕ12.5	3.0±0.9	467.0 – 555.8 (516.5 – 553.0)	567.0 – 751.2 (569.8 – 617.5)
VPFHT-25C-5614	561	ϕ25			

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			
VPFHT-12.5C-6328	633	ϕ12.5	3.4±1.0	515.4 – 626.5 (582.2 – 623.3)	639.1 – 884.7 (642.3 – 696.1)
VPFHT-25C-6328	633	ϕ25			
VPFHT-12.5C-6471	647	ϕ12.5	3.5±1.0	524.8 – 640.6 (595.3 – 637.4)	653.6 – 912.9 (656.8 – 711.8)
VPFHT-25C-6471	647	ϕ25			
VPFHT-12.5C-6710	671	ϕ12.5	3.65±1.05	540.4 – 664.3 (617.3 – 660.9)	677.7 – 961.2 (681.1 – 738.1)
VPFHT-25C-6710	671	ϕ25			
VPFHT-12.5C-7800	780	ϕ12.5	4.25±1.25	609.0 – 772.2 (717.6 – 768.3)	787.8 – 1201.8 (791.7 – 858.0)
VPFHT-25C-7800	780	ϕ25			
VPFHT-12.5C-7850	785	ϕ12.5	4.25±1.27	612.0 – 777.0 (722.0 – 773.0)	793.0 – 1214.0 (797.0 – 864.0)
VPFHT-25C-7850	785	ϕ25			
VPFHT-12.5C-8080	808	ϕ12.5	4.4±1.3	625.9 – 799.9 (743.4 – 795.9)	816.1 – 1039.4 (820.1 – 888.8)
VPFHT-25C-8080	808	ϕ25			
VPFHT-12.5C-8300	830	ϕ12.5	4.5±1.3	639.1 – 821.7 (763.6 – 817.6)	838.3 – 1067.9 (842.5 – 913.0)
VPFHT-25C-8300	830	ϕ25			
VPFHT-12.5C-8520	852	ϕ12.5	4.6±1.4	652.0 – 843.5 (783.8 – 839.2)	860.5 – 1106.6 (864.8 – 937.2)
VPFHT-25C-8520	852	ϕ25			
VPFHT-12.5C-9760	976	ϕ12.5	5.25±1.55	722.2 – 966.2 (897.9 – 961.4)	985.8 – 1325.2 (990.6 – 1073.6)
VPFHT-25C-9760	976	ϕ25			
VPFHT-12.5C-9800	980	ϕ12.5	5.3±1.6	724.4 – 970.2 (901.6 – 965.3)	989.8 – 1332.6 (994.7 – 1078.0)
VPFHT-25C-9800	980	ϕ25			
VPFHT-12.5C-10471	1047	ϕ12.5	5.65±1.65	963.3 – 1036.6 (963.3 – 1031.4)	1057.6 – 1398.6 (1062.8 – 1151.8)
VPFHT-25C-10471	1047	ϕ25			
VPFHT-12.5C-10640	1064	ϕ12.5	5.75±1.71	979.0 – 1053.0 (979.0 – 1048.0)	1075.0 – 1429.0 (1080.0 – 1170.0)
VPFHT-25C-10640	1064	ϕ25			

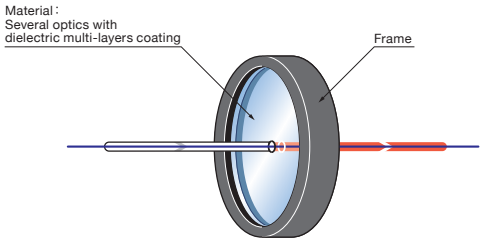
Interference Filters | YIF

RoHS

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.

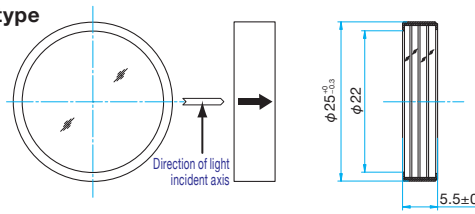
- The filters are made by Ion Beam assisted dielectric coating process which can assure an extremely high environment resistance and high stability.
- Using high absorption glass material and heat absorption optical coating, it assures a low deterioration with any types of light-source.
- The filters 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

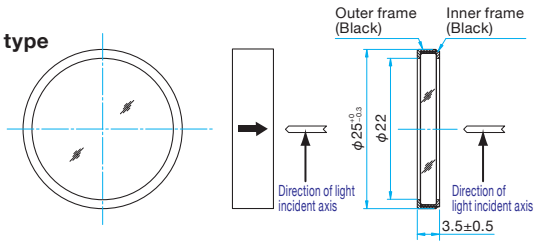


Outline Drawing (in mm)

●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 tradmark 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 on request

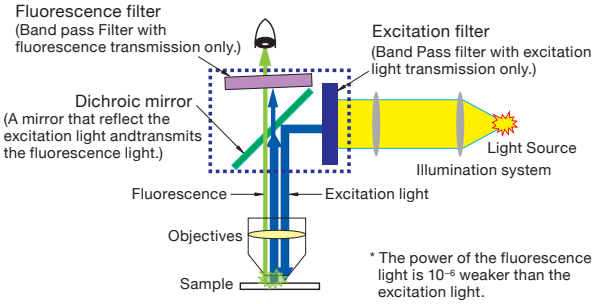
Attention

- 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

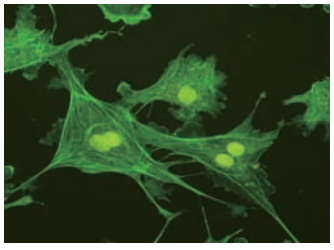
Irradiation with excitation light onto a bound biological fluorescent reagent. A weak fluorescence light appears and the reaction of the biological specimen is visible.

■Fluorescence microscope observation optical path diagram



* The power of the fluorescence light is 10^{-6} weaker than the excitation light.

■Fluorescent observation image



Interference filters | YIF

Catalog Code W3118

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 densitty
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 densitty
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 densitty	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

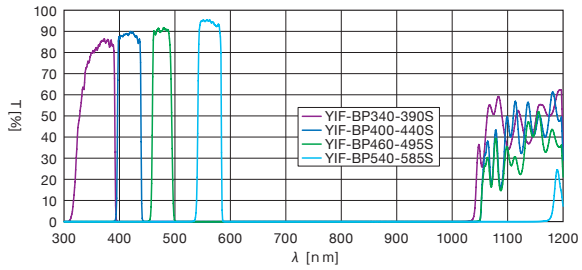
Part Number	Transmission spectral	Short wavelength cutoff range		High transmittance range		Long wavelength cutoff range	
		wavelength [nm]	optical densitty	wavelength [nm]	transmittance [%]	wavelength [nm]	transmittance [%]
YIF-BA420-460S		340 – 380 380 – 390	>OD7 >OD6	430 – 460	>88 > Average 93	495 – 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

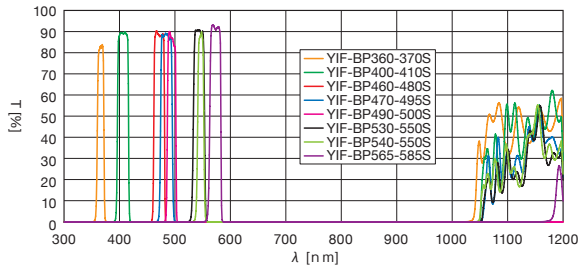
T: Transmission

■BP type

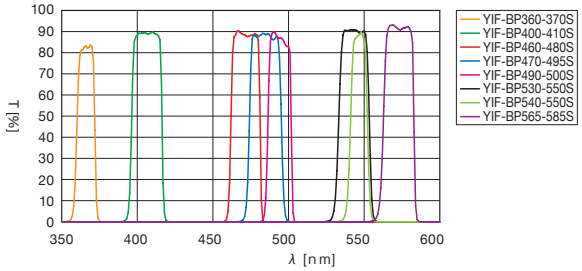
Broadband type (300 – 1200nm)



Narrowband type (300 – 1200nm)

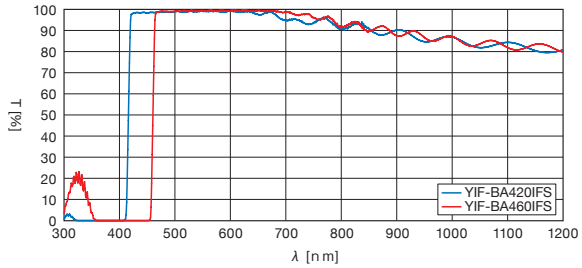


Enlagement of Narrowband type (350 – 600nm)

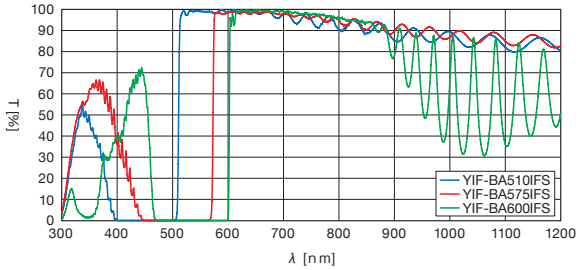


■BA type

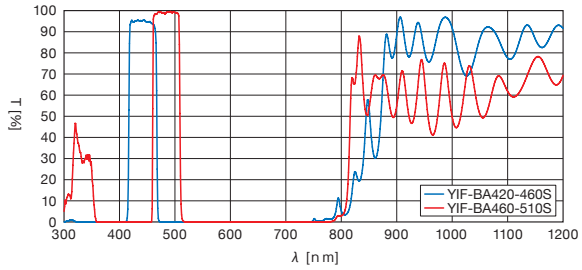
Broadband type 1 (300 – 1200nm)



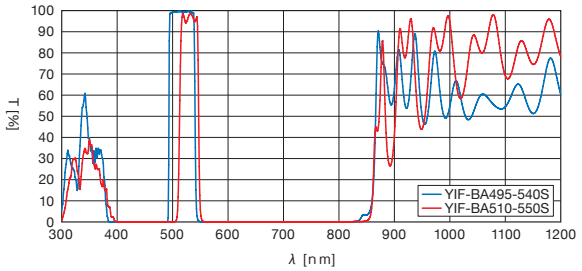
Broadband type 2 (300 – 1200nm)



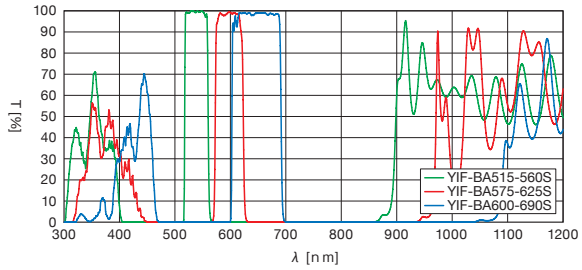
Narrowband type 1 (300 – 1200nm)



Narrowband type 2 (300 – 1200nm)



Narrowband type 3 (300 – 1200nm)



Bandpass Interference Filters | VPF

RoHS

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.

Specifications

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

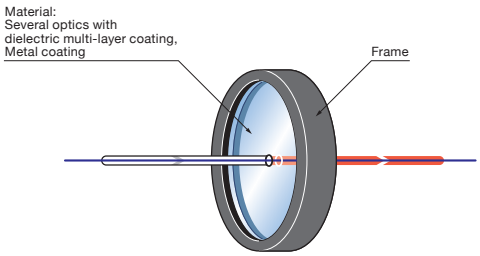
Guide

- 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.

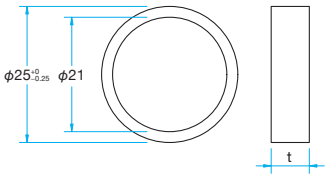
Attention

- 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℃ (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.

Schematic

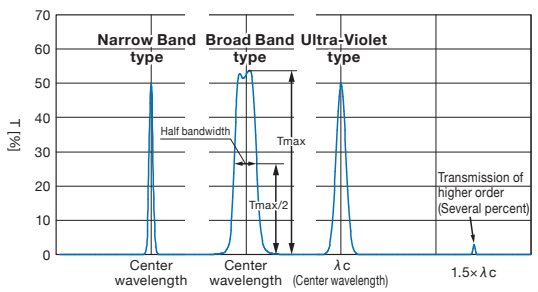


Outline Drawing (in mm)



■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$^{+3.0}_{0.0}$	N2	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$^{+3.0}_{0.0}$	YAG3ω	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$^{+0.2}_{0.0}$	YAG2ω	1.0±0.2	>40	<8.5	Narrow Band
VPF-25C-03-45-53200	532.0$^{+0.5}_{0.0}$	YAG2ω	3.0±0.5	>45	<8.5	Narrow Band
VPF-25C-10-50-53200	532.0$^{+3.0}_{0.0}$	YAG2ω	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

Bandpass Interference Filters | VPF

Catalog Code W3120

650.0nm – 1550.0nm

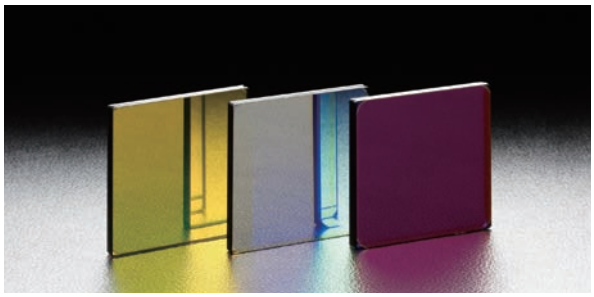
Part Number	Center wavelength [nm]	Laser or Emission line spectrum	Half bandwidth [nm]	Maximum transmittance [%]	Thickness t [mm]	Type
VPF-25C-10-50-65000	$650.0^{+3.0}_{-0.0}$	—	10.0±2.0	>50	<7	Broad Band
VPF-25C-40-50-65000	$650.0^{+10.0}_{-0.0}$	—	40.0±8.0	>50	<7	Broad Band
VPF-25C-10-50-65630	$656.3^{+3.0}_{-0.0}$	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

Bandpass Interference Filters | VPF

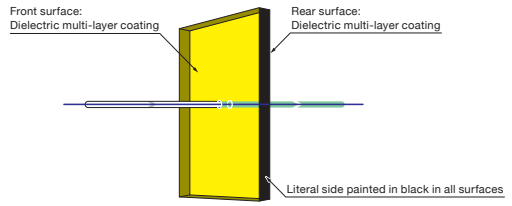
RoHS Catalog Code W3121

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.

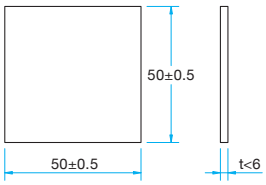
- The filters are made of dielectric multilayer coating and metallic coating which assure a steep rise and a sharp cut-off spectrum.
- A selection of filter from the spectrum half-width from 10nm to 12nm, the center spectrum from 400nm to 900nm with 10nm increments.
- The whole lateral side of the filter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



Schematic



Outline Drawing (in mm)



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℃ (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.

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

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

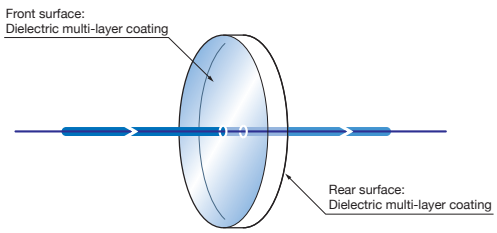
Notch Filter | NF

RoHS

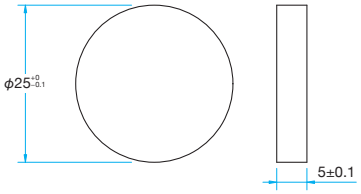
Notch filter is a filter that cuts only a specific wavelength. It is not the same as the interference filter which transmits only a specific wavelength. By using a dielectric multilayer coating the product has very high stability and has environmental resistance.

- 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)



●Tolerance
Chamfer Ridge line <C0.3

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

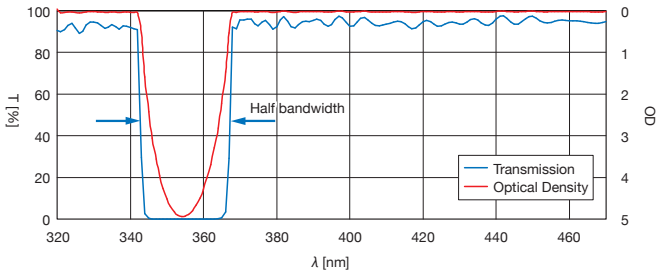
Compatible Optic Mounts

MHG-MP25-NL

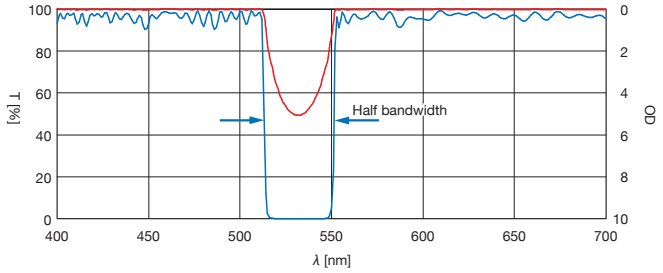
Typical Transmittance & Optical Density Data

OD: Optical Density T: Transmission

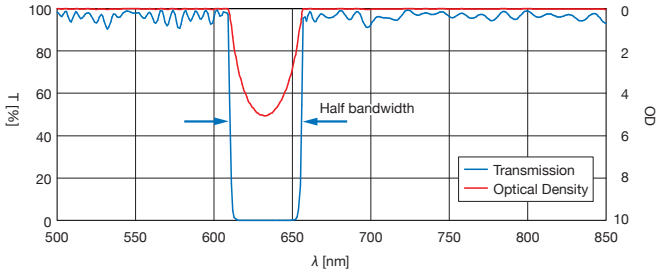
NF-25C05-27-355



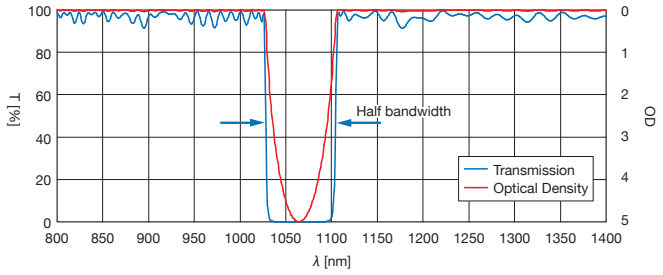
NF-25C05-40-532



NF-25C05-47-633



NF-25C05-80-1064



Contact Sheet

Catalog Code W3812

Filter Case

Catalog Code W3218

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

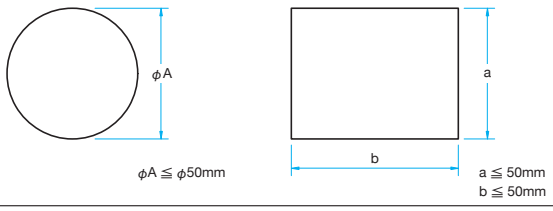
Specifications

Part Number	Compatible Optics Size	Maximum number of filters	Size [mm]
Case-25C-20-SET	ϕ25mm, □25mm	20 pieces	(W)240 × (D)100 × (H)67
Case-50S-15-SET	ϕ50mm, □50mm	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**

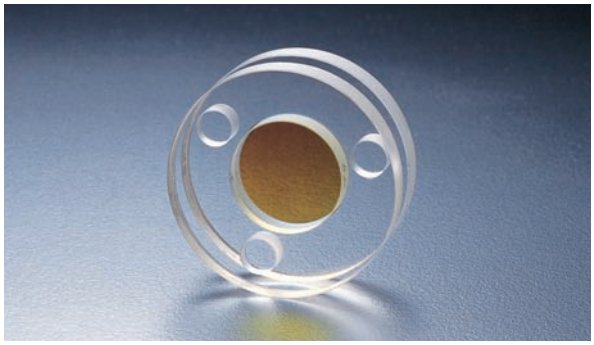
Affiliation (Organization Name)					
Department		Name			
TEL		FAX		E-mail	
Country/Address					
Name & Designation	(Tentative name is okay)				
Drawing Number		Estimate	☐ Yes: by Date	☐ No	
Desired Delivery Date		Budget	JP Yen		
Mount	☐ Yes ☐ No	Pieces			
Central wavelength	nm	Half bandwidth	nm		
Transmittance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

Etalon | Custom-made

Catalog Code W3122

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.



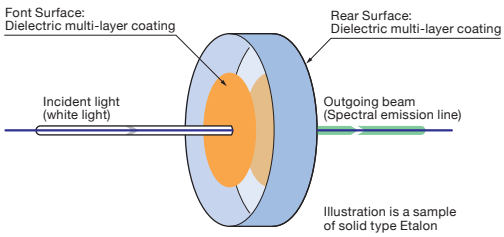
Specifications

Material	Synthetic fused silica
Surface flatness of substrate	<λ/20 (λ=632.8nm)
Incident angle	0°

Attention

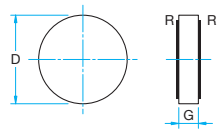
- If the angle of incident is not correctly set the transmittance wave-length may be displaced or the light does not transmit as planned.
- Question about the characteristic of the finesse or the transmission of the Etalon, please contact our International Sales Division.
- The lead time of some model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

Schematic



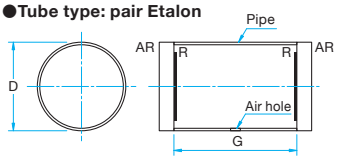
Outline Drawing (in mm)

●Solid Etalon



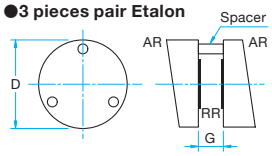
Simple structure and easy to use but the characteristic depends on the refractive index of the glass.

●Tube type: pair Etalon



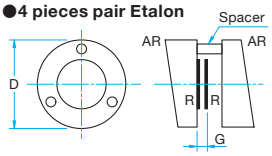
Air spaced with no effects from refractivity of the glass. The resonator is covered, less noise effects from outside.

●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					
Type			Budget		JP Yen
Wavelength	nm	Diameter (D)	mm	Quantity	piece
Reflectance	%	Incident beam	mm	Space	mm
Others	* Write more detailed specifications here. (Rough illustration is acceptable.)				