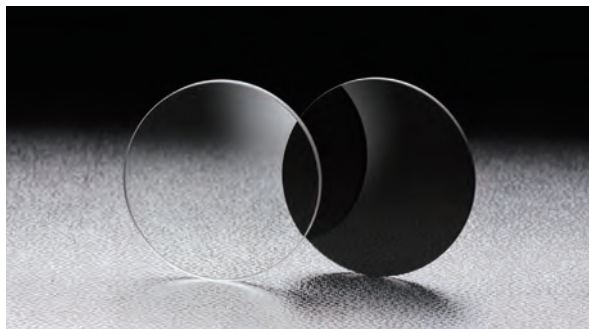


We offer a complete line of ND filters to reduce intensity of the visible light. This is an absorptive type of filter that reduces stray reflected light and reduces intensity of the light with minimal difference of transmission for visible wavelengths.

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



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

Guide

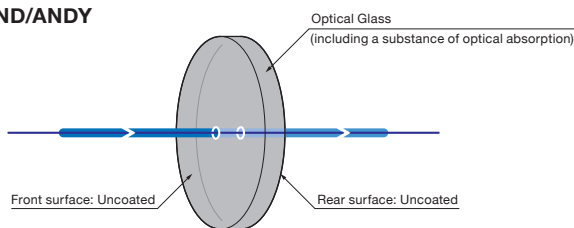
- ▶ Different size, wavelength and deviation ratio which is not listed on-line or in our catalog is available as custom product upon the request.
- ▶ Absorptive ND filter placed near to a light-source can be broken by the sudden high temperature. The filter must be treated with thermal reinforcement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

Attention

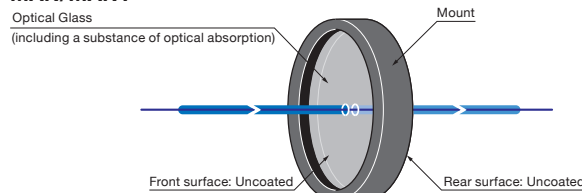
- ▶ Do not use with high power laser, the filter can be damaged. In that case, please try our Reflective type of ND filter (model FND).
- ▶ To obtain a better transmittance characteristic, the thickness of the filter can be changed. For this reason the thickness of each filter is different. For filter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

Schematic

AND/ANDY



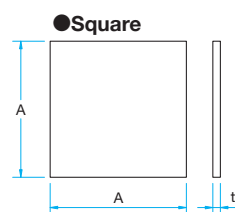
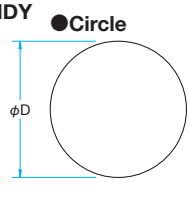
MAN/MANY



Outline Drawing

(in mm)

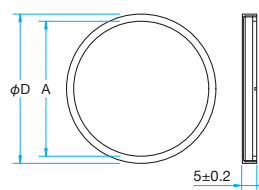
AND/ANDY



● Tolerance
(Circle) Diameter
(Square) Length

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

MAN/MANY



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

Strengthened glass

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

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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

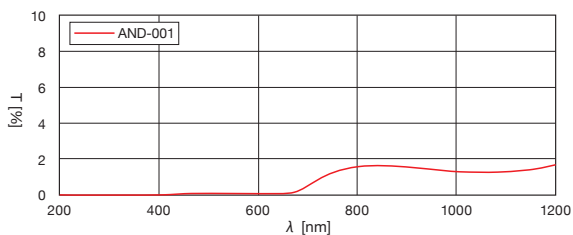
Compatible Optic Mounts

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

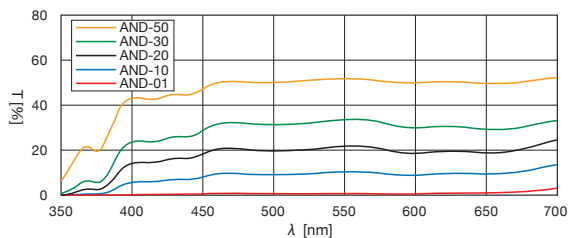
Typical Transmittance Data

T: Transmission

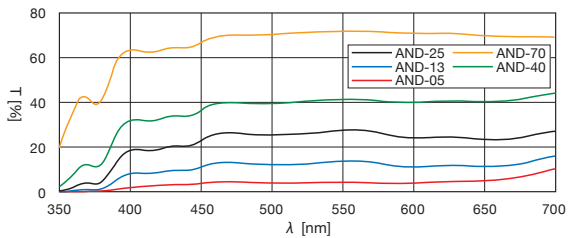
AND-001



AND-01 · 10 · 20 · 30 · 50



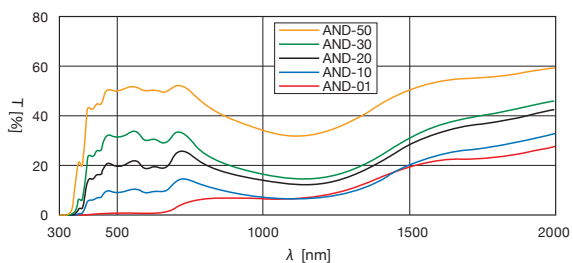
AND-05 · 13 · 25 · 40 · 70



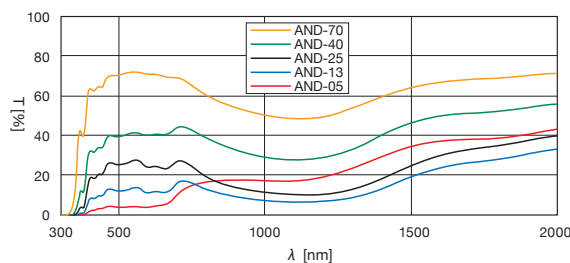
Typical Transmittance Data (300 – 2000nm)

T: Transmission

AND-01 · 10 · 20 · 30 · 50



AND-05 · 13 · 25 · 40 · 70



Visible · Mounted

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

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

Transmittance Chart

(Unit: %)

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

The transmittance values are approximate values.

Compatible Optic Mounts

FH-25, -50 / LHF-30S

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

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

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AND/ANDY/MAN/MANY

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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

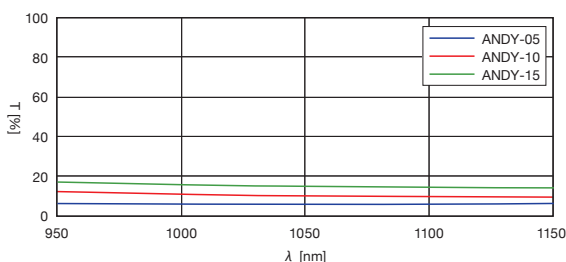
Catalog Code **W3096**

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

