

Aluminum Mirrors | TFA/TFAN/TFAQ/TFAQN/TFAE/OPBA/OPSQA

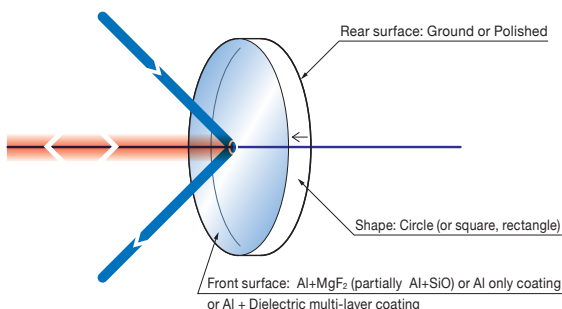
RoHS

This is a vapour-deposited aluminium mirror plane and the substrate is polished with high accuracy. Designed for high reflectivity at any incident angle.

- With four types to choose from; (TFAN/TFAQN) which is coated with only aluminium, (TFA/TFAQ) which is coated with a protective coating against accidental hard scratches, (TFAE) which is coated with a protective coating and aluminium to increase the reflectance of ultraviolet and lastly, (OPBA/OPSQA) which provides a protective coat on the optical parallel substrate.
- For ultraviolet, visible and near-infrared light applications.
- For low thermal expansion mirrors, we have (TFAQ/TFAQN) which is made of Synthetic fused silica that provides high rigidity and high precision surface quality.



Schematic



Specifications

Material	BK7 Synthetic fused silica Hard glass (Pyrex [®] etc.)
Coating	TFAN/TFAQN: Al (without protection coating) TFA/TFAQ/OPBA/OPSQA: Al+MgF ₂ (surface flatness λ/20 is Al+SiO ₂) TFAE: Al + Dielectric multi-layer coating
parallelism	TFA/TFAN/TFAQ/TFAQN/TFAE: <3' OPBA/OPSQA: <2"
Incident angle	TFA/TFAQ/TFAE: 45° OPBA/OPSQA: 0°
Laser Damage Threshold	0.25J/cm ² (pulse width 10ns, repetition frequency 20Hz)
Surface Quality (Scratch-Dig)	40-20
Clear aperture	90% of actual aperture or circle or ellipse that contacts 90% square of dimension

Guide

- ▶ If you need a much higher reflectance aluminium mirror, please kindly contact us.
- ▶ Should you require a surface accuracy analysis/data, please kindly contact our sales group.
- ▶ For non-standard sizes other than those found in our catalogue, please kindly contact us.
- ▶ Pyrex[®] is a registered trademark of Corning Inc.

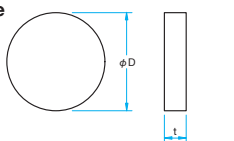
Attention

- ▶ For aluminium mirrors without a protective film, (TFAN/TFAQN) can be easily scratched and oxidation builds up in the membrane. Do not rub the surface with paper or cloth. For long term storage, use any de-oxidizer to prevent the oxidation.
- ▶ When a laser is transmitted with multiple mirrors installed, there will be a large amount of light loss and this is due to the absorption of the aluminium coating. Please switch to dielectric multi-layer mirrors (TFM) for improved performance.
- ▶ Reflectance of the specification are represented by the average of the reflectance of P polarized light and S polarized light. Reflectance may vary depending on the polarization state of the incident beam.

Outline Drawing

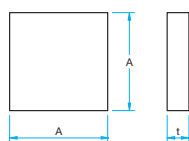
(in mm)

●Circle



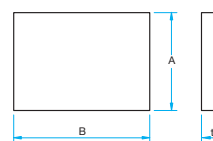
- Tolerance
- φD ≤ φ50
Diameter φD_{-0.1}
Thickness t ± 0.1
- φ60 ≤ φD
Diameter φD_{-0.2}
Thickness t ± 0.2

●Square



- Tolerance
- A ≤ 50
Length A_{-0.1}
Thickness t ± 0.1
- 60 ≤ A
Length A_{-0.2}
Thickness t ± 0.2

●Rectangle

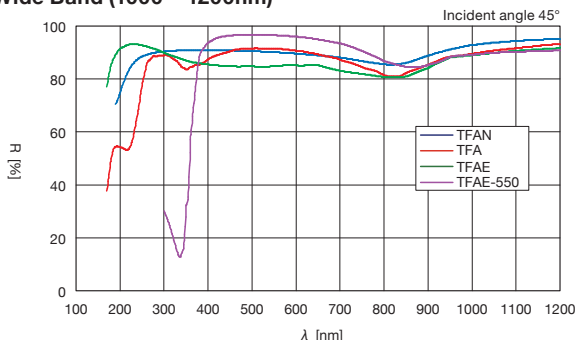


- Tolerance
- A × B ≤ 40 × 50
Length A · B_{-0.1}
Thickness t ± 0.1
- 50 × 60 ≤ A × B
Length A · B_{-0.2}
Thickness t ± 0.2

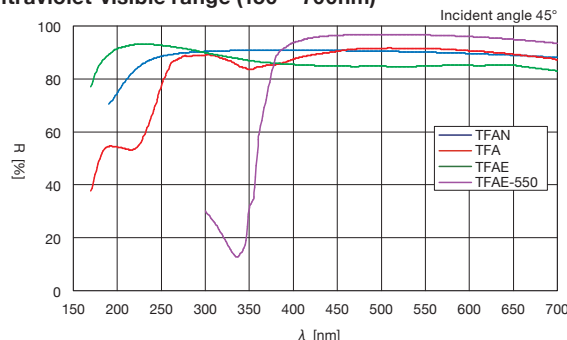
Typical Reflectance Data

R: Reflectance

Wide Band (1000 – 1200nm)



Ultraviolet-visible range (150 – 700nm)





Circle		Diameter ϕ D [mm]	Thickness t [mm]	Material	Surface Flatness	Rear Surface
Al+MgF ₂ (partially Al+SiO)	Al only					
Part Number	Part Number					
TFA-10C03-4	—	ϕ 10	3	BK7	$\lambda/4$	Ground
TFA-10C03-10	TFAN-10C03-10	ϕ 10	3	BK7	$\lambda/10$	Ground
TFA-10C05-10	TFAN-10C05-10	ϕ 10	5	BK7	$\lambda/10$	Ground
TFA-10C05-20	TFAN-10C05-20	ϕ 10	5	BK7	$\lambda/20$	Ground
TFAQ-10C06-20	TFAQN-10C06-20	ϕ 10	6	Synthetic Fused Silica	$\lambda/20$	Ground
TFA-12.7C05-4	—	ϕ 12.7	5	BK7	$\lambda/4$	Ground
TFA-12.7C05-10	—	ϕ 12.7	5	BK7	$\lambda/10$	Ground
TFAQ-12.7C06-20	—	ϕ 12.7	6	Synthetic Fused Silica	$\lambda/20$	Ground
TFA-15C03-10	TFAN-15C03-10	ϕ 15	3	BK7	$\lambda/10$	Ground
TFA-15C05-10	TFAN-15C05-10	ϕ 15	5	BK7	$\lambda/10$	Ground
TFA-15C05-20	TFAN-15C05-20	ϕ 15	5	BK7	$\lambda/20$	Ground
TFAQ-15C06-20	TFAQN-15C06-20	ϕ 15	6	Synthetic Fused Silica	$\lambda/20$	Ground
TFA-20C03-10	TFAN-20C03-10	ϕ 20	3	BK7	$\lambda/10$	Ground
TFA-20C05-4	TFAN-20C05-4	ϕ 20	5	BK7	$\lambda/4$	Ground
TFA-20C05-10	TFAN-20C05-10	ϕ 20	5	BK7	$\lambda/10$	Ground
TFA-20C05-20	TFAN-20C05-20	ϕ 20	5	BK7	$\lambda/20$	Ground
TFAQ-20C06-20	TFAQN-20C06-20	ϕ 20	6	Synthetic Fused Silica	$\lambda/20$	Ground
TFA-25C05-1	TFAN-25C05-1	ϕ 25	5	BK7	λ	Polished
TFA-25C05-4	TFAN-25C05-4	ϕ 25	5	BK7	$\lambda/4$	Polished
TFA-25C05-10	TFAN-25C05-10	ϕ 25	5	BK7	$\lambda/10$	Polished
TFA-25C05-20	TFAN-25C05-20	ϕ 25	5	BK7	$\lambda/20$	Polished
TFAQ-25C06-20	TFAQN-25C06-20	ϕ 25	6	Synthetic Fused Silica	$\lambda/20$	Polished
TFA-25.4C05-4	—	ϕ 25.4	5	BK7	$\lambda/4$	Polished
TFA-25.4C05-10	TFAN-25.4C05-10	ϕ 25.4	5	BK7	$\lambda/10$	Polished
TFAQ-25.4C06-20	—	ϕ 25.4	6	Synthetic Fused Silica	$\lambda/20$	Polished
TFA-30C05-1	TFAN-30C05-1	ϕ 30	5	BK7	λ	Polished
TFA-30C05-4	TFAN-30C05-4	ϕ 30	5	BK7	$\lambda/4$	Polished
TFA-30C05-10	TFAN-30C05-10	ϕ 30	5	BK7	$\lambda/10$	Polished
TFA-30C05-20	TFAN-30C05-20	ϕ 30	5	BK7	$\lambda/20$	Polished
TFAQ-30C06-20	TFAQN-30C06-20	ϕ 30	6	Synthetic Fused Silica	$\lambda/20$	Polished
TFA-40C06-1	TFAN-40C06-1	ϕ 40	6	BK7	λ	Polished
TFA-40C06-4	TFAN-40C06-4	ϕ 40	6	BK7	$\lambda/4$	Polished
TFA-40C06-10	TFAN-40C06-10	ϕ 40	6	BK7	$\lambda/10$	Polished
TFA-40C06-20	TFAN-40C06-20	ϕ 40	6	BK7	$\lambda/20$	Polished
TFAQ-40C08-20	TFAQN-40C08-20	ϕ 40	8	Synthetic Fused Silica	$\lambda/20$	Polished
TFA-50C08-1	TFAN-50C08-1	ϕ 50	8	BK7	λ	Polished
TFA-50C08-4	TFAN-50C08-4	ϕ 50	8	BK7	$\lambda/4$	Polished
TFA-50C08-10	TFAN-50C08-10	ϕ 50	8	BK7	$\lambda/10$	Polished
TFA-50C08-20	TFAN-50C08-20	ϕ 50	8	BK7	$\lambda/20$	Polished
TFAQ-50C10-20	TFAQN-50C10-20	ϕ 50	10	Synthetic Fused Silica	$\lambda/20$	Polished
TFA-50.8C08-10	—	ϕ 50.8	8	BK7	$\lambda/10$	Polished
TFA-60C10-1	TFAN-60C10-1	ϕ 60	10	Hard glass	λ	Polished
TFA-60C10-4	TFAN-60C10-4	ϕ 60	10	Hard glass	$\lambda/4$	Polished
TFA-60C10-10	TFAN-60C10-10	ϕ 60	10	Hard glass	$\lambda/10$	Polished
TFA-60C10-20	TFAN-60C10-20	ϕ 60	10	Hard glass	$\lambda/20$	Polished
TFA-80C12-1	TFAN-80C12-1	ϕ 80	12	Hard glass	λ	Polished
TFA-80C12-4	TFAN-80C12-4	ϕ 80	12	Hard glass	$\lambda/4$	Polished
TFA-80C12-10	TFAN-80C12-10	ϕ 80	12	Hard glass	$\lambda/10$	Polished
TFA-80C12-20	TFAN-80C12-20	ϕ 80	12	Hard glass	$\lambda/20$	Polished
TFA-100C15-1	TFAN-100C15-1	ϕ 100	15	Hard glass	λ	Polished
TFA-100C15-4	TFAN-100C15-4	ϕ 100	15	Hard glass	$\lambda/4$	Polished
TFA-100C15-10	TFAN-100C15-10	ϕ 100	15	Hard glass	$\lambda/10$	Polished
TFA-130C18-1	TFAN-130C18-1	ϕ 130	18	Hard glass	λ	Polished
TFA-130C18-4	TFAN-130C18-4	ϕ 130	18	Hard glass	$\lambda/4$	Polished
TFA-130C18-10	TFAN-130C18-10	ϕ 130	18	Hard glass	$\lambda/10$	Polished
TFA-150C20-1	TFAN-150C20-1	ϕ 150	20	Hard glass	λ	Polished
TFA-150C20-4	TFAN-150C20-4	ϕ 150	20	Hard glass	$\lambda/4$	Polished
TFA-150C20-10	TFAN-150C20-10	ϕ 150	20	Hard glass	$\lambda/10$	Polished

Compatible Optic Mounts

MHG-MP12.7-NL / MHG-HS25-NL, -HS30-NL / MHG-MP50-NL, -MP50.8-NL / MAD-30-10 + MHB-30M / BSHL-15-2 / MHF-20
 MHAN-40S, -60S / MHA-80S, -100S, -130S, -150S

- Application Systems
- Optics & Optical Coatings
- Holders
- Bases
- Manual Stages
- Actuators
- MotORIZED Stages
- Light Sources
- Index
- Guide
- Mirrors
- Beamsplitters
- Polarizers
- Lenses
- Multi-Element Optics
- Filters
- Prisms
- Substrates/Windows
- Optical Data
- Maintenance
- Selection Guide
- Super Mirror
- Femtosecond Laser
- Frameless
- Accuracy Guarantee
- High Power
- Ultra Broadband
- Dielectric Coating
- Aluminum Coating
- Gold Coating

Aluminum Mirrors

TFA/TFAN/TFAQ/TFANQ/TFAE/OPBA/OPSQA

RoHS

Catalog Code **W3405**

UV Enhanced Aluminum Flat Mirrors							
Part Number	Wavelength Range [nm]	Reflectance [%]	Diameter ϕ D [mm]	Thickness t [mm]	Material	Surface Flatness	Rear Surface
TFAE-12.7C05-10	170 – 400	> average 85	ϕ 12.7	5	BK7	$\lambda/10$	Ground
TFAE-25.4C05-10	170 – 400	> average 85	ϕ 25.4	5	BK7	$\lambda/10$	Polished
TFAE-30C05-10	170 – 400	> average 85	ϕ 30	5	BK7	$\lambda/10$	Polished
TFAE-50C08-10	170 – 400	> average 85	ϕ 50	8	BK7	$\lambda/10$	Polished
TFAE-12.7C05-10-550	400 – 700	> average 94	ϕ 12.7	5	BK7	$\lambda/10$	Ground
TFAE-25.4C05-10-550	400 – 700	> average 94	ϕ 25.4	5	BK7	$\lambda/10$	Polished
TFAE-30C05-10-550	400 – 700	> average 94	ϕ 30	5	BK7	$\lambda/10$	Polished

Catalog Code **W3403**

Square							
Al+MgF ₂ (partially Al+SiO) Part Number	Al only Part Number	Length A [mm]	Thickness t [mm]	Material	Surface Flatness	Rear Surface	
TFA-10S03-10	TFAN-10S03-10	\square 10	3	BK7	$\lambda/10$	Ground	
TFA-10S05-10	TFAN-10S05-10	\square 10	5	BK7	$\lambda/10$	Ground	
TFA-10S05-20	TFAN-10S05-20	\square 10	5	BK7	$\lambda/20$	Ground	
TFAQ-10S06-20	TFAQN-10S06-20	\square 10	6	Synthetic fused silica	$\lambda/20$	Ground	
TFA-12.7S03-4	—	\square 12.7	3	BK7	$\lambda/4$	Ground	
TFA-12.7S03-10	—	\square 12.7	3	BK7	$\lambda/10$	Ground	
TFA-15S03-4	TFAN-15S03-4	\square 15	3	BK7	$\lambda/4$	Ground	
TFA-15S03-10	TFAN-15S03-10	\square 15	3	BK7	$\lambda/10$	Ground	
TFA-15S05-4	TFAN-15S05-4	\square 15	5	BK7	$\lambda/4$	Ground	
TFA-15S05-10	TFAN-15S05-10	\square 15	5	BK7	$\lambda/10$	Ground	
TFA-15S05-20	TFAN-15S05-20	\square 15	5	BK7	$\lambda/20$	Ground	
TFAQ-15S06-20	TFAQN-15S06-20	\square 15	6	Synthetic fused silica	$\lambda/20$	Ground	
TFA-20S03-4	TFAN-20S03-4	\square 20	3	BK7	$\lambda/4$	Ground	
TFA-20S03-10	TFAN-20S03-10	\square 20	3	BK7	$\lambda/10$	Ground	
TFA-20S05-4	TFAN-20S05-4	\square 20	5	BK7	$\lambda/4$	Ground	
TFA-20S05-10	TFAN-20S05-10	\square 20	5	BK7	$\lambda/10$	Ground	
TFA-20S05-20	TFAN-20S05-20	\square 20	5	BK7	$\lambda/20$	Ground	
TFAQ-20S06-20	TFAQN-20S06-20	\square 20	6	Synthetic fused silica	$\lambda/20$	Ground	
TFA-25S05-1	TFAN-25S05-1	\square 25	5	BK7	λ	Ground	
TFA-25S05-4	TFAN-25S05-4	\square 25	5	BK7	$\lambda/4$	Ground	
TFA-25S05-10	TFAN-25S05-10	\square 25	5	BK7	$\lambda/10$	Ground	
TFA-25S05-20	TFAN-25S05-20	\square 25	5	BK7	$\lambda/20$	Ground	
TFAQ-25S06-20	TFAQN-25S06-20	\square 25	6	Synthetic fused silica	$\lambda/20$	Ground	
TFA-30S05-1	TFAN-30S05-1	\square 30	5	BK7	λ	Ground	
TFA-30S05-4	TFAN-30S05-4	\square 30	5	BK7	$\lambda/4$	Ground	
TFA-30S05-10	TFAN-30S05-10	\square 30	5	BK7	$\lambda/10$	Ground	
TFA-30S05-20	TFAN-30S05-20	\square 30	5	BK7	$\lambda/20$	Ground	
TFAQ-30S06-20	TFAQN-30S06-20	\square 30	6	Synthetic fused silica	$\lambda/20$	Ground	
TFA-40S06-1	TFAN-40S06-1	\square 40	6	Hard glass	λ	Polished	
TFA-40S06-4	TFAN-40S06-4	\square 40	6	Hard glass	$\lambda/4$	Polished	
TFA-40S06-10	TFAN-40S06-10	\square 40	6	Hard glass	$\lambda/10$	Polished	
TFA-40S06-20	TFAN-40S06-20	\square 40	6	Hard glass	$\lambda/20$	Polished	
TFA-50S08-1	TFAN-50S08-1	\square 50	8	Hard glass	λ	Polished	
TFA-50S08-4	TFAN-50S08-4	\square 50	8	Hard glass	$\lambda/4$	Polished	
TFA-50S08-10	TFAN-50S08-10	\square 50	8	Hard glass	$\lambda/10$	Polished	
TFA-50S08-20	TFAN-50S08-20	\square 50	8	Hard glass	$\lambda/20$	Polished	
TFA-60S10-1	TFAN-60S10-1	\square 60	10	Hard glass	λ	Polished	
TFA-60S10-4	TFAN-60S10-4	\square 60	10	Hard glass	$\lambda/4$	Polished	
TFA-60S10-10	TFAN-60S10-10	\square 60	10	Hard glass	$\lambda/10$	Polished	
TFA-60S10-20	TFAN-60S10-20	\square 60	10	Hard glass	$\lambda/20$	Polished	
TFA-80S12-1	TFAN-80S12-1	\square 80	12	Hard glass	λ	Polished	
TFA-80S12-4	TFAN-80S12-4	\square 80	12	Hard glass	$\lambda/4$	Polished	
TFA-80S12-10	TFAN-80S12-10	\square 80	12	Hard glass	$\lambda/10$	Polished	
TFA-80S12-20	TFAN-80S12-20	\square 80	12	Hard glass	$\lambda/20$	Polished	
TFA-100S15-1	TFAN-100S15-1	\square 100	15	Hard glass	λ	Polished	
TFA-100S15-4	TFAN-100S15-4	\square 100	15	Hard glass	$\lambda/4$	Polished	
TFA-100S15-10	TFAN-100S15-10	\square 100	15	Hard glass	$\lambda/10$	Polished	
TFA-130S18-1	TFAN-130S18-1	\square 130	18	Hard glass	λ	Polished	
TFA-130S18-4	TFAN-130S18-4	\square 130	18	Hard glass	$\lambda/4$	Polished	
TFA-130S18-10	TFAN-130S18-10	\square 130	18	Hard glass	$\lambda/10$	Polished	
TFA-150S20-1	TFAN-150S20-1	\square 150	20	Hard glass	λ	Polished	
TFA-150S20-4	TFAN-150S20-4	\square 150	20	Hard glass	$\lambda/4$	Polished	
TFA-150S20-10	TFAN-150S20-10	\square 150	20	Hard glass	$\lambda/10$	Polished	

Compatible Optic Mounts

CHA-25, -60, -130 / LHA-150

Rectangle						
Al+MgF ₂ (partially Al+SiO) Part Number	Al only Part Number	Length AxB [mm]	Thickness t [mm]	Material	Surface Flatness	Rear Surface
TFA-1015R03-4	TFAN-1015R03-4	10×15	3	BK7	λ/4	Ground
TFA-1015R03-10	TFAN-1015R03-10	10×15	3	BK7	λ/10	Ground
TFA-1015R05-4	TFAN-1015R05-4	10×15	5	BK7	λ/4	Ground
TFA-1015R05-10	TFAN-1015R05-10	10×15	5	BK7	λ/10	Ground
TFA-1015R05-20	TFAN-1015R05-20	10×15	5	BK7	λ/20	Ground
TFAQ-1015R06-20	TFAQN-1015R06-20	10×15	6	Synthetic fused silica	λ/20	Ground
TFA-1525R03-4	TFAN-1525R03-4	15×25	3	BK7	λ/4	Ground
TFA-1525R03-10	TFAN-1525R03-10	15×25	3	BK7	λ/10	Ground
TFA-1525R05-4	TFAN-1525R05-4	15×25	5	BK7	λ/4	Ground
TFA-1525R05-10	TFAN-1525R05-10	15×25	5	BK7	λ/10	Ground
TFA-1525R05-20	TFAN-1525R05-20	15×25	5	BK7	λ/20	Ground
TFAQ-1525R06-20	TFAQN-1525R06-20	15×25	6	Synthetic fused silica	λ/20	Ground
TFA-2030R05-1	TFAN-2030R05-1	20×30	5	BK7	λ	Ground
TFA-2030R05-4	TFAN-2030R05-4	20×30	5	BK7	λ/4	Ground
TFA-2030R05-10	TFAN-2030R05-10	20×30	5	BK7	λ/10	Ground
TFA-2030R05-20	TFAN-2030R05-20	20×30	5	BK7	λ/20	Ground
TFAQ-2030R06-20	TFAQN-2030R06-20	20×30	6	Synthetic fused silica	λ/20	Ground
TFA-2535R05-1	TFAN-2535R05-1	25×35	5	BK7	λ	Ground
TFA-2535R05-4	TFAN-2535R05-4	25×35	5	BK7	λ/4	Ground
TFA-2535R05-10	TFAN-2535R05-10	25×35	5	BK7	λ/10	Ground
TFA-2535R05-20	TFAN-2535R05-20	25×35	5	BK7	λ/20	Ground
TFAQ-2535R06-20	TFAQN-2535R06-20	25×35	6	Synthetic fused silica	λ/20	Ground
TFA-3040R06-1	TFAN-3040R06-1	30×40	6	Hard glass	λ	Polished
TFA-3040R06-4	TFAN-3040R06-4	30×40	6	Hard glass	λ/4	Polished
TFA-3040R06-10	TFAN-3040R06-10	30×40	6	Hard glass	λ/10	Polished
TFA-3040R06-20	TFAN-3040R06-20	30×40	6	Hard glass	λ/20	Polished
TFAQ-3040R08-20	TFAQN-3040R08-20	30×40	8	Hard glass	λ/20	Polished
TFA-4050R08-1	TFAN-4050R08-1	40×50	8	Hard glass	λ	Polished
TFA-4050R08-4	TFAN-4050R08-4	40×50	8	Hard glass	λ/4	Polished
TFA-4050R08-10	TFAN-4050R08-10	40×50	8	Hard glass	λ/10	Polished
TFA-4050R08-20	TFAN-4050R08-20	40×50	8	Hard glass	λ/20	Polished
TFA-5060R10-1	TFAN-5060R10-1	50×60	10	Hard glass	λ	Polished
TFA-5060R10-4	TFAN-5060R10-4	50×60	10	Hard glass	λ/4	Polished
TFA-5060R10-10	TFAN-5060R10-10	50×60	10	Hard glass	λ/10	Polished
TFA-5060R10-20	TFAN-5060R10-20	50×60	10	Hard glass	λ/20	Polished
TFA-6080R12-1	TFAN-6080R12-1	60×80	12	Hard glass	λ	Polished
TFA-6080R12-4	TFAN-6080R12-4	60×80	12	Hard glass	λ/4	Polished
TFA-6080R12-10	TFAN-6080R12-10	60×80	12	Hard glass	λ/10	Polished
TFA-6080R12-20	TFAN-6080R12-20	60×80	12	Hard glass	λ/20	Polished
TFA-80100R15-1	TFAN-80100R15-1	80×100	15	Hard glass	λ	Polished
TFA-80100R15-4	TFAN-80100R15-4	80×100	15	Hard glass	λ/4	Polished
TFA-80100R15-10	TFAN-80100R15-10	80×100	15	Hard glass	λ/10	Polished

High Parallelism				
Part Number	Diameter φD [mm]	Thickness t [mm]	Material	Surface Flatness
OPBA-10C05-10	φ10	5	BK7	λ/10
OPBA-15C05-10	φ15	5	BK7	λ/10
OPBA-20C05-10	φ20	5	BK7	λ/10
OPBA-25C05-10	φ25	5	BK7	λ/10
OPBA-30C05-10	φ30	5	BK7	λ/10
OPBA-40C06-10	φ40	6	BK7	λ/10
OPBA-50C08-10	φ50	8	BK7	λ/10
OPBA-60C10-10	φ60	10	BK7	λ/10
OPSQA-10C05-10	φ10	5	Synthetic fused silica	λ/10
OPSQA-15C05-10	φ15	5	Synthetic fused silica	λ/10
OPSQA-20C05-10	φ20	5	Synthetic fused silica	λ/10
OPSQA-25C05-10	φ25	5	Synthetic fused silica	λ/10
OPSQA-30C05-10	φ30	5	Synthetic fused silica	λ/10