



Partnership for Aspheric Optics Solutions

FPC Technology Showcase
October 8, 2020



Agenda

- 1) Brief introduction of OptoSigma & asphericon
- 2) Partnership
- 3) asphericon Product portfolio
- 4) Video – laser beam expansion & fiber coupling
- 5) Coming soon!
- 6) Q&A

Partnership – OptoSigma and asphericon

- = Distribution partnership formed July, 2020
- = Products: aspheric lenses, axicons, acylinders, and beam tuning systems
- = Europe, North & South America markets
- = Provide one-stop shopping experience through OptoSigma's website
- = Most products are in stock in the US

asphericon StockOptics

HIGH-PRECISION OFF-THE-SHELF OPTICS - INNOVATIVE DIVERSITY & PRECISION



a|Aspheres

Low-NA & High-NA

- = Diameter: 10-100 mm
- = Quality: RMS < 0.5 μm
- = 3 standard coatings

UV-Aspheres

- = Diameter: 12.5 – 50 mm
- = Quality: RMS < 0.3 μm
- = 4 standard coatings



a|Axicons

- = For high-power laser applications
- = Diameter: 25.4 and 50.8 mm
- = Quality: RMS < 0.07 μm
- = Material: Fused silica
- = Available with 4 standard coatings



a|Acylinders

- = Ideal line-focus
- = Size: 10x10 – 50x50 mm
- = Quality: RMS < 0.5 μm
- = Material: S-LAH64
- = Available with 4 standard coatings



MountedOptics

- = Pre-aligned aspheres, axicons and acylinders in high-precision mounts
- = Diameter: 12.5 - 25.4
- = Quality: < 10 μm decentration
- = Material: S-LAH64, N-BK7, Fused silica

Aspheres

HIGH-NA

Product Code	∅	EFL	NA	f/d	WD	λ_{Design}	Material
	[mm]	[mm]			[mm]	[nm]	
AHL10-08 ⁴	10	8	0.55	0.80	6.0	780	S-LAH64
AHL12-10	12.5	10	0.55	0.80	7.6	780	S-LAH64
AHL15-12	15	12	0.55	0.80	9.0	780	S-LAH64
AHL18-15	18	15	0.53	0.83	11.5	780	S-LAH64
AHL20-18	20	18	0.49	0.90	14.0	780	S-LAH64
AHL25-20	25	20	0.54	0.80	15.7	780	S-LAH64
AHL30-26	30	26	0.52	0.87	20.6	780	S-LAH64
AHL45-32	45	32	0.61	0.71	24.2	780	S-LAH64
AHL50-40	50	40	0.55	0.80	31.3	780	S-LAH64

1 Custom coatings available upon request. | 2RMS, corresponds to ISO 10110-5 (surface form tolerances). | 3 For lenses AHL45-32, AHL50-40 please consider a center thickness tolerance of ± 0.1 . | 4 Calculated for 250 μm cover glass thickness. | General: Technical parameters and prices are subject to change without prior notice.

Lens description

Surface Form Deviation (RMS) ²	[μm]	≤ 0.5
EFL Tolerance	[%]	≤ 0.1
Surface Imperfections	[Scratch/Dig]	60 - 40
Diameter Tolerance	[mm]	+0/-0.05
Center Thickness Tolerance ³	[mm]	+0.05
Clear Aperture	[%]	≥ 90

Aspheres

LOW-NA

Product Code	Ø [mm]	EFL [mm]	NA	f/d	WD [mm]	λ_{Design} [nm]	Material
ALL12-25	12.5	25	0.23	2.0	22.4	780	N-BK7
ALL25-50	25	50	0.23	2.0	46.0	780	N-BK7
ALL50-100	50	100	0.24	2.0	93.4	780	N-BK7
ALL75-60	75	60	0.62	0.8	36.5	780	N-BK7
ALL75-150	75	150	0.23	2.0	140.1	780	N-BK7
ALL100-100	100	100	0.48	1.0	76.2	780	N-BK7
ALL100-200	100	200	0.23	2.0	187.4	780	N-BK7

1 Custom coatings available upon request. | 2 For lenses ALL75-60, ALL75-150, ALL100-100, ALL100-200 please consider a maximum value of 0.75. RMS, corresponding to ISO 10110-5 (surface form tolerances). | 3 For lenses ALL50-100, ALL100-200 please consider a center thickness tolerance of ± 0.1 . For lenses ALL75-60, ALL100-100 please consider a center thickness tolerance of ± 0.15 | General: Technical parameters and prices are subject to change without prior notice.

Lens description

Surface Form Deviation (RMS) ²	[μm]	≤ 0.5
EFL Tolerance	[%]	≤ 0.1
Surface Imperfections	[Scratch/Dig]	60 - 40
Diameter Tolerance	[mm]	+0/-0.05
Center Thickness Tolerance ³	[mm]	+0.05
Clear Aperture	[%]	≥ 90

Aspheres

FUSED-SILICA

Product Code	Ø	EFL	NA	f/d	WD	λ_{Design}	Material ⁴
	[mm]	[mm]			[mm]	[nm]	
AFL12-10	12.5	10	0.58	0.833	5.7	355	Fused Silica
AFL12-15	12.5	15	0.39	1.2	12.3	285	Fused Silica
AFL12-20	12.5	20	0.29	1.6	17.3	285	Fused Silica
AFL25-17	25	17	0.64	0.7	10.0	355	Fused Silica
AFL25-20	25	20	0.56	0.8	12.6	355	Fused Silica
AFL25-25	25	25	0.48	1.0	17.0	285	Fused Silica
AFL25-30	25	30	0.39	1.2	23.3	285	Fused Silica
AFL25-40	25	40	0.29	1.6	34.6	285	Fused Silica
AFL25-50	25	50	0.23	2.0	45.1	355	Fused Silica
AFL25-75	25	75	0.15	3.0	70.9	355	Fused Silica
AFL25-100	25	100	0.11	4.0	96.3	355	Fused Silica
AFL50-40	50	40	0.56	0.8	25.2	355	Fused Silica
AFL50-50	50	50	0.48	1.0	37.0	355	Fused Silica
AFL50-60	50	60	0.39	1.2	48.3	285	Fused Silica
AFL50-80	50	80	0.29	1.6	70.6	285	Fused Silica
AFL50-100	50	100	0.23	2.0	91.5	355	Fused Silica

1 Custom coatings available upon request. | 2 RMS_y corresponds to ISO 10110-5 (surface form tolerances). | 3 For AFL50-60, AFL50-80, please consider a center thickness tolerance of ± 0.1 . | 4 Typically used J-Fiber SQ 1 or equivalent corning 7980 quality. | General: Technical parameters and prices are subject to change without prior notice.

Aspheres

FUSED-SILICA

= New Features from mid of October 2020:

- = Improved Design Wavelength (355nm instead of 285nm)
- = Extended selection of Dia-EFL combinations
- = Introduction of 3 different quality levels
 - = Precision (RMSi < 0,5 μ m)
 - = Ultra (RMSi < 0,3 μ m)
 - = BeamTuning (Diffraction-limited)
- = Additional product category: TailoredLaser
 - = UV-Aspheres with V-Coating (355nm, 532nm, 1064nm)



Bigger
Choice



Best
quality in
the market

Acyllinders

Product Code	Size [mm]	EFL [mm]	NA	f/d	WD [mm]	λ_{Design} [nm]	Material
CHL10-08	10x10	8	0.54	0.8	6.3	780	S-LAH64
CHL12-10	12.5x12.5	10	0.55	0.8	7.2	780	S-LAH64
CHL15-12	15x15	12	0.54	0.8	9.2	780	S-LAH64
CHL18-15	18x18	15	0.53	0.83	11.6	780	S-LAH64
CHL20-18	20x20	18	0.49	0.9	14.3	780	S-LAH64
CHL25-20	25x25	20	0.54	0.8	15.8	780	S-LAH64
CHL30-26	30x30	26	0.52	0.87	21.5	780	S-LAH64
CHL45-32	45x45	32	0.61	0.71	24.7	780	S-LAH64
CHL50-40	50x50	40	0.55	0.8	32.1	780	S-LAH64

1 Custom coatings available upon request. | 2 RMS, corresponds to ISO 10110-5 (surface form tolerances). | 3 For lenses CHL 45-32, CHL 50-40, please consider a center thickness tolerance of ± 0.1 .
General: Technical parameters and prices are subject to change without prior notice.

Lens description

Surface Form Deviation (RMS) ²	[μm]	≤ 0.5
EFL Tolerance	[%]	≤ 0.1
Surface Imperfections	[Scratch/Dig]	60 - 40
Width Tolerance	[mm]	+0/-0.05
Length Tolerance	[mm]	+/-0.1
Center Thickness Tolerance ³	[mm]	± 0.05
Clear Aperture	[%]	≥ 90

Axicons

Product Code	Ø	Angle	Edge Thickness	λ_{Design}	Material
	[mm]	[degree]	[mm]	[nm]	
XFL25-005 ⁴	25.4	0.5	5.0	780	Fused Silica
XFL25-010 ⁴	25.4	1.0	5.0	780	Fused Silica
XFL25-020 ⁴	25.4	2.0	5.0	780	Fused Silica
XFL25-050 ⁴	25.4	5.0	5.0	780	Fused Silica
XFL25-100 ⁴	25.4	10.0	5.0	780	Fused Silica
XFL25-200 ⁴	25.4	20.0	5.0	780	Fused Silica
XFL50-005 ⁵	50.8	0.5	8.0	780	Fused Silica
XFL50-010 ⁵	50.8	1.0	8.0	780	Fused Silica
XFL50-020 ⁵	50.8	2.0	8.0	780	Fused Silica
XFL50-050 ⁵	50.8	5.0	8.0	780	Fused Silica
XFL50-100 ⁵	50.8	10.0	8.0	780	Fused Silica
XFL50-200 ⁵	50.8	20.0	8.0	780	Fused Silica

1 Custom coatings on request. | 2 RMS, corresponds to ISO 10110-5 (surface form tolerances). | 3 Prices valid per piece. | 4 Conical tip, Clear Aperture 2.3 - 23 mm, smaller conical tips on request. | 5 Conical tip, Clear Aperture 4.6 - 46 mm, smaller conical tips on request. | General: Technical parameters and prices are subject to change without prior notice.

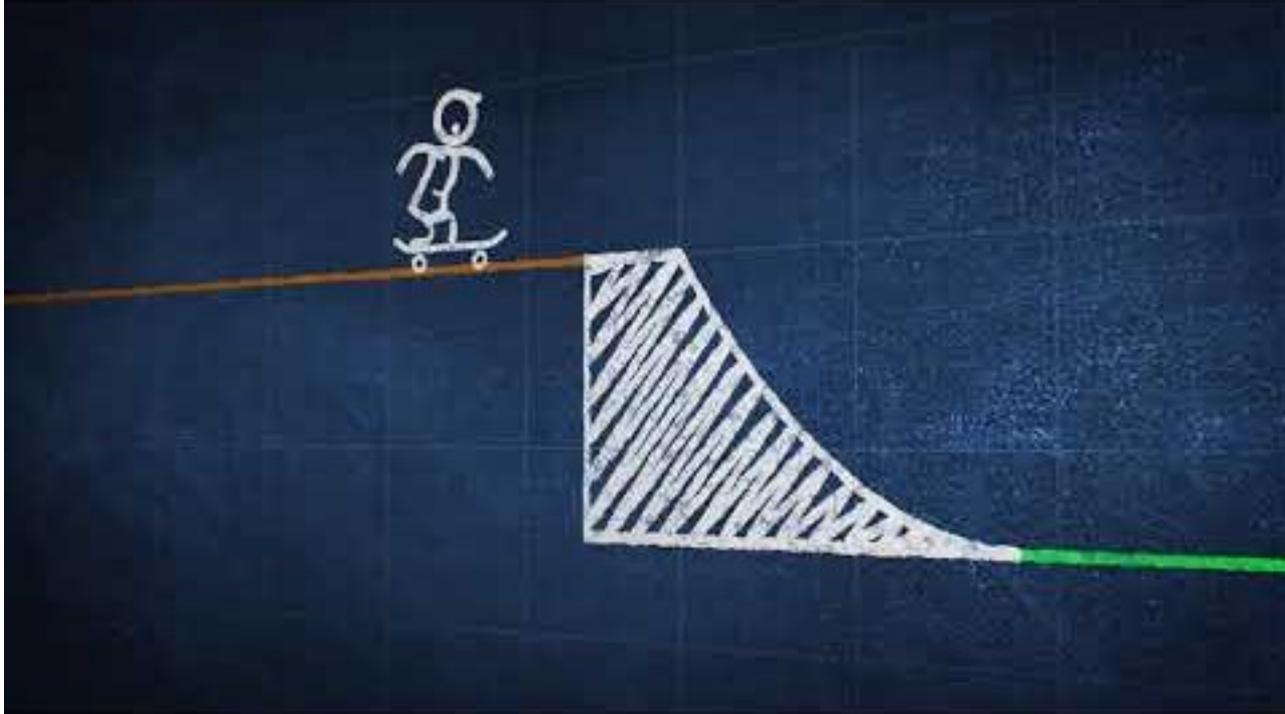
Lens description

Surface Form Deviation (RMS) ²	[μm]	0.07
Surface Imperfections	[Scratch/Dig]	40 - 20
Diameter Tolerance	[mm]	+0/-0.1
Center Thickness Tolerance	[mm]	$\pm 0.1/-0$
Clear Aperture	[%]	>90



tu·ning [ˈtju:nɪŋ]

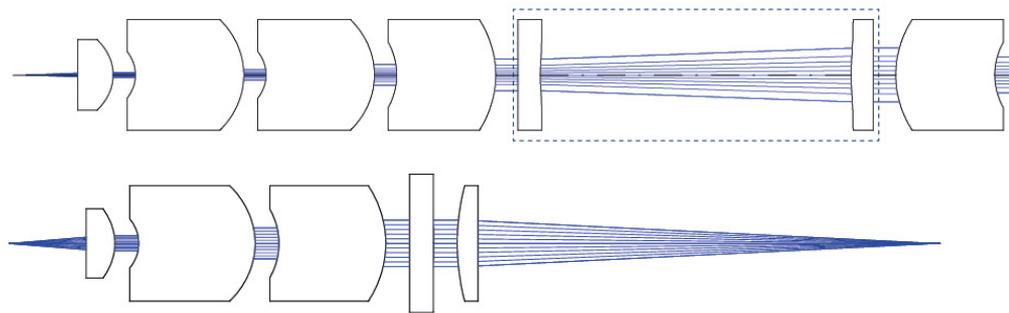
to adjust something for maximum usability or performance



asphericon BeamTuning

From the world's first aspheric beam expander to a unique system

- = Diffraction-limited beam expansion system and beam shaping components
- = Optimized performance for wavelengths from 355 up to 1600 nm
- = Individually measured and certified
- = Short overall length – up to three times shorter than average
- = Low contamination due to tightly enclosed mountings
- = Intelligent assembly concept for easy handling
- = Flexible choice of input and output beam diameter
- = Mix and Match



Mix & Match: a|BeamBoxes

INDIVIDUAL BOXES WITH BEAMTUNING ELEMENTS



a|BeamBox Essential

- = Consisting of up to eight a|BeamExpander, a|AspheriColl, a|Waveλdapt and matching a|Adapters
- = Available for wavelengths 355 nm, 532 nm, 632 nm, 780 nm and 1064 nm
- = Certified diffraction-limited system



a|BeamBox TopShape

- = Consisting of up to five a|BeamExpanders, a|TopShape, a|AspheriColl and matching a|Adapters as well as MountedOptics
- = Perfect support for applications in the field of metrology or microscopy



a|BeamBox AiryShape

- = Consisting of up to six a|BeamExpanders, a|AiryShape, a|AspheriColl and matching a|Adapters as well as a|MountedAspheres
- = Perfect support applications in the field of material processing

BeamExpansion & BeamTuning

SUMMARY

BeamExpansion



FiberCollimation



BeamShaping

