



a|Fizeric

The aspherization of
Fizeau interferometry



a|FizeriC

The world's first aspheric

4" Fizeau lens

With the development of the world's first aspheric transmission sphere a|FizeriC, asphericon redefines an established measurement technique and presents compact, lightweight Fizeau lenses that allow you to get the most out of your measuring instrument. By using a high-end asphere significantly larger measuring diameters are possible. For the first time this allows a 4" Fizeau transmission sphere to cover the measuring range, which previously could only be measured with a 6" lens.

KEY BENEFITS

- = Completely new measuring range (R/D 0.55)
- = Innovative Design comprising aspheric surfaces
- = Fizeau surface quality $\lambda/10$ and $\lambda/20$
- = Collection of well-chosen Fizeau radii
- = High-quality transmitted wavefront
- = Optimized for long term clean components
- = Suitable for all interferometers with Zygo Bayonet
- = Real 4" system input



- 1 LARGEST MEASURING RANGE ON THE MARKET**
- 2 SAFE HANDLING, EASY STORAGE, ADAPTER FREE**
- 3 UP TO THREE TIMES LIGHTER**

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The aspherization of **Fizeau interferometry**

PRECISION FROM THE TECHNOLOGY LEADER

asphericon is the world's top technology leader when it comes to aspheres and aspheric components. Our almost twenty years of knowledge are now being applied to Fizeau interferometry by using high-end aspheres. The smart mount design of a|FizeriC allows maximum utilization of the Fizeau surface aperture diameter. This results in an enlarged measuring range and more space for your surface under test (no danger of collision). The transmission spheres are robust to

tilting and can be used in most interferometers' thanks Zygo-Bayonet. A convenient gripping rim and three position markers ensure easy and low-risk use.

asphericon guarantees:

- = Waviness as low as spherical lenses
- = Lithography level aspheres



1 HIGH-END ASPHERE

2 4" ZYGO BAYONET

3 HIGH QUALITY FIZEAU SURFACE

4 CONVENIENT GRIPPING RIM

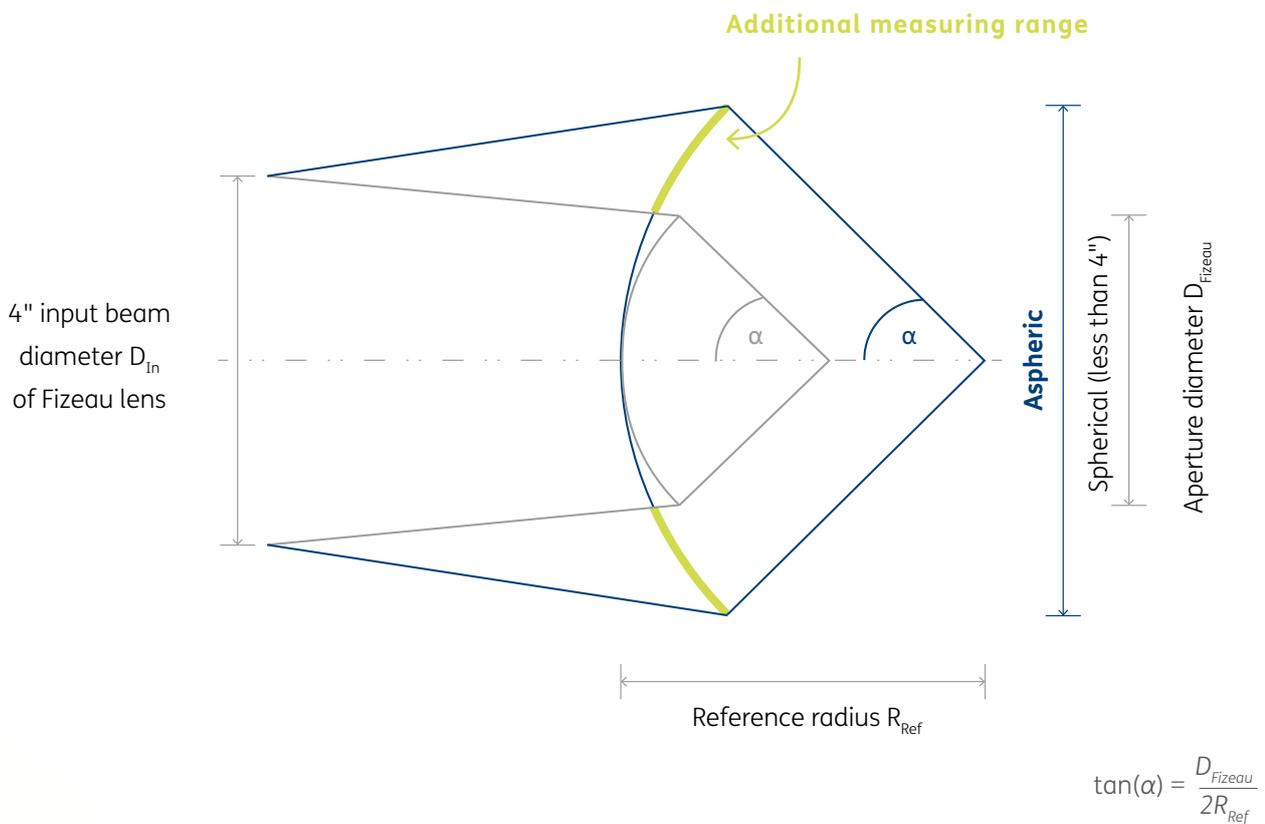
5 POSITION MARKERS FOR EASIER INTEGRATION

6 MORE SPACE FOR SPECIMEN ALIGNMENT

COMPARISON – SPHERICAL AND ASPHERIC FIZEAU LENS

The superiority and extended application range of an aspheric Fizeau lens can be seen in a direct comparison with a spherical lens.

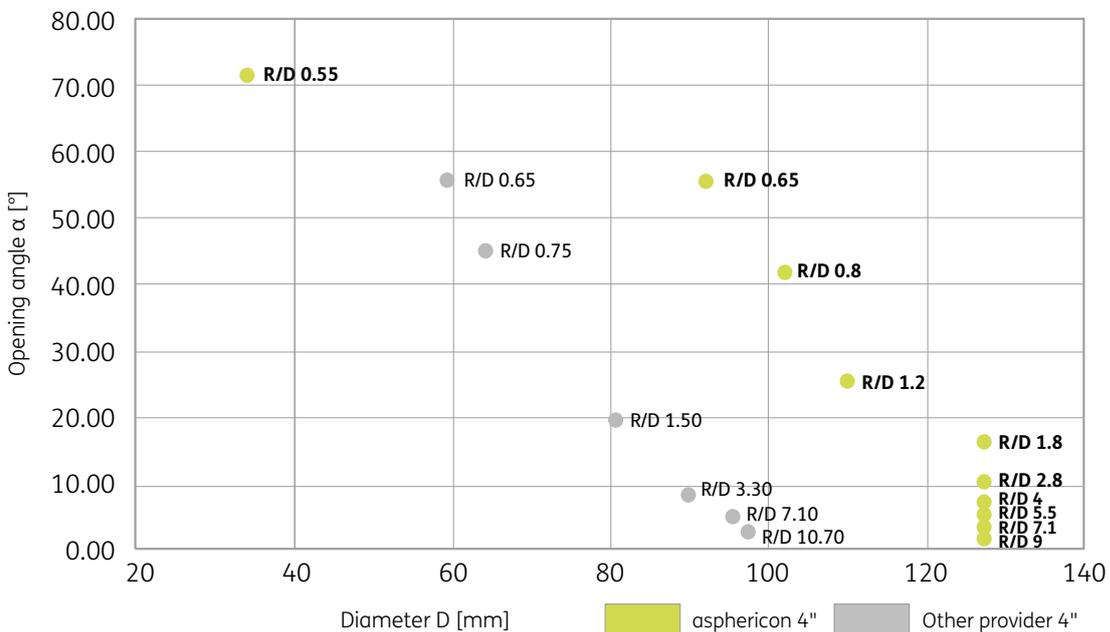
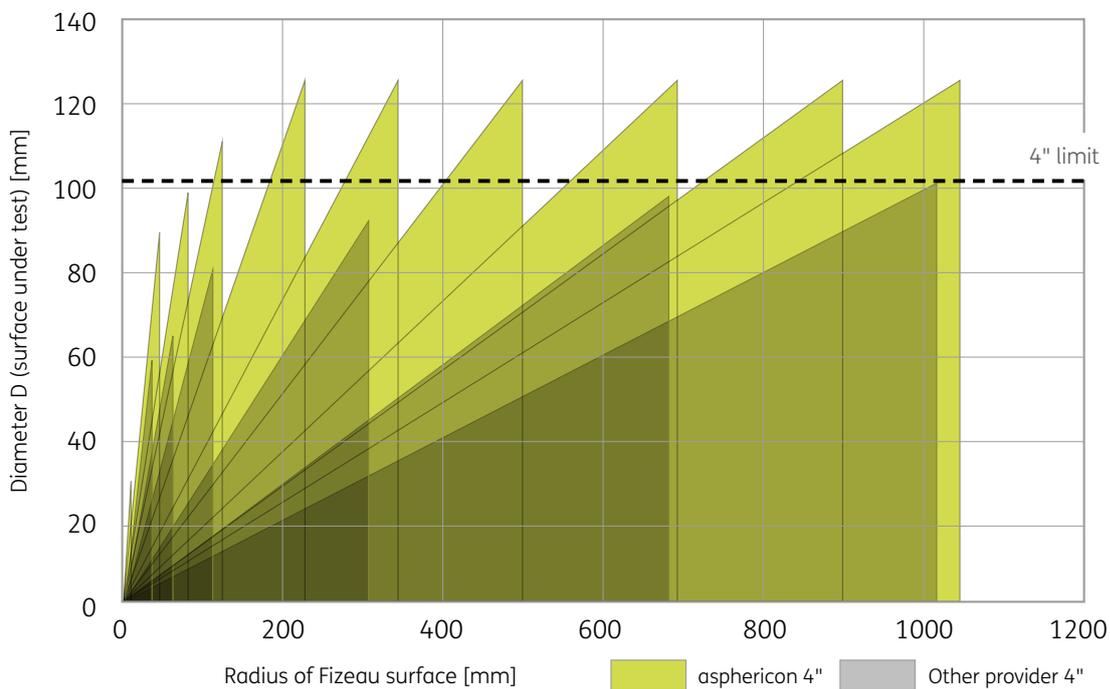
Both Fizeau lenses have a 4" input beam diameter, which leads to a limited measurement range for spherical designs. Whereas the a|FizeriC widens intrinsically and thus, achieves a larger aperture diameter (see additional measuring range).



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Largest measuring range **through aspherization**

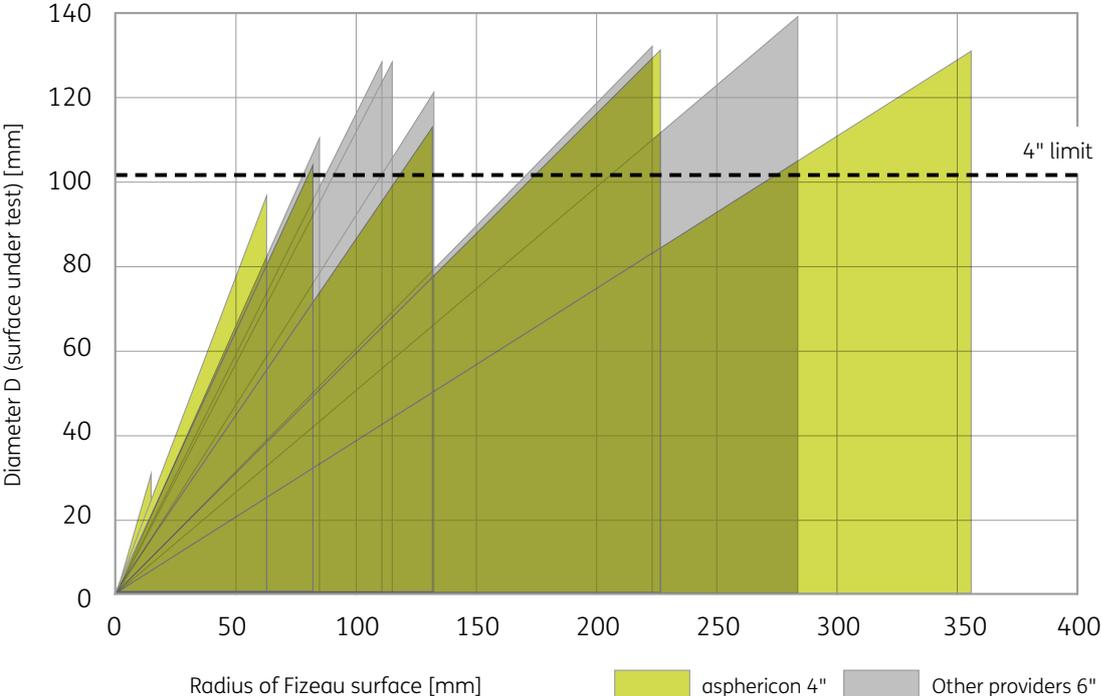
COMPARISON – ASPHERICON & OTHER 4" PROVIDER



Compared to all other Fizeau lenses on the market, the a|FizeriC offers a significantly increased measuring range, which is especially advantageous with small aperture ratios. Above that, the radii of the Fizeau surfaces were selected to close the existing gaps.

No additional adapters or beam expanders are required for using the a|FizeriC enhanced measuring range. Therefore, the a|FizeriC even chases currently available 6" Fizeau lenses.

COMPARISON – ASPHERICON 4" & OTHER 6" PROVIDERS



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Product Family

10 INNOVATIVE DESIGNS FOR THE COVERAGE OF A WIDE SPECTRUM

In close cooperation with leading measurement engineers, asphericon has put together a portfolio of ten 4" lenses. A well-chosen spacing of Fizeau radii (19 mm to 1143 mm) and very high R/D coverage (0.55 to 9) provides you with the highest flexibility for any type of measurement task. Additional options are two quality levels of the Fizeau surface ($\lambda/10$, $\lambda/20$). A 4" Zygo-Bayonet connector ensures easy and fast integration into conventional measuring instruments.

Are you looking for a customized solution for your application? Feel free to ask us! We'll develop an individual solution for you.



world's
only!

R/D	R _{Ref} [mm]	D _{FIZEAU} [mm]	WAVEFRONT DEFORMATION**	QUALITY FIZEAU SURFACE
0.55	19	34.55	1.5 λ PV	λ/10 λ/20*
0.65	60	92	1.5 λ PV	λ/10 λ/20*
0.8	81	101.6	1.5 λ PV	λ/10 λ/20
1.2	132	110	1.5 λ PV	λ/10 λ/20
1.8	228	127	1.5 λ PV	λ/10 λ/20
2.8	355	127	1.5 λ PV	λ/10 λ/20
4	508	127	1.5 λ PV	λ/10 λ/20
5.5	699	127	1.5 λ PV	λ/10 λ/20
7.1	902	127	1.5 λ PV	λ/10 λ/20
9	1143	127	1.5 λ PV	λ/10 λ/20

* on request | ** Typical max. wavefront deformation for single pass at T = 22°, other accuracies on request.

Please notice: For high accuracies we recommend a vertical measurement setup, although the transmission spheres work in horizontal setups as well.

ADDITIONAL INFORMATION: EXPECTED RETRACE ERROR AND PEAK-TO-VALLEY VALUE

To insure peak cavity induced retrace errors will contribute less than the specified RMS value up to reference-to-part radius ratios of 4:1 the as-built transmission sphere wavefront slope is controlled. For a better understanding, consider the following example:

A ratio of 4:1 for a transmission sphere with focal length f/0.55 corresponds to a reference surface with radius 19 mm and a test sphere with radius 4.75 mm. Cavities that yield ratios > 4:1 may cause errors that exceeding the specified RMS.

The peak-to-valley value (PV) defines the maximum permitted difference between maximum and minimum values of the surface form deviation in total:

$$PV = |x_{\max} - x_{\min}|$$

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Handling Concept

ONE GLANCE. ONE HANDLE.

Timeless design, a form-fit and transport-secure locking system, user-friendly removal and stowing – the a|FizeriC not only sets new technical standards but will also impress you with its ultra-modern packaging system.

After opening the box, a specially developed handle area ensures easy removal and the safe insertion of the lens into the measuring instrument. Stowing the lens is just as easy. Once stored, you can always clearly see which lens is contained in the box.



Now available: Reference sphere

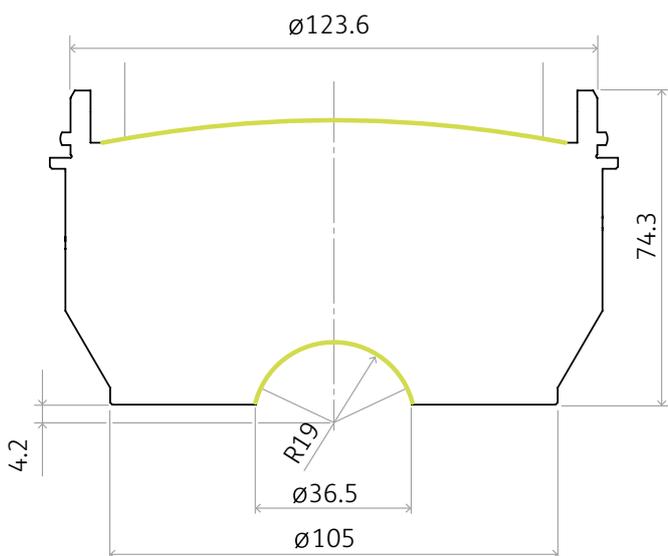
REFERENCE SPHERE FOR a|FIZERIC 4" 0.55

For even more accurate measurement results we offer a reference sphere for a|FizeriC 4" 0.55 now. The reference sphere enables a quality increase and is useful for all metrology tasks that require

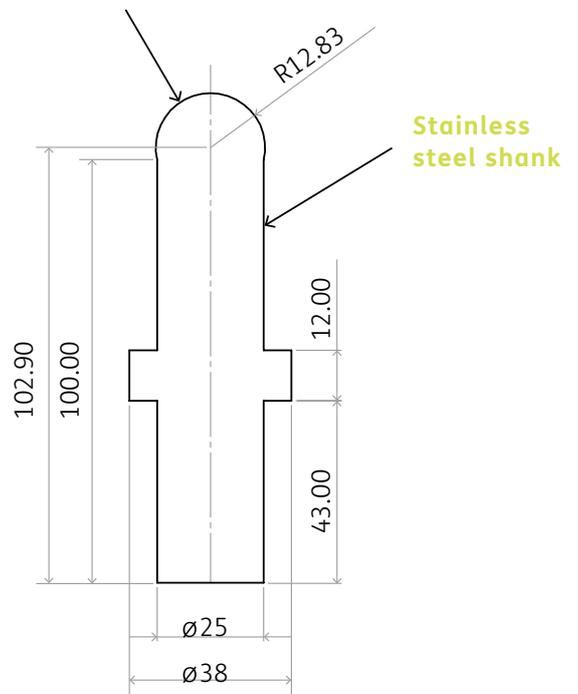
an optical high NA $\lambda/20$ surface. Thanks to a stainless steel shank the reference sphere is easy to align. For proper calibration it is supplied with manual.

PROFILE a|FIZERIC 4" 0.55 & DIMENSIONS REFERENCE SPHERE

Profile a|FizeriC 4" 0.55



Super polished glass surface





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