

WHY YOU SHOULD TAKE ADVANTAGE OF DOCTER OPTICS TECHNOLOGY.

Our customers come to us with novel ideas and unusual requirements. However, no matter what their needs, they can count on us for the right production technology or combination of technologies required to obtain the best possible optical solution in terms of economy and quality.

New types of multifunctional aspheres, free-form lenses, lens arrays and light pipes can be economically produced with the process developed by Docter Optics for the production of double-sided precision-molded optical components.

- That makes Docter Optics the choice of preference when it comes to turning optical ideas into marketable products.
- Docter Optics offers a wide range of solutions for the production and processing of optical components.
- Docter Optics can accommodate customer specific needs and has the resources required for mass production as well as limited runs of niche products.

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ECONOMICAL PRODUCTION OF
PRECISION GLASS COMPONENTS.
OUR CORE COMPETENCY.

DOCTER OPTICS: GUARANTEED ADDED VALUE FOR OUR CUSTOMERS.

Type	Dimensions	Best possible contour tolerance for the application		Typical quantities	Materials	Docter Optics production process	
		up to	Example, dimension in mm			Ground and polished	Molded
Aspheres	∅ 5 - 165 mm	> 4 µm Peak-to-Valley	∅ 50 ± 5 µm	> 500	B270, F2, Pyrex, ²⁾		●
Spheres	∅ 5 - 165 mm	> 4 µm Peak-to-Valley		> 500	B270, F2, Pyrex, ²⁾		●
	∅ 3 - 100 mm	λ/4	∅ 50 ± λ/2	> 100 ¹⁾	As requested ³⁾	●	
Free-form lenses	5 - 165 mm	> 4 µm Peak-to-Valley		> 100	B270, F2, Pyrex, ²⁾		●
Lens arrays, integrator plates	10 x 10 bis 130 x 130 mm	> 2 µm Peak-to-Valley (contour deviation of individual lenses)	∅ 50 ± 5 µm	> 500	B270, F2, Pyrex, ²⁾		●
Light pipes	High degree of thinness	> 4 µm Peak-to-Valley	40 x 8 x 18: 40 µm 10 x ∅ 6 x ∅ 2: 8 µm	> 500	B270, F2, Pyrex, ²⁾	●	●
Prisms	up to 120 mm edge length	> 10 µm Peak-to-Valley		> 300	B270, F2, Pyrex, ²⁾		●
	up to 110 mm edge length	λ/10 (as a function of geometry)	Edge length 50 mm ± λ/4	> 50	As requested ³⁾	●	
Aspheric and free-form mirrors	10 - 150 mm edge length	> 4 µm Peak-to-Valley		> 500	B270, F2, Pyrex, ²⁾		●
Flat and spheric mirrors	3 - 100 mm edge length	λ/10 (as a function of geometry)	∅ 50 mm ± λ/4	> 100	As requested ³⁾	●	

1) Including samples and one-of-a-kind components 2) Other types of technical glass available upon request 3) Virtually all optical glass qualities, color and filter glass, glass ceramics, quartz

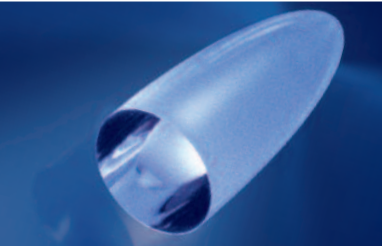

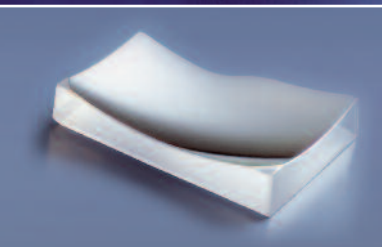

When it comes to precision components, you can count on Docter Optics for the products and services you need along your entire added-value chain. The reason why is that Docter Optics uses the most advanced production and coating technologies available to produce optical glass components.

Docter Optics not only uses the most appropriate method for the production of optical components in terms of economy and technical considerations, but also takes into account all customer requirements. For example, Docter Optics always designs components to make production and assembly as efficient as possible and also makes sure that products are designed to permit automated packaging.

The following services complement the extensive Docter Optics offering of value-added services:

- Support in the area of *optical design* to leverage the possibilities offered by advanced production processes and enhance the functionality of components and subassemblies
- Development of *new coating systems* covering a broad spectrum of wavelengths to meet customer requirements and implementation with advanced coating lines
- Consultation with the customer for purpose of defining methods and criteria for *quality management, auditing and certification* according to international standards

	<p>Aspheres</p> <ul style="list-style-type: none"> • Single and double side molded • Biconvex, planoconvex, biconcave, planoconcave and meniscusses • With or without flange • Conventional post-processing available
	<p>Spheric lenses</p> <ul style="list-style-type: none"> • Molded or ground and polished using advanced CNC technology • Biconvex, planoconvex, biconcave, planoconcave and meniscusses • With or without flange
	<p>Free-form lenses</p> <ul style="list-style-type: none"> • Complex component geometries reduce the number of optical surfaces required and can support completely new functions • Virtually any single or double side molded geometry is possible • Optical design services or support available upon request
	<p>Arrays/Integrator plates</p> <ul style="list-style-type: none"> • Single and double side molded flat components in combination with spheric, aspheric or free-form elements or microlenses

	<p>Light pipes</p> <ul style="list-style-type: none"> • Production of optical components with a high degree of thinness as light pipes with plano, cylindrical, ellipsoid, parabolic or other boundaries • Molded or ground and polished
	<p>Prisms</p> <ul style="list-style-type: none"> • Conventional production or molded as combined prismatic bodies • Use of combination of technologies possible upon request
	<p>Aspheric and free-form mirrors</p> <ul style="list-style-type: none"> • Complex geometries • High-quality coatings: Wavelengths UV (120nm) to IR (3000nm)
	<p>Mirrors, flat/spheric</p> <ul style="list-style-type: none"> • Various thicknesses, sizes, edges and flanges • Advanced coating processes (see above)