



Q U A R T Z S O L U T I O N S I N C .



**QS**  
QUARTZ SOLUTIONS INC.

# OPTICAL GLASS



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# OUR PRODUCT AND US

## Laser Optics from Quartz glass by QS- Solutions

Are you in need of protection windows or lenses for your laser applications?  
We are dedicated in supporting you in finding the right products for your application quickly and easily.

As a company with many years of special glass expertise, QS convinces with optical components for laser welding and cutting systems.

QS offers a wide range of debris shields made of high-purity synthetically fused silica as well as natural quartz glass. Due to different coating variations, we can supply suitable protective optics and lenses for nearly every common laser type and laser head.

Based on our knowledge of the special glass market and by having an influence on the basic material, we also create an excellent price-performance ratio. Whether protection discs for laser welding or cutting, scanner windows or lenses: Benefit from our many years of experience in the procurement of raw materials and processing of quartz glass.

We offer you an extensive stock range as well as customized products, individual advice and flexible delivery schedules adapted to your needs. In doing so, we guarantee you a approved and consistently high quality.

Would you like individual advice? Please contact us



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PROTECTIVE WINDOWS FOR LASEROPTICS



# PROTECTIVE WINDOWS FOR LASEROPTICS

# OPTICAL ANTIREFLECTION-COATINGS

“Antireflective coating enhances performance !”

Each beam of light generates a back reflection during the transition from one into another medium.

Antireflective coatings are used to minimize effects like loss of power and the appearance of dangerous hot spots caused by the back reflection.

Antireflective coatings (short AR-coating) are used in a variety of optics as they reduce the reflection of glass surfaces.

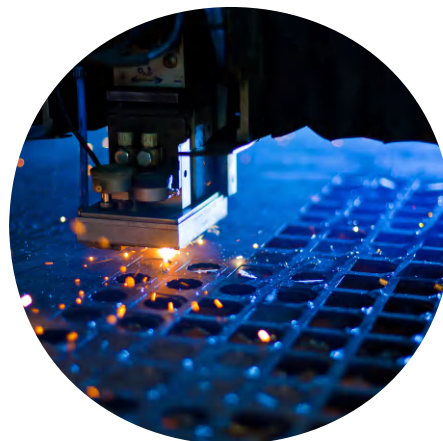
The increased light transmission and a reduction of aberrations are the main advantages.

## PRODUCT FEATURES

- Single layer - AR (advantageous for materials with high refractive index)
- Narrow-band AR coatings (e.g. for V-type single laser wavelength)
- Broadband AR coatings
- Multispectral AR coatings

## TYPICAL APPLICATIONS

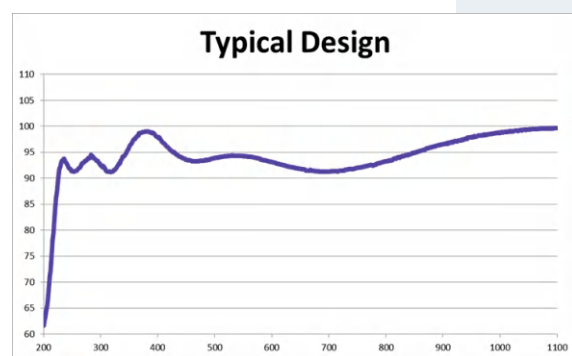
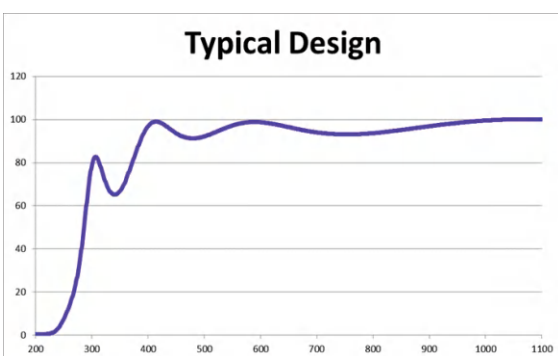
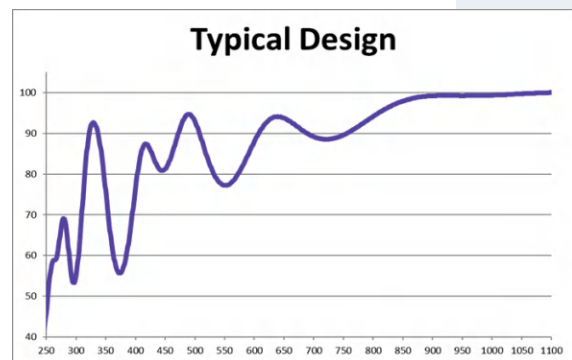
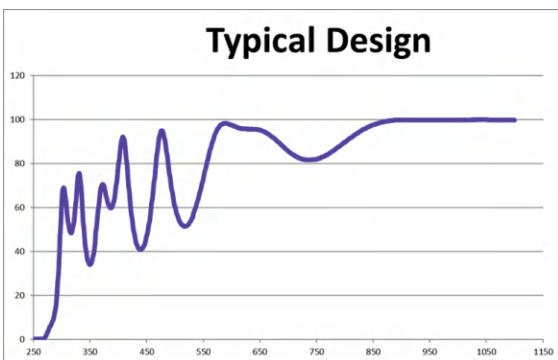
- Antireflective sight glass window to protect high-quality laser optics from splashing material
- Antireflective laser scanner window



# THE FOLLOWING SPECIFICATIONS ARE NECESSARY FOR A QUOTATION

- Required wavelength range
- Substrate material  
(Fused Silica, BK7, Borosilicate glass 3.3, Float glass, Sapphire and more)
- Dimension tolerances
- Transmission output and/or reflection
- Angle of incidence in degrees
- Laser power density in  $W/cm^2$  (cw)
- Energy density in  $J/cm^2$  (pulsed laser)

## EXAMPLE CURVES FOR COMMON ANTI-REFLECTIVE COATINGS



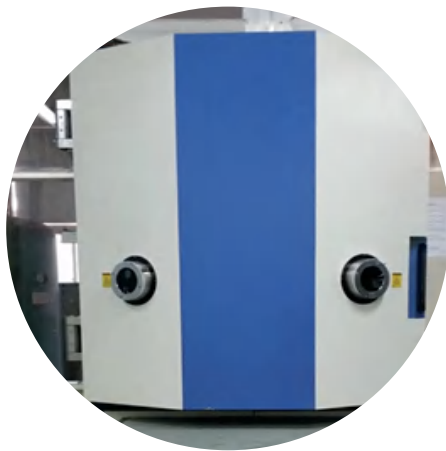
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# PROTECTIVE WINDOWS FOR DIODE-, DISC-, ND:YAG- AND FIBER-LASERS

Used as the last optic to be placed before the working area to protect the high-class laser optics from material spilling during the laser welding and cutting process.

## COATING RANGE

All AR-Coatings can be offered with a wavelength range between 200-3000nm.  
Due to different coating materials and designs, we are able to influence the broad band coating.



## TRANSMISSION MEASUREMENTS

Our spectral transmission tests are made in cooperation with the laser center Hannover.

## WE ARE ALSO ABLE TO OFFER YOU LASER DISCS WITHOUT ANTI-REFLECTIVE COATING!

Please feel free to contact us if your need laser disc is not stated in the list and let us have your specification (diameter, coating and so), that we can arrange an individual offer for you

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# STANDARD SPECIFICATIONS FOR LASER PROTECTION WINDOWS

- Standard substrate: Fused Silica (for lasers with higher output power)
- Standard tolerances:  $\varnothing \pm 0,1\text{mm}$  or  $+0/-2,0\text{mm}$
- Thickness:  $\pm 0,1\text{mm}$  or  $+0/-0,2\text{mm}$
- Edges grinded with facettem ( f.e.  $0.3\text{ mm} \times 45^\circ$ )
- Both sides mechanically polished  $\lambda/4-\lambda/6$
- Scratch/dig 60/40 or 40/20
- Typical Standard Coatings: @1064nm  $T \geq 99,6\%$  & @633nm  $T \geq 95\%$  or broad band coating: for example, @900-1080nm  $T \geq 99.5\%$
- Smudge-proof and scratch-resistant, adhesive peeling test, cleaning with alcohol mixture in a dust-free chamber ultrasonic cleaning

## OVERVIEW OF QUARTZ GLASS MATERIALS QUALIFIED BY GVB GMBH & PARTNERS FOR LASER APPLICATIONS

- Natural quartz glass EN08, EN07
- Synthetic quartz glass FS03 & Viosil SQ

For more information concerning the different properties of the materials, please visit our homepage: [www.quartz-solutions.com](http://www.quartz-solutions.com)



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## AN EXCERPT OF OUR STOCK ASSORTMENT

	SIZE/mm	COATING-RANGE /nm
Debris Shield	D22,35 T4	900-1080
Debris Shield	D27 T2	1064/1070
Debris Shield	D30 T1,6	905-1080
Debris Shield	D30 T5	900-1080
Debris Shield	D33,3 T1,5	900-1080
Debris Shield	D34 T5	1030-1070
Debris Shield	D36 T5	900-1080
Debris Shield	D37 T7	900-1080
Debris Shield	D38,1 T5	900-1080
Debris Shield	D42 T9	1025-1080
Debris Shield	D45 T3	1030-1070
Debris Shield	D50 T2	900-1070
Debris Shield	D50 T3	900-1100
Debris Shield	D55 T1,5	905-1080
Debris Shield	D60 T3	1064-1070
Debris Shield	D96 T3	1030-1090
Debris Shield	D134 T3	T1030-1090

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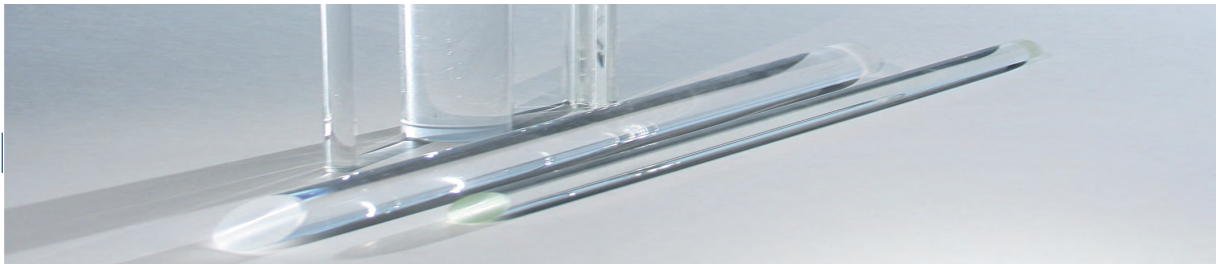


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## TUBES

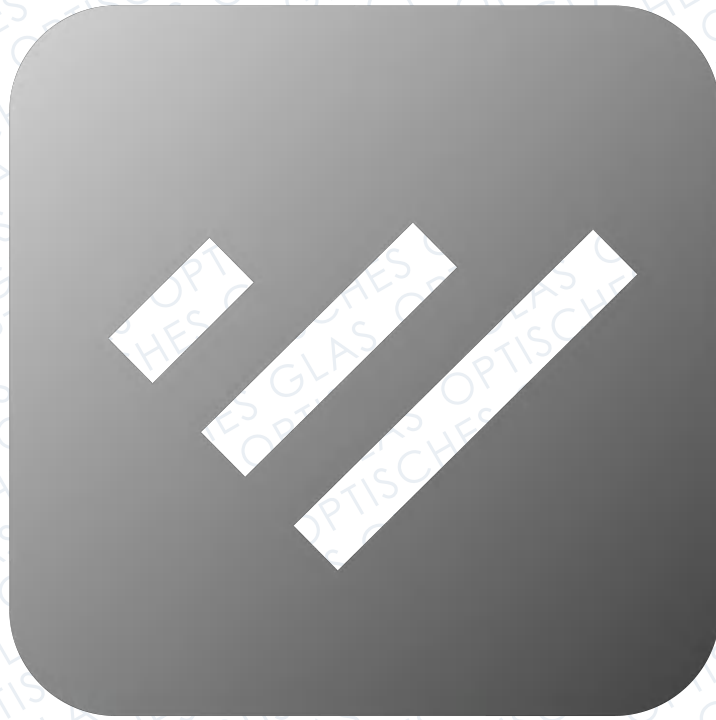


## RODS



## OPTICAL GLASS





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