



PROTECT
LASERSCHUTZ GMBH

Technical data
Laser safety product catalogue 2011

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Product catalogue



All our frame styles, laser safety products for medical applications, laser protection windows, IPL products, IR-vision equipment and all products for your perfect eye protection can be found in our product catalogue 2011. If you do not have the product catalogue, please ask for it: Phone: +49 (0) 911-96 44 730 Or download it at www.protect-laserschutz.de.

Please note:

This short overview is for fast search of our laser protection filters depending on the application, only. In no case it is possible to choose your laser protection filter only on basis

of this overview. You always have to adapt the certified protection levels according to EN 207 with your specific application.

	Excimer	UV	Nd:YAG (4x)	Nd:YAG (3x)	Argon	Nd:YAG KTP	Dye	HeNe	Diodes	Ruby	Alexandrite	Ti:Sapphire	Diodes	Diodes	Disc	Nd:YAG	Fibre	Telecom	Telecom	Ho:YAG	Er:YAG	CO2
wavelength (nm)	193	248	266	355	515	532	595	633	650	694	755	800	808	940	1030	1064	1080	1320	1550	2100	2940	10600
mineral glass:																						
14039H															x	x	x	x	x	x	x	
14059H															x	x	x	x	x	x	x	x
0142	x	x	x	x	x	x																
0154											x	x	x	x	x	x	x					
0155											x	x	x	x	x	x	x					x
0159																						x
0167							x	x						x	x							
0170								x	x	x	x	x	x	x	x	x	x					
0174	x	x	x																			
0175								x	x	x	x	x	x									
0193	x	x	x	x	x	x									x	x	x	x	x			
with di-electrical coating:																						
0152										x	x											
0153															x	x	x					
0157											x	x	x	x	x	x	x					
0160	x	x	x	x	x	x							x	x	x	x	x					
0165	x	x	x	x	x	x								x	x	x	x					
0177									x						x	x	x					
0178							x	x	x	x					x	x	x	x	x	x	x	
0179								x	x	x	x	x	x	x	x	x	x					
0185											x	x	x	x	x	x	x					x
0188						x	x															
0191															x	x	x					
0197							x	x	x	x												
special plastic:																						
0145	x	x	x																			x
0148											x	x	x	x	x	x						x
0149	x	x	x	x	x	x																
0156					x	x	x	x	x	x												
0158A	x	x	x									x	x	x	x	x	x					
0158T	x	x	x									x	x	x	x	x	x					
0158ST	x	x	x									x	x	x	x	x	x					
0166	x	x	x	x	x	x						x	x	x	x	x	x					
0176											x	x	x	x	x	x	x					
0180																						x
0181																						x
0182																					x	
0190	x	x	x	x				x	x													
0195								x	x	x												
0198																						x

Information to this brochure:

This information brochure serves as a guideline to our product portfolio, only. To choose appropriate laser safety products always compare the necessary protection levels/OD of your specific application with the certified protection levels/OD of the product. We would be pleased to assist you in choosing the products most suitable. Please transmit your laserdata by using the inquiry form in our webpage www.protect-laserschutz.de and we will calculate the necessary protection levels/OD as a free-of-charge service.

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Our general terms and conditions (AGB) can be read on our website www.protect.laserschutz.de or we will send on request.

Information to the filter specification:

The mentioned filter specifications are just for a first information. Specially the values for thickness and VLT are average values and may vary from mold to mold and due to different type of production. The colours can provide only an idea of the actual colour individually seen. The colour vision through the filter can be influenced by environmental conditions, too.

Remark:

Frames marked with (**) are in testing and application procedure for the EC-type-certification or in the repeated certification according to EN 207:2009 and EN 208:2009. The values mentioned are the expected protection ratings according to our current state of knowledge at the time of printing this catalogue. These values are without obligation and subject to a corresponding certification.

Values of the protection levels marked with (*) are in testing and application procedure for the EC-type-certification or in the repeated certification according to EN 207:2009 and EN 208:2009. The values mentioned are the expected protection ratings according to our current state of knowledge at the time of printing this catalogue. These values are without obligation and subject to a corresponding certification.

Information to the OD-Graphs:

The graphs show a typical curve of the individual filter. Due to fluorescence effects while measuring, some filter graphs may show a lower value as the filter provide by itself, specially in the UV. To draw conclusions on the certified laser protection ratings from the OD values are not possible. PROTECT-Laserschutz GmbH can guarantee the certified protection ratings only. OD-values and -tables have only informative character and applicable only for interested parties outside Europe, e.g. outside the area of application of the standards EN 207, EN 208 and EN 12254.

OD = optical density
λ = wavelength (nm)

Filter 014039H

Filter 014059H

Filter specification

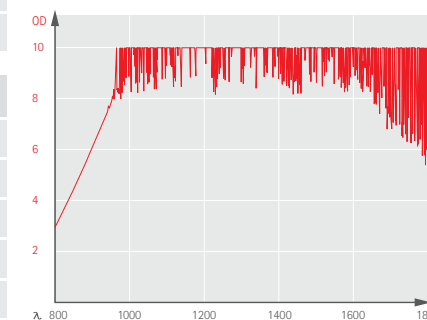
Application: 014039H: Diodes, Disc, Nd:YAG, Fibre, Telecom, Ho:YAG, Er:YAG
014059H: Diodes, Disc, Nd:YAG, Fibre, Telecom, Ho:YAG, Er:YAG, CO2
Material: mineral glass laminated
Filter colour: light grey
VLT: appr. 68%

Optical density filter 014039H

900-1000	OD 5+
>1000-1030	OD 7+
>1030-1400	OD 8+
>1400-3000	OD 4+

Optical density filter 014059H

940-1000	OD 4+
>1000-1400	OD 8+
>1400-1800	OD 5+
>1800-3000	OD 4+
10000-11000	OD 5+



Protection levels filter 014039H – total thickness: appr. 5,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0140-3,9-U-01	BGB10-0140-3,9-U-01A	BGB10-0140-3,9-R-xx xx=silver(20), titan(21)	BGU10-0140-3,9-G-20	BGU10-0140-3,9-O-21
900-1000 DIR	LB5	LB5*	LB5	LB5	LB5
>1000-1030 D	LB5	LB7*	LB7	LB7	LB7
>1000-1030 IR	LB7	LB7*	LB7	LB7	LB7
>1030-1400 D	LB5	LB7*	LB7	LB7	LB7
>1030-1400 IR	LB7	LB8*	LB8	LB8	LB8
>1400-3000 DI		LB4*	LB4	LB4	LB4
Certification according to EN 207:2009	PF CE	PF CE*	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

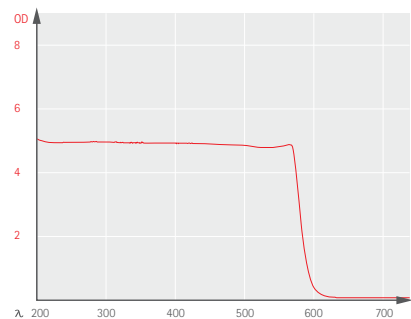
Protection levels filter 014059H – total thickness: appr. 7,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0140-5,9-U-01	BGB10-0140-5,9-U-01A	BGB10-0140-5,9-R-xx xx=silver(20), titan(21)	BGU10-0140-5,9-G-20	BGU10-0140-5,9-O-21
940-1000 DIR	LB4	LB4*	LB4	LB4	LB4
>1000-1400 D	LB5	LB7*	LB7	LB7	LB7
>1000-1400 IR	LB7	LB8*	LB8	LB8	LB8
>1400-1800 D		LB4*	LB5	LB5	LB5
>1400-1800 I		LB4*	LB4	LB4	LB4
>1800-3000 DI		LB4*	LB4	LB4	LB4
10000-11000 DI		LB4*	LB5	LB5	LB5
Certification according to EN 207:2009	PF CE	PF CE*	PF CE	PF CE	PF CE

Filter 0142

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm), Argon, KTP
 Material: mineral glass laminated
 Filter colour: orange
 VLT: appr. 35%



Optical density filter 0142	
180-315	OD 10+
>315-532	OD 8+

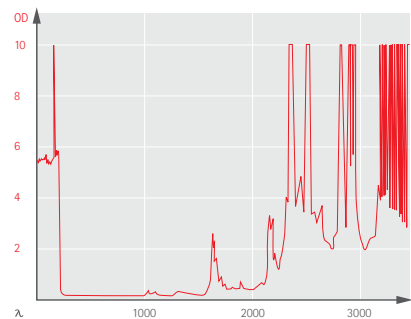
Protection levels filter 0142 – total thickness: appr. 5,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0142-U-01	BGB10-0142-U-01A	BGB10-0142-R-xx xx=silver(20), titan(21)	BGU10-0142-G-20	BGU10-0142-O-21
180-315 D	LB9	LB10*	LB10	LB10	LB10
180-315 IR	LB4	LB4*	LB5	LB5	LB5
>315-532 D	LB5	LB6*	LB6	LB6	LB6
>315-532 I	LB7	LB8*	LB8	LB8	LB8
>315-532 R	LB7	LB7*	LB7	LB7	LB7
Certification according to EN 207:2009	PF CE	PF CE*	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

Filter 0145

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm), CO2
 Material: special plastics
 Filter colour: colourless
 VLT: appr. 85%



Optical density filter 0145	
180-315	OD 5+
9000-11000	OD 4+

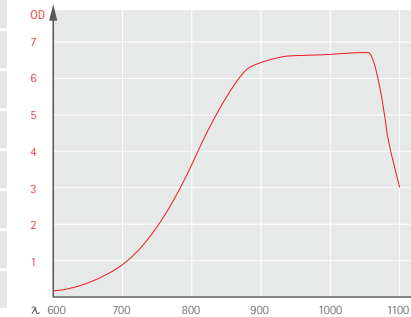
Protection levels filter 0145 – total thickness: appr. 6,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.		BKB10-0145-U-01A	BKB10-0145-R-xx xx=silver(20), titan(21)	BKU10-0145-G-20	BKU10-0145-O-21
180-315 D*	LB5*	LB5*	LB5*	LB5*	LB5*
180-315 IR*	LB3*	LB3*	LB3*	LB3*	LB3*
9000-11000 DI*		LB4*	LB4*	LB4*	LB4*
Certification according to EN 207:2009	PF CE*	PF CE*	PF CE *	PF CE*	PF CE*

Filter 0148

Filter specification

Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: special plastics
 Filter colour: light green
 VLT: appr. 60%



Optical density filter 0148	
750-780	OD 2+
>780-805	OD 3+
>805-830	OD 4+
>830-860	OD 5+
>860-1070	OD 6+
>1070-1075	OD 5+
>1075-1085	OD 4+
>1085-1095	OD 3+

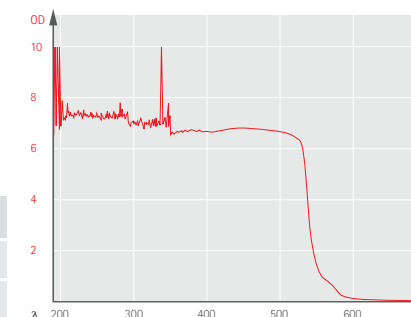
Protection levels filter 0148 – total thickness: appr. 3,1 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BKB10-0148-U-01	BKB10-0148-U-01A	BKB10-0148-R-xx xx=silver(20), titan(21)	BKU10-0148-G-20	BKU10-0148-O-21
750-780 DIR	LB2	LB2*	LB2	LB2	LB2
>780-805 DIR	LB3	LB3*	LB3	LB3	LB3
>805-830 DIR	LB4	LB4*	LB4	LB4	LB4
>830-860 DIR	LB5	LB5*	LB5	LB5	LB5
>860-1070 D	LB5	LB6*	LB6	LB6	LB6
>860-1070 IR	LB6	LB6*	LB6	LB6	LB6
>1070-1075 DIR	LB5	LB5*	LB5	LB5	LB5
>1075-1085 DIR	LB4	LB4*	LB4	LB4	LB4
>1085-1095 DIR	LB3	LB3*	LB3	LB3	LB3
Certification according to EN 207:2009	PF CE	PF CE*	PF CE	PF CE	PF CE

Filter 0149

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm), KTP
 Material: special plastics
 Filter colour: orange
 VLT: appr. 25%



Optical density filter 0149	
180-315	OD 7+
>315-532	OD 5+

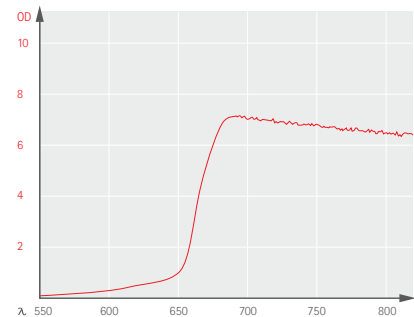
Protection levels filter 0149 – total thickness: appr. 3,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BKB10-0149-U-01		BKB10-0149-R-xx xx=silver(20), titan(21)	BKU10-0149-G-20	BKU10-0149-O-21
180-315 D	LB7		LB7	LB7	LB7
180-315 IR	LB3		LB3	LB3	LB3
>315-532 DIR	LB5		LB5	LB5	LB5
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

Filter 0152

Filter specification

Application: Ruby, Alexandrite
 Material: mineral glass with dielectrical coating
 Filter colour: turquoise
 VLT: appr. 65%



Optical density filter 0152	
694-755	OD 7+

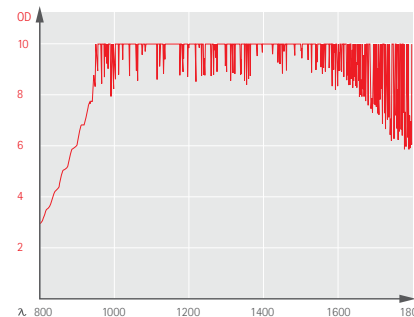
Protection levels filter 0152 - total thickness: appr. 2,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0152-U-01		BGB10-0152-R-xx xx=silver(20), titan(21)	BGU10-0152-G-20	BGU10-0152-O-21
694-755 D	LB5		LB5	LB5	LB5
694-755 IR	LB7		LB7	LB7	LB7
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

Filter 0153

Filter specification

Application: Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: light grey
 VLT: appr. 58%



Optical density filter 0153	
1025-1100	OD 9+

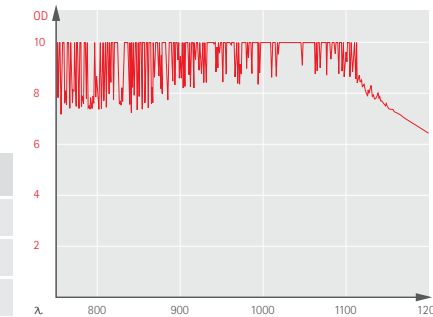
Protection levels filter 0153 - total thickness: appr. 3,9 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.			BGB10-0153-R-xx xx=silver(20), titan(21)	BGU10-0153-G-20	BGU10-0153-O-21
1025-1100 D			LB8	LB8	LB8
1025-1100 I			LB9	LB9	LB9
1025-1100 R			LB9	LB9	LB9
1025-1100 M			LB9Y	LB9Y	LB9Y
Certification according to EN 207:2009			PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

Filter 0154

Filter specification

Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass
 Filter colour: turquoise
 VLT: appr. 52%



Optical density filter 0154	
705-760	OD 5+
>760-1080	OD 8+
>1080-1125	OD 7+

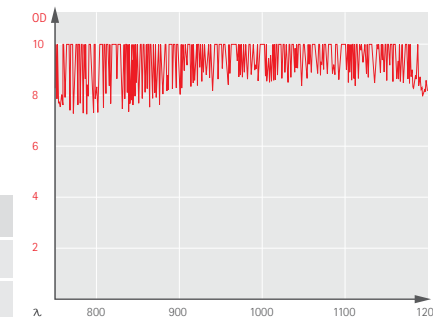
Protection levels filter 0154 - total thickness: appr. 2,7 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0154-U-01	BGB10-0154-U-01A	BGB10-0154-R-xx xx=silver(20), titan(21)	BGU10-0154-G-20	BGU10-0154-O-21
705-760 DIR	LB5	LB5*	LB5	LB5	LB5
>760-1080 D	LB5	LB6*	LB6	LB6	LB6
>760-1080 IR	LB7	LB8*	LB8	LB8	LB8
>1080-1125 D	LB5	LB6*	LB6	LB6	LB6
>1080-1125 IR	LB7	LB7*	LB7	LB7	LB7
900-1080 M			LB8Y	LB8Y	LB8Y
Certification according to EN 207:2009	PF CE	PF CE	PF CE	PF CE	PF CE

Filter 0155

Filter specification

Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre, CO2
 Material: mineral glass laminated
 Filter colour: turquoise
 VLT: appr. 45%



Optical density filter 0155	
750-1200	OD 8+
9000-11000	OD 5+

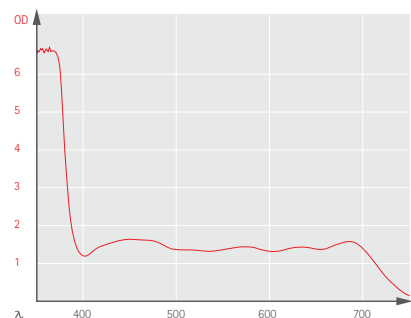
Protection levels filter 0155 - total thickness: appr. 5,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0155-5,5-U-01	BGB10-0155-5,5-U-01A	BGB10-0155-5,5-R-xx xx=silver(20), titan(21)	BGU10-0155-5,5-G-20	BGU10-0155-5,5-O-21
750-1200 D	LB5	LB7*	LB7	LB7	LB7
750-1200 IR	LB7	LB8*	LB8	LB8	LB8
9000-11000 DI		LB5*	LB5	LB5	LB5
Certification according to EN 207:2009	PF CE	PF CE	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

Filter 0156

Filter specification

Application: Alignment VIS
 Material: special plastics
 Filter colour: grey
 VLT: appr. 3,5%



Optical density filter 0156

400-700	OD 1-2
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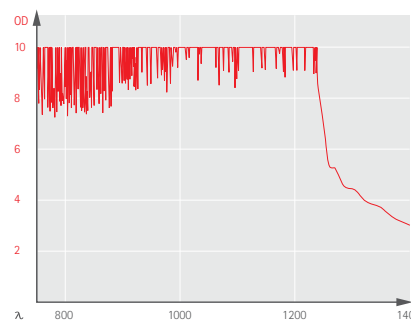
Protection levels filter 0156 - total thickness: appr. 1,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BKB10-0156-U-01		BKB10-0156-R-xx xx=silver(20), titan(21)	BKU10-0156-G-20	BKU10-0156-O-21
400-700	RB1		RB1	RB1	RB1
Certification according to EN 208:2009	PF CE		PF CE	PF CE	PF CE

Filter 0157

Filter specification

Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: turquoise
 VLT: appr. 44%



Optical density filter 0157

750-950	OD 8+
>950-1200	OD 9+

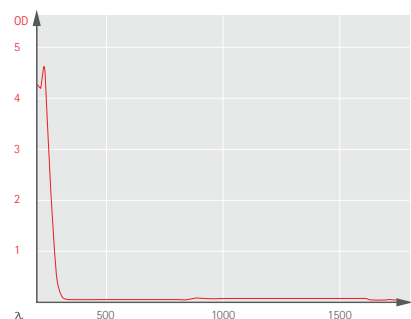
Protection levels filter 0157 - total thickness: appr. 2,6 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0157-U-01	BGB10-0157-U-01A	BGB10-0157-R-xx xx=silver(20), titan(21)	BGU10-0157-G-20	BGU10-0157-O-21
750-950 D	LB5	LB6*	LB6	LB6	LB6
750-950 IR	LB7	LB8*	LB8	LB8	LB8
>950-1200 D	LB5	LB7*	LB7	LB7	LB7
>950-1200 I	LB7	LB8*	LB9	LB9	LB9
>950-1200 R	LB7	LB8*	LB8	LB8	LB8
>950-1200 M			LB8	LB8	LB8
Certification according to EN 207:2009	PF CE	PF CE	PF CE	PF CE	PF CE

Filter 0159

Filter specification

Application: CO2 High-Power
 Material: mineral glass
 Filter colour: colourless
 VLT: appr. 90%



Optical density filter 0159

9000-11000	OD 5+
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Protection levels filter 0159 - total thickness: appr. 3,7 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.		BGB10-0159-U-01A	BGB10-0159-R-xx xx=silver(20), titan(21)	BGU10-0159-G-20	BGU10-0159-O-21
9000-11000 DI		LB4*	LB5	LB5	LB5
Certification according to EN 207		PF CE	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

Filter 0158A

Filter 0158T

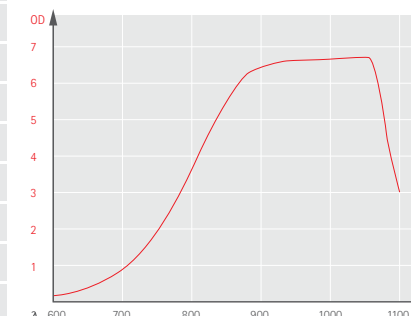
Filter 0158ST

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm), Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: special plastics
 Filter colour: yellow-greenish
 VLT: appr. 63%

Optical density Filter 0158A, 0158T, 0158ST

190-315	OD 7+
760-790	OD 2+
>790-805	OD 3+
>805-840	OD 4+
>840-860	OD 5+
>860-1030	OD 6+
>1030-1065	OD 7+
>1065-1080	OD 5+
>1080-1100	OD 3+



Protection levels filter 0158A total thickness: appr. 2,2 mm

Frame	ASTOR XL Diodes/YAG
Order No.	BKU10-0158-ASTOR XL
190-315 D	LB7
190-315 IR	LB4
760-790 DIR	LB2
>790-805 DIR	LB3
>805-840 DIR	LB4
>840-860 DIR	LB5
>860-1030 D	LB5
>860-1030 IR	LB6
>1030-1065 D	LB5
>1030-1065 IR	LB7
>1065-1080 DIR	LB5
>1080-1100 DIR	LB3
Certification according to EN 207:2009	PF CE

Protection levels filter 0158T total thickness: appr. 2,2 mm

Frame	TERMINATOR Diodes/YAG
Order No.	BKB10-0158-T-T
190-315 D	LB7
190-315 IR	LB4
760-790 DIR	LB2
>790-805 DIR	LB3
>805-840 DIR	LB4
>840-860 DIR	LB5
>860-1030 D	LB5
>860-1030 IR	LB6
>1030-1065 D	LB5
>1030-1065 IR	LB7
>1065-1080 DIR	LB5
>1080-1100 DIR	LB3
Certification according to EN 207:2009	PF S CE

Protection levels filter 0158ST total thickness: appr. 2,2 mm

Frame	STRATOR Diodes/YAG
Order No.	BKB10-0158-ST
190-315 D	LB7
190-315 IR	LB4
760-790 DIR	LB2
>790-805 DIR	LB3
>805-840 DIR	LB4
>840-860 DIR	LB5
>860-1030 D	LB5
>860-1030 IR	LB6
>1030-1065 D	LB5
>1030-1065 IR	LB7
>1065-1080 DIR	LB5
>1080-1100 DIR	LB3
Certification according to EN 207:2009	PF S CE



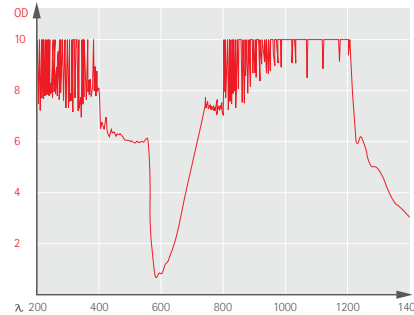
Filter 0160

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm + 1064 nm), Argon, KTP, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: amber
 VLT: appr. 5%

Optical density filter 0160

180-315	OD 10+
>315-532	OD 7+
750-950	OD 8+
>950-1200	OD 9+



Protection levels filter 0160 - total thickness: appr. 6,7 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0160-U-01	BGB10-0160-U-01A	BGB10-0160-R-xx xx=silver(20), titan(21)	BGU10-0160-G-20	BGU10-0160-O-21
180-315 D	LB9	LB10*	LB10	LB10	LB10
180-315 IR	LB4	LB4*	LB5	LB5	LB5
>315-532 D	LB5	LB7*	LB7	LB7	LB7
>315-532 IR	LB7	LB7*	LB7	LB7	LB7
>315-532 M			LB7	LB7	LB7
750-950 D	LB5	LB6*	LB6	LB6	LB6
750-950 IR	LB7	LB8*	LB8	LB8	LB8
750-900 M			LB8	LB8	LB8
>900-950 M			LB8	LB8	LB8
>950-1200 D	LB5	LB7*	LB7	LB7	LB7
>950-1200 I	LB7	LB8*	LB9	LB9	LB9
>950-1200 R	LB7	LB8*	LB8	LB8	LB8
>950-1200 M			LB8	LB8	LB8
Certification according to EN 207:2009	PF CE	PF CE	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

Filter 0166

Filter specification

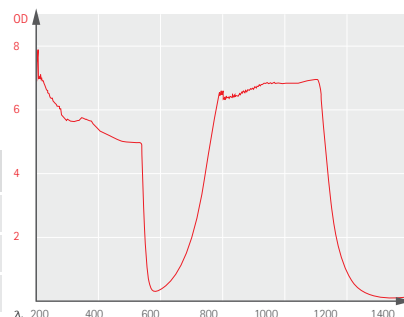
Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm + 1064 nm), KTP, Ti:Sa, Diodes, Disc, Nd:YAG
 Material: special plastics
 Filter colour: amber
 VLT: appr. 20%

Protection levels filter 0166 total thickness: appr. 2,4 mm

Frame	CONVEX Alu reinforced
Order No.	BKB10-0166-C-01A
190-315 D	LB7*
190-315 IR	LB4*
>315-532 DIRM	LB5*
800-1065 D	LB5*
800-1065 IR	LB7*
800-1065 M	LB6*
Certification according to EN 207:2009	PF CE

Optical density filter 0166

190-315	OD 7+
>315-532	OD 5+
800-1065	OD 7+



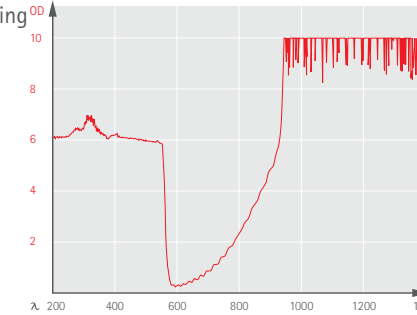
Filter 0165

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm + 1064 nm), Argon, KTP, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: amber
 VLT: appr. 18%

Optical density filter 0165

180-315	OD 10+
>315-532	OD 8+
930-1025	OD 7+
>1025-1100	OD 9+



Protection levels filter 0165 - total thickness: appr. 8,3 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0165-U-01	BGB10-0165-U-01A	BGB10-0165-R-xx xx=silver(20), titan(21)	BGU10-0165-G-20	BGU10-0165-O-21
180-315 D	LB9	LB10*	LB10	LB10	LB10
180-315 IR	LB4	LB4*	LB5	LB5	LB5
>315-532 D	LB5	LB7*	LB7	LB7	LB7
>315-532 IR	LB7	LB7*	LB7	LB7	LB7
>315-532 M			LB8	LB8	LB8
930-1025 D	LB5	LB7*	LB7	LB7	LB7
930-1025 IR	LB7	LB7*	LB7	LB7	LB7
>1025-1100 D	LB5	LB7*	LB7	LB7	LB7
>1025-1100 I	LB7	LB8*	LB9	LB9	LB9
>1025-1100 R	LB7	LB8*	LB8	LB8	LB8
>1025-1100 M			LB8	LB8	LB8
Certification according to EN 207:2009	PF CE	PF CE	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS

Filter 0167

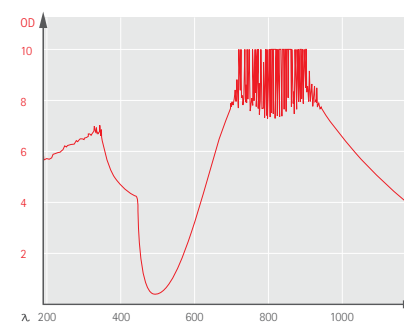
Filter specification

Application: Dye, HeNe, Diodes
 Material: mineral glass

Filter colour: blue-green
 VLT: appr. 9%

Optical density filter 0167

295-315	OD 2+
361-381	OD 2+
404-424	OD 2+
575-595	OD 2+
622-642	OD 2+
808	OD 5+
980	OD 5+



Protection levels filter 0167 - total thickness: appr. 6,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0167-U-01		BGB10-0167-R-xx xx=silver(20), titan(21)	BGU10-0167-G-20	BGU10-0167-O-21
295-315 D	LB2		LB2	LB2	LB2
361-381 D	LB2		LB2	LB2	LB2
404-424 D	LB2		LB2	LB2	LB2
575-595 D	LB2		LB2	LB2	LB2
622-642 D	LB2		LB2	LB2	LB2
808 DI	LB5		LB5	LB5	LB5
980 DI	LB5		LB5	LB5	LB5
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

Filter 0170

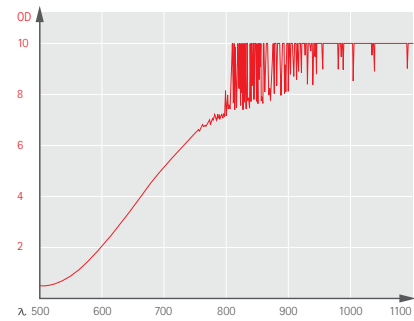
Filter specification

Application: HeNe, Diodes, Ruby, Alexandrite, Ti:Sa, Disc, Nd:YAG, Fibre

Material: mineral glass
Filter colour: blue-green
VLT: appr. 15%

Optical density filter 0170

610-640	OD 2+
>640-670	OD 3+
>670-705	OD 4+
>705-745	OD 5+
>745-780	OD 6+
>780-840	OD 7+
>840-1200	OD 8+



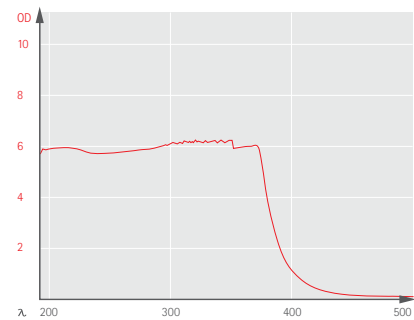
Protection levels filter 0170 – total thickness: appr. 6,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0170-U-01	BGB10-0170-U-01A	BGB10-0170-R-xx xx=silver(20), titan(21)	BGU10-0170-G-20	BGU10-0170-O-21
610-640 DIR	LB 2	LB 2*	LB 2	LB 2	LB 2
>640-670 DIR	LB 3	LB 3*	LB 3	LB 3	LB 3
>670-705 DIR	LB 4	LB 4*	LB 4	LB 4	LB 4
>705-745 DIR	LB 5	LB 5*	LB 5	LB 5	LB 5
>745-780 D	LB 5	LB 6*	LB 6	LB 6	LB 6
>745-780 IR	LB 6	LB 6*	LB 6	LB 6	LB 6
>780-840 D	LB 5	LB 7*	LB 7	LB 7	LB 7
>780-840 IR	LB 7	LB 7*	LB 7	LB 7	LB 7
>840-1200 D	LB 5	LB 7*	LB 7	LB 7	LB 7
>840-1200 IR	LB 7	LB 8*	LB 8	LB 8	LB 8
900-1200 M			LB8Y	LB8Y	LB8Y
Certification according to EN 207:2009	PF CE	PF CE*	PF CE	PF CE	PF CE

Filter 0174

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm)
Material: mineral glass
Filter colour: light yellow
VLT: appr. 85%



Optical density filter 0174

180-315	OD 9+
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Protection levels filter 0174 – total thickness: appr. 3,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0174-U-01		BGB10-0174-R-xx xx=silver(20), titan(21)	BGU10-0174-G-20	BGU10-0174-O-21
180-315 D	LB9		LB9	LB9	LB9
180-315 IR	LB4		LB4	LB4	LB4
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

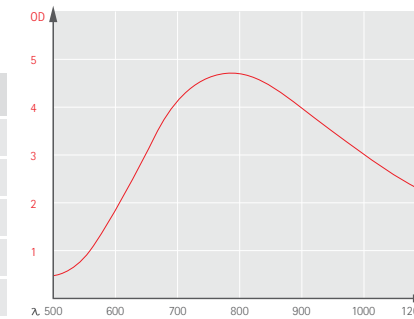
Filter 0175

Filter specification

Application: HeNe, Diodes, Ruby, Alexandrite, Ti:Sa
Material: mineral glass
Filter colour: blue
VLT: appr. 18%

Optical density filter 0175

610-645	OD 2+
>645-685	OD 3+
>685-755	OD 4+
>755-810	OD 5+
>810-910	OD 4+



Protection levels filter 0175 – total thickness: appr. 2,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0175-U-01		BGB10-0175-R-xx xx=silver(20), titan(21)	BGU10-0175-G-20	BGU10-0175-O-21
610-645 DIR	LB2		LB2	LB2	LB2
>645-685 DIR	LB3		LB3	LB3	LB3
>685-755 DIR	LB4		LB4	LB4	LB4
>755-810 DIR	LB5		LB5	LB5	LB5
>810-910 DIR	LB4		LB4	LB4	LB4
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

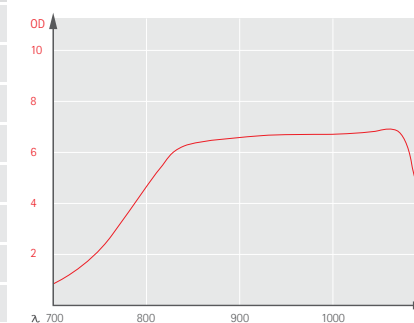
Filter 0176

Filter specification

Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
Material: special plastics
Filter colour: light green
VLT: appr. 57%

Optical density filter 0176

750-785	OD 2+
>785-805	OD 3+
>805-825	OD 4+
>825-855	OD 5+
>855-1070	OD 6+
>1070-1080	OD 5+
>1080-1090	OD 4+
>1090-1100	OD 3+



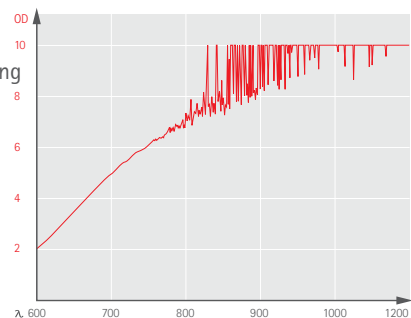
Protection levels filter 0176 – total thickness: appr. 3,1 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BKB10-0176-U-01		BKB10-0176-R-xx xx=silver(20), titan(21)	BKU10-0176-G-20	BKU10-0176-O-21
750-785 DIR	LB2		LB2	LB2	LB2
>785-805 DIR	LB3		LB3	LB3	LB3
>805-825 DIR	LB4		LB4	LB4	LB4
>825-855 DIR	LB5		LB5	LB5	LB5
>855-1070 D	LB5		LB5	LB5	LB5
>855-1070 IR	LB6		LB6	LB6	LB6
>1070-1080 DIR	LB5		LB5	LB5	LB5
>1080-1090 DIR	LB4		LB4	LB4	LB4
>1090-1100 DIR	LB3		LB3	LB3	LB3
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

Filter 0177 Eyewear only for use outside the EU ***

Filter specification

Application: Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: blue-green
 VLT: appr. 20%



Optical density filter 0177 – total thickness: appr. 4,7 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0177-U-01	BGB10-0177-U-01A	BGB10-0177-R-xx xx=silver(20), titan(21)	BGU10-0177-G-20	BGU10-0177-O-21
>645-685	OD 3+	OD 3+	OD 3+	OD 3+	OD 3+
1025-1100	OD 9+	OD 9+	OD 9+	OD 9+	OD 9+

***in all member countries of the EU the guidelines for personal protective equipment 89/686/EWG and the standards EN 207/208 are mandatory. Eyewear with a.m. filter is not tested and certified for the use within the EU according to these european regulations and the respective national accident prevention regulations. Laser

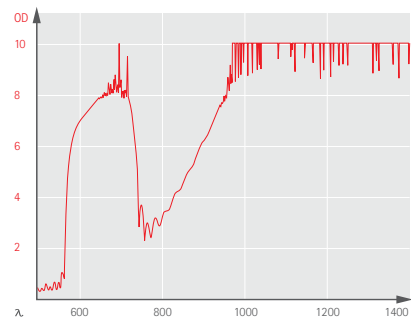
safety eyewear with this filter is solely for export in countries, which are not member of the EU or do not fall under the jurisdiction of the european standards. Therefore we cannot mark these eyewear with the CE-sign. The eyewear is marked with the value of the optical density and the remark „For use outside the EU only“. Eyewear

with this filter is also not for the use in countries, which require a certification according to the national legislature.

Filter 0178 Eyewear only for use outside the EU ***

Filter specification

Application: Dye, HeNe, Ruby, Diodes, Disc, Nd:YAG, Fibre, Ho:YAG, Er:YAG
 Material: mineral glass with dielectrical coating
 Filter colour: light grey
 VLT: appr. 21%



Optical density filter 0178 – total thickness: appr. 3,9 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0178-U-01		BGB10-0178-R-xx xx=silver(20), titan(21)	BGU10-0178-G-20	BGU10-0178-O-21
>585-720	OD 6+		OD 6+	OD 6+	OD 6+
900-1000	OD 5+		OD 5+	OD 5+	OD 5+
>1000-1030	OD 7+		OD 7+	OD 7+	OD 7+
>1030-1400	OD 8+		OD 8+	OD 8+	OD 8+
>1400-3000	OD 4+*		OD 4+	OD 4+	OD 4+

***in all member countries of the EU the guidelines for personal protective equipment 89/686/EWG and the standards EN 207/208 are mandatory. Eyewear with a.m. filter is not tested and certified for the use within the EU according to these european regulations and the respective national accident prevention regulations. Laser

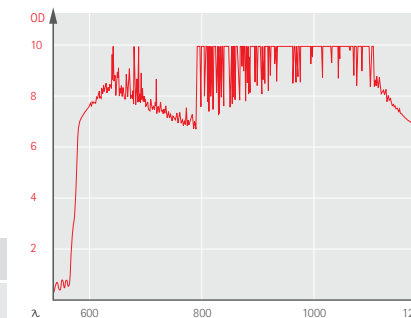
safety eyewear with this filter is solely for export in countries, which are not member of the EU or do not fall under the jurisdiction of the european standards. Therefore we cannot mark these eyewear with the CE-sign. The eyewear is marked with the value of the optical density and the remark „For use outside the EU only“. Eyewear

with this filter is also not for the use in countries, which require a certification according to the national legislature.

Filter 0179

Filter specification

Application: Dye, HeNe, Ruby, Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: turquoise
 VLT: appr. 31%



Optical density filter 0179

585-1200	OD 6+
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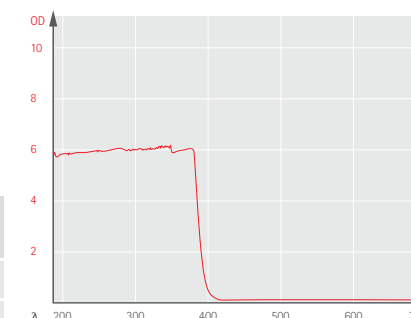
Protection levels filter 0179 – total thickness: appr. 4,8 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0179-U-01	BGB10-0179-U-01A	BGB10-0179-R-xx xx=silver(20), titan(21)	BGU10-0179-G-20	BGU10-0179-O-21
585-1200 D*	LB5*	LB6*	LB6*	LB6*	LB6*
585-1200 IR*	LB6*	LB6*	LB6*	LB6*	LB6*
585-1200 M*			LB6*	LB6*	LB6*
Certification according to EN 207:2009	PF CE*	PF CE*	PF CE*	PF CE*	PF CE*

Filter 0180 | **Filter 0181**

Filter specification

Application: CO2 Low-Power
 Material: special plastics
 Filter colour: colourless
 VLT: appr. 90%



Protection levels filter 0180 total thickness: appr. 2,2 mm

Fassung	ASTOR XL LASER CO ₂
Art.-Nr.	BKB10-0180 ASTOR XL
9000-11000 DI	LB3
Certification according to EN 207:2009	PF CE

Optical density filter 0180

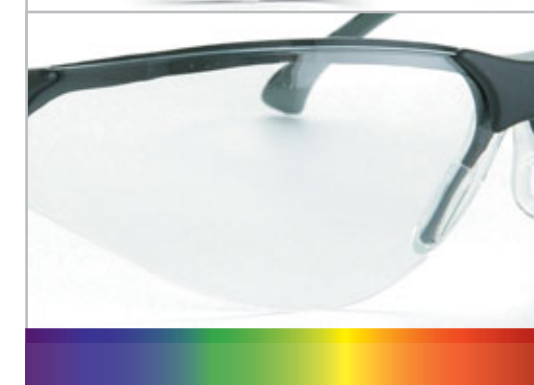
9000-11000	OD 3+
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Protection levels filter 0181 total thickness: appr. 2,2 mm

Fassung	TERMINATOR LASER CO ₂
Art.-Nr.	BKB10-0181-T-T
9000-11000 DI	LB3
Certification according to EN 207:2009	PF S CE

Optical density filter 0181

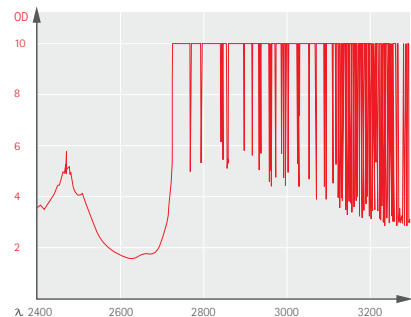
9000-11000	OD 3+
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Filter 0182

Filter specification

Application: Er:YAG
 Material: special plastics,
 Filter colour: colourless
 VLT: appr. 86%



Optical density filter 0182

2710-3000	OD 3+
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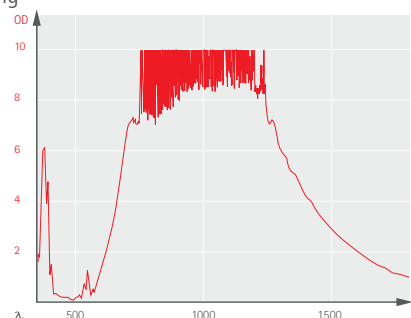
Protection levels filter 0182 - total thickness: appr. 3,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0182-U-01		BGB10-0182-R-xx xx=silver(20), titan(21)	BGU10-0182-G-20	BGU10-0182-O-21
2710-3000 DI	LB3		LB3	LB3	LB3
Certification according to EN 207:2009	PF CE		PF CE	PF CE	PF CE

Filter 0185

Filter specification

Application: Alexandrite, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass with dielectrical coating
 Filter colour: turquoise
 VLT: appr. 30%



Optical density filter 0185

750-1024	OD 8+
1025-1100	OD 9+
>1100-1200	OD 8+

Protection levels filter 0185 - total thickness: appr. 4,4 mm

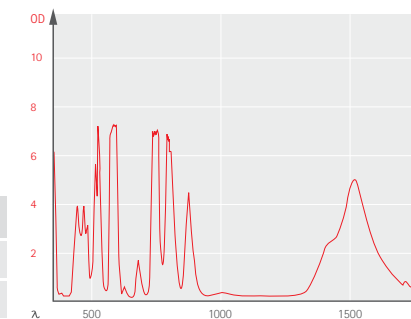
Frame	UNIVERSAL	UNIVERSAL Alu reinforced	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0185-U-01		BGB10-0185-R-xx xx=silver(20), titan(21)	BGU10-0185-G-20	BGU10-0185-O-21
750-<1025 D	LB5	LB7	LB7	LB7	LB7
750-<1025 I	LB7	LB8	LB8	LB8	LB8
750-<1025 R	LB7	LB8	LB8	LB8	LB8
1025-1100 D	LB5	LB7	LB8	LB8	LB8
1025-1100 I	LB7	LB8	LB9	LB9	LB9
1025-1100 R	LB7	LB8	LB9	LB9	LB9
1025-1100 M			LB9Y	LB9Y	LB9Y
>1100-1200 D	LB5	LB7	LB7	LB7	LB7
>1100-1200 IR	LB7	LB8	LB8	LB8	LB8
Certification according to EN 207:2009	PF CE	PF CE	PF CE ECS GS	PF CE ECS GS	PF CE ECS GS



Filter 0188

Filter specification

Application: KTP, Dye
 Material: mineral glass
 Filter colour: amber
 VLT: appr. 14%



Optical density filter 0188

532	OD 3+
575-595	OD 7+

Protection levels filter 0188 - total thickness: appr. 4,4 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0188-U-01	BGB10-0188-U-01A	BGB10-0188-R-xx xx=silver(20), titan(21)	BGU10-0188-G-20	BGU10-0188-O-21
532 DI	LB3	LB3	LB3	LB3	LB3
575-595 D	LB5	LB6	LB6	LB6	LB6
575-595 I	LB7	LB7	LB7	LB7	LB7
Certification according to EN 207:2009	PF CE	PF CE	PF CE	PF CE	PF CE

Filter 0190 AQUASTAR

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm), HeNe Justier, Diodes Justier
 Material: special plastics
 Filter colour: light blue
 VLT: appr. 55%

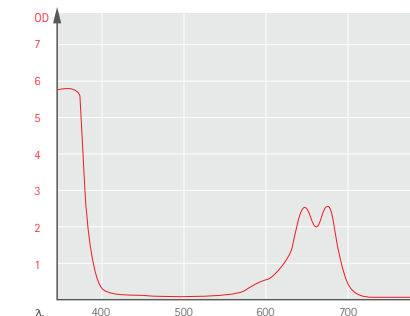


Protection levels AQUASTAR total thickness: appr. 2,0 mm

190-315 D	LB7*
190-315 R	LB3*
>315-360 DIR	LB5*
625-640	RB1*
>640-655	RB2*
>655-665	RB1*
>665-680	RB2*
Certification according to EN 207:2009/208:2009	PF CE

Optical density

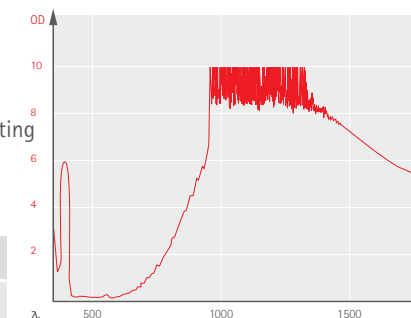
190-315	OD 7+
>315-360	OD 5+
625-640	OD 1-2
>640-655	OD 2-3
>655-665	OD 1-2
>665-680	OD 2-3



Filter 0191

Filter specification

Application: UV, Argon, KTP, Diodes, harmonic Nd:YAG
 Material: mineral glass with dielectrical coating
 Filter colour: light grey
 VLT: appr. 65%



Optical density filter 0191

1025-1100	OD 9+
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Protection levels filter 0191 - total thickness: appr. 4,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0191-U-01	BGB10-0191-U-01A	BGB10-0191-R-xx xx=silver(20), titan(21)	BGU10-0191-G-20	BGU10-0191-O-20
1025-1100 D	LB5	LB7*	LB8	LB8	LB8
1025-1100 I	LB7	LB8*	LB9	LB9	LB9
1025-1100 R	LB7	LB8*	LB8	LB8	LB8
1025-1100 M			LB8	LB8	LB8
Certification according to EN 207:2009	PF CE	PF CE	PF CE	PF CE	PF CE

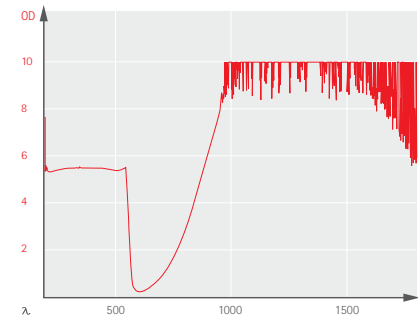
Filter 0193

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm + 1064 nm), Argon, KTP, Diodes, Disc, Nd:YAG, Fibre, Telecom, Holmium, Erbium, CO2
 Material: mineral glass
 Filter colour: orange
 VLT: appr. 25%

Optical density filter 0193

180-315	OD 10+
>315-532	OD 8+
940-1000	OD 4+
>1000-1400	OD 8+
>1400-1800	OD 5+
>1800-3000	OD 4+
10000-11000	OD 5+



Protection levels filter 0193 – total thickness: appr. 10,4 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0193-U-01	BGB10-0193-U-01A	BGB10-0193-R-xx xx=silver(20), titan(21)	BGU10-0193-G-20	BGU10-0193-O-20
180-315 D	LB9*	LB10*	LB10*	LB10*	LB10*
180-315 IR	LB4*	LB4*	LB5*	LB5*	LB5*
>315-532 D	LB5*	LB6*	LB6*	LB6*	LB6*
>315-532 I	LB7*	LB8*	LB8*	LB8*	LB8*
>315-532 R	LB7*	LB7*	LB7*	LB7*	LB7*
940-1000 DIR	LB4*	LB4*	LB4*	LB4*	LB4*
>1000-1400 D	LB5*	LB7*	LB7*	LB7*	LB7*
>1000-1400 IR	LB7*	LB8*	LB8*	LB8*	LB8*
>1400-1800 D	LB5*	LB5*	LB5*	LB5*	LB5*
>1400-1800 I	LB4*	LB4*	LB4*	LB4*	LB4*
>1800-3000 DI	LB4*	LB4*	LB4*	LB4*	LB4*
10000-11000 DI	LB5*	LB5*	LB5*	LB5*	LB5*
Certification according to EN 207:2009	PF CE*	PF CE*	PF CE*	PF CE*	PF CE*

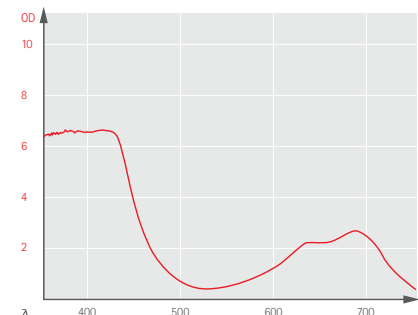
Filter 0195

Filter specification

Application: Justier VIS
 Material: special plastics
 Filter colour: light green
 VLT: appr. 21%

Optical density filter 0195

630-700	OD 2-3
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Protection levels filter 0195 – total thickness: appr. 4,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0195-U-01		BGB10-0195-R-xx xx=silver(20), titan(21)	BGU10-0195-G-20	BGU10-0195-O-20
630-700*	RB2*		RB2*	RB2*	RB2*
Certification according to EN 208:2009	PF CE*		PF CE*	PF CE*	PF CE*

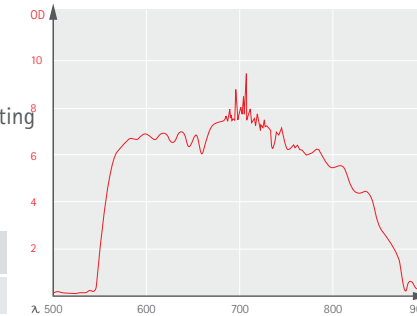
Filter 0197

Filter specification

Application: Dye, HeNe, Diodes, Ruby
 Material: mineral glass with dielectrical coating
 Filter colour: colourless
 VLT: appr. 21%

Optical density filter 0197

580-700	OD 6+
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Protection levels filter 0197 – total thickness: appr. 4,0 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced	RETRO	GLADIATOR	OVERSPEC
Order No.	BGB10-0197-U-01		BGB10-0197-R-xx xx=silver(20), titan(21)	BGU10-0197-G-20	BGU10-0197-O-20
580-700 D*	LB5*		LB6*	LB6*	LB6*
580-700 IR*	LB6*		LB6*	LB6*	LB6*
580-700 M*			LB6*	LB6*	LB6*
Certification according to EN 207:2009	PF CE*		PF CE*	PF CE*	PF CE*

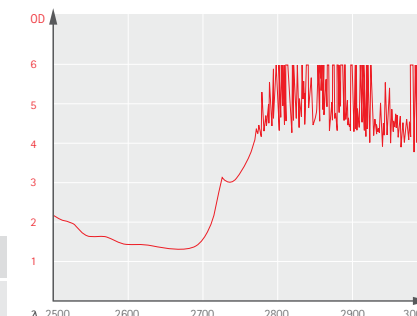
Filter 0198

Filter specification

Application: Er:YAG
 Material: special plastics
 Filter colour: colourless
 VLT: appr. 80%

Optical density filter 0198

2770-3000	OD 4+
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Protection levels filter 0198 – total thickness: appr. 2,5 mm

Frame	UNIVERSAL	UNIVERSAL Alu reinforced**	RETRO	GLADIATOR	OVERSPEC
Order No.	BKB10-0198-U-01		BKB10-0198-R-xx xx=silver(20), titan(21)	BKU10-0198-G-20	BKU10-0198-O-21
2770-3000 DI	LB4*		LB4*	LB4*	LB4*
Certification according to EN 207:2009	PF CE*		PF CE*	PF CE*	PF CE*

Laser protection windows

Filter 014039H

Filter specification

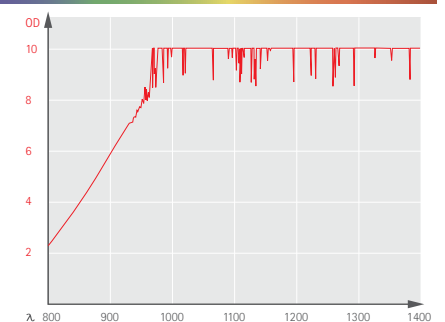
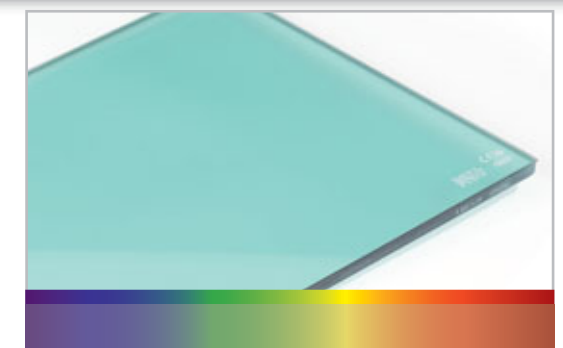
Application: Diodes, Disc, Nd:YAG, Fibre, Telecom, Ho:YAG, Er:YAG
 Material: mineral glass laminated
 Filter colour: light grey
 VLT: appr. 68%
 Maximum size: 100 x 200 mm

Protection levels filter 014039H total thickness: appr. 5,6 mm

Order No.	FGE10-0140-3,9-100x200
Dimensions	100 x 200 mm
900-1000 DIR	LB5
>1000-1030 DIR	LB7
>1030-1400 D	LB7
>1030-1400 IR	LB8
>1400-3000 DI	LB4
Certification according to EN 207:2009	PF CE

Optical density filter 014039H

900-1000	OD 5+
>1000-1030	OD 7+
>1030-1400	OD 8+
>1400-3000	OD 4+



Filter 014059H

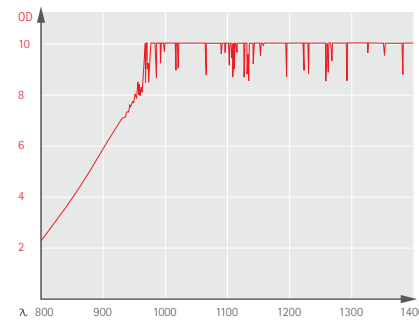
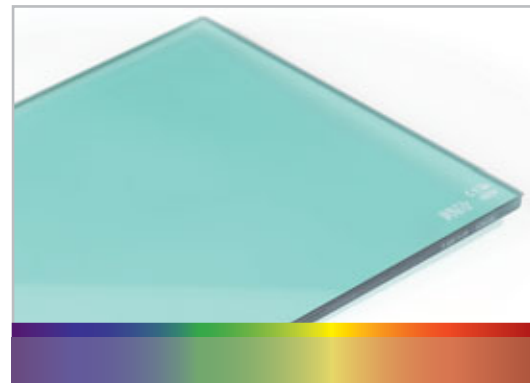
Filter specification

Application: Diodes, Disc, Nd:YAG, Fibre, Telecom, Ho:YAG, Er:YAG, CO2
 Material: mineral glass laminated
 Filter colour: light grey
 VLT: appr. 68%
 Maximum size: 210 x 297 mm

Optical density filter 014059H	
940-1000	OD 4+
>1000-1400	OD 8+
>1400-1800	OD 5+
>1800-3000	OD 4+
>10000-11000	OD 5+

Protection levels filter 014059H – total thickness: appr. 7,4 mm

Order No.	FGE10-0140-5,9-100x200	FGE10-0140-5,9-210x297
Dimensions	100 x 200 mm	210 x 297 mm
940-1000 DIR	LB4	LB4
>1000-1400 D	LB7	LB7
>1000-1400 IR	LB8	LB8
>1400-1800 D	LB5	LB5
>1400-1800 I	LB4	LB4
>1800-3000 DI	LB4	LB4
10000-11000 DI	LB5	LB5
Certification according to EN207:2009	PF CE	PF CE



Filter 0145

Filter specification

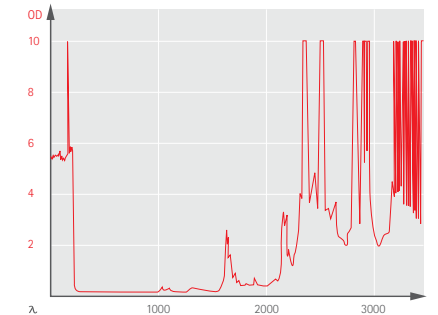
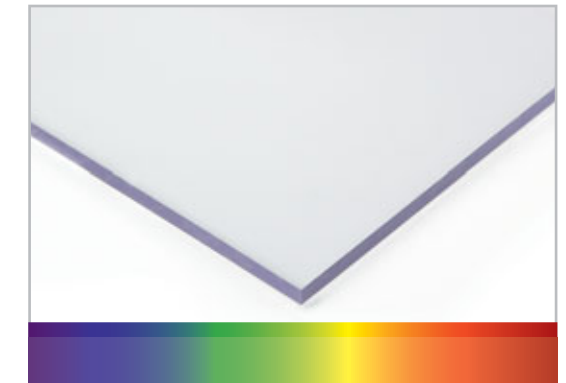
Application: Excimer, UV, CO2, harmonische Nd:YAG (266 nm)
 Material: special plastics
 Filter colour: colourless
 VLT: appr. 85%
 Maximum size: 3050 x 2050 mm

Optical density filter 0145

180-315	OD 5+
9000-11000	OD 4+

Protection levels filter 0145 – total thickness: appr. 6,0 mm

Order No.	FKE10-0145-100x200	FKE10-0145-210x297
Dimensions	100 x 200 mm	210 x 297 mm
180-315 D*	LB5*	LB5*
180-315 IR*	LB3*	LB3*
9000-11000 DI*	LB4*	LB4*
Certification according to EN 207:2009	PF CE*	PF CE*



Filter 0142

Filter specification

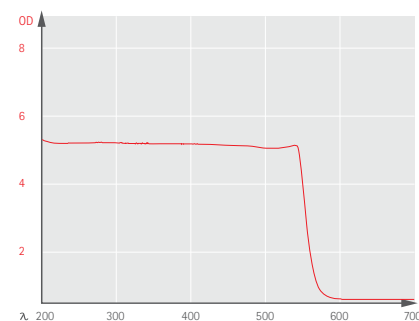
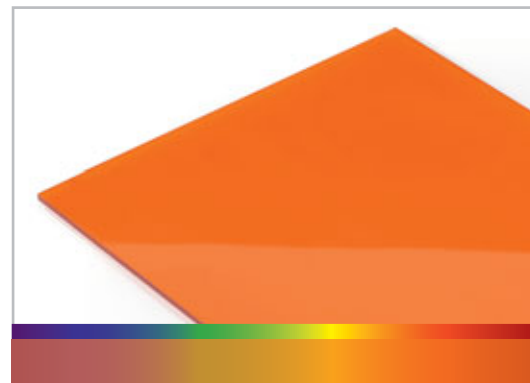
Application: Excimer, UV, harmonic Nd:YAG (266nm+355nm+532nm), Argon, KTP
 Material: mineral glass laminated,
 Filter colour: orange
 VLT: appr. 35%
 Maximum size: 210 x 297 mm

Optical density filter 0142

180-315	10+
>315-532	8+

Protection levels filter 0142 – total thickness: appr. 6,1 mm

Order No.	FGE10-0142-100x200	FGE10-0142-210x297
Dimensions	100 x 200 mm	210 x 297 mm
180-315 D	LB10	LB10
180-315 IR	LB5	LB5
>315-532 D	LB6	LB6
>315-532 I	LB8	LB8
>315-532 R	LB7	LB7
Certification according to EN 207:2009	PF CE	PF CE



Filter 0148

Filter specification

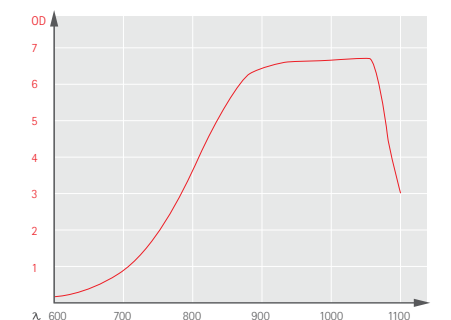
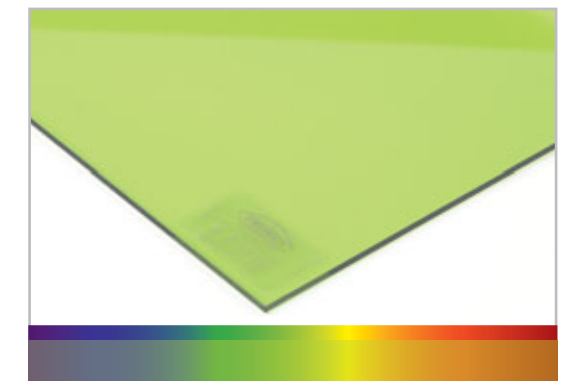
Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: special plastics
 Filter colour: light green
 VLT: appr. 60%
 Maximum size: 640 x 1400 mm

Optical density filter 0148

750-780	OD 2+
>780-805	OD 3+
>805-830	OD 4+
>830-860	OD 5+
>860-1070	OD 6+
>1070-1075	OD 5+
>1075-1085	OD 4+
>1085-1095	OD 3+

Protection levels filter 0148 – total thickness: appr. 3,1 mm

Order No.	FKE10-0148-100x200	FKE10-0148-210x297
Dimensions	100 x 200 mm	210 x 297 mm
750-780 DIR	LB2	LB2
>780-805 DIR	LB3	LB3
>805-830 DIR	LB4	LB4
>830-860 DIR	LB5	LB5
>860-1070 DIR	LB6	LB6
>1070-1075 DIR	LB5	LB5
>1075-1085 DIR	LB4	LB4
>1085-1095 DIR	LB3	LB3
Certification according to EN 207:2009	PF CE	PF CE



Filter 0149

Filter specification

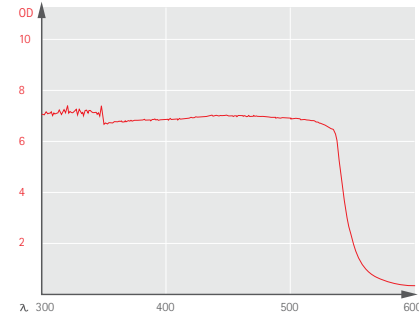
Application: Excimer, UV, harmonic Nd:YAG (266nm+355nm+532nm), KTP
 Material: special plastics
 Filter colour: orange
 VLT: appr. 25%
 Maximum size: 640 x 1400 mm

Optical density filter 0149

180-315	OD 7+
>315-532	OD 5+

Protection levels filter 0149 – total thickness: appr. 3,5 mm

Order No.	FKE10-0149-100x200	FKE10-0149-210x297
Dimensions	100 x 200 mm	210 x 297 mm
180-315 D	LB7	LB7
180-315 IR	LB3	LB3
>315-532 DIR	LB5	LB5
Certification according to EN 207:2009	PF CE	PF CE



Filter 0159

Filter specification

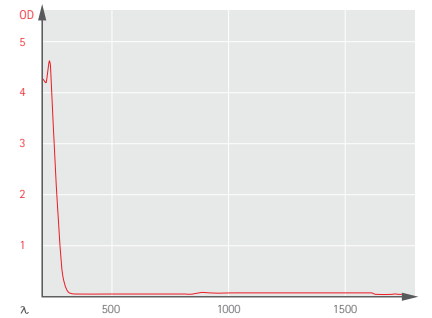
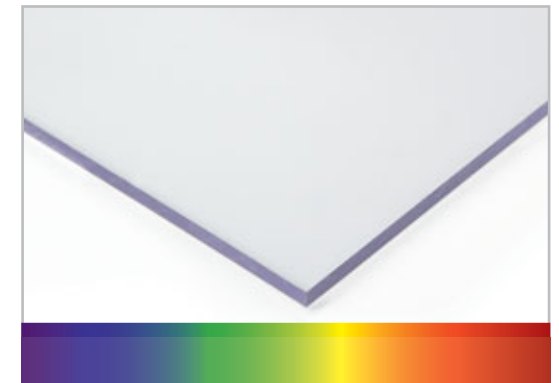
Application: CO2 High-Power
 Material: mineral glass
 Filter colour: colourless
 VLT: appr. 90%
 Maximum size: 210 x 297 mm (DIN A4)

Optical density filter 0159

9000-11000	OD 5+
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Protection levels filter 0159 – total thickness: appr. 3,7 mm

Order No.	FGE10-0159-100x200	FGE10-0159-210x297
Dimensions	100 x 200 mm	210 x 297 mm
9000-11000 DI	LB5	LB5
Certification according to EN 207:2009	PF CE	PF CE



Filter 0155

Filter specification

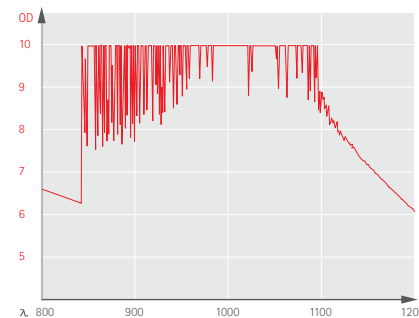
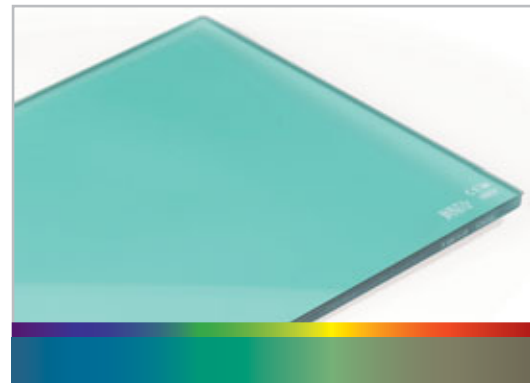
Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre, CO2
 Material: mineral glass laminated
 Filter colour: turquoise
 VLT: appr. 45%
 Maximum size: 210 x 297 mm (DIN A4)

Optical density filter 0155

750-1200	OD 8+
9000-11000	OD 5+

Protection levels filter 0155 – total thickness: appr. 6,1 mm

Order No.	FGE10-0155-100x200	FGE10-0155-210x297
Dimensions	100 x 200 mm	210 x 297 mm
750-1200 D	LB7	LB7
750-1200 IR	LB8	LB8
9000-11000 DI	LB5	LB5
Certification according to EN 207:2009	PF CE	PF CE



Filter 0170

Filter specification

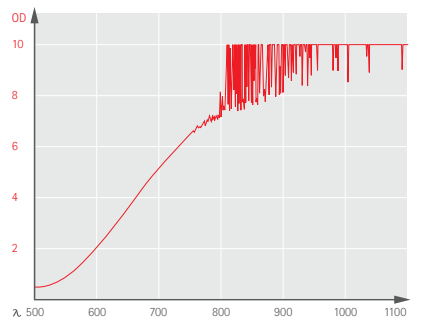
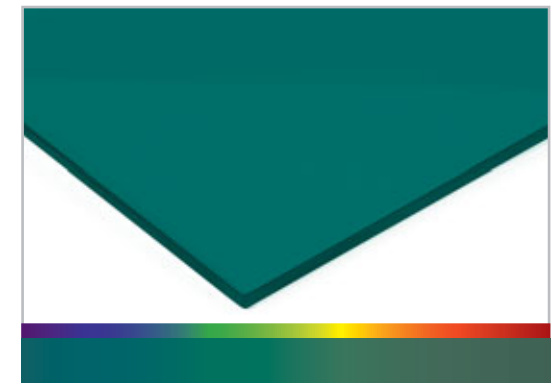
Application: HeNe, Diodes, Ruby, Alexandrite, Ti:Sa, Disc, Nd:YAG, Fibre
 Material: mineral glass laminated
 Filter colour: blue-green
 VLT: appr. 14%
 Maximum size: 100 x 200 mm

SProtection levels filter 0170 total thickness: appr. 6,0 mm

Order No.	FGE10-0170-100x200
Dimensions	100 x 200 mm
610-640 DIR	LB2
>640-670 DIR	LB3
>670-705 DIR	LB4
>705-745 DIR	LB5
>745-780 DIR	LB6
>780-840 DIR	LB7
>840-1200 D	LB7
>840-1200 IR	LB8
900-1200 M	LB8Y
Certification according to EN 207:2009	PF CE

Optical density filter 0170

610-640	OD 2+
>640-670	OD 3+
>670-705	OD 4+
>705-745	OD 5+
>745-780	OD 6+
>780-840	OD 7+
>840-1200	OD 8+



Filter 0156

Filter specification

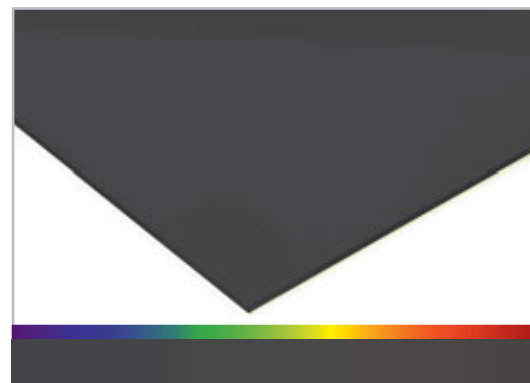
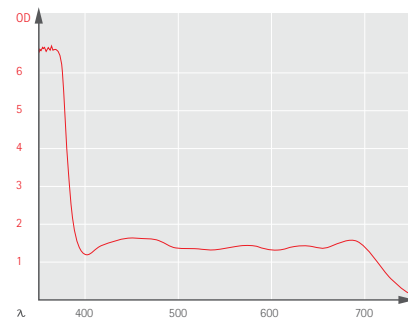
Application: Alignment VIS
 Material: special plastics
 Filter colour: grey
 VLT: appr. 3,5%
 Maximum size: 1500 x 1000 mm

Optical density filter 0156

400-700	OD 1-2
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Protection levels filter 0156 – total thickness: appr. 1,5 mm

Order No.	FKE10-0156-100x200	FKE10-0156-210x297
Dimensions	100 x 200 mm	210 x 297 mm
400-700	RB1	RB1
Certification according to EN 208:2009	PF CE	PF CE



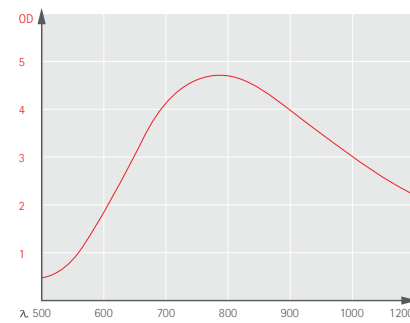
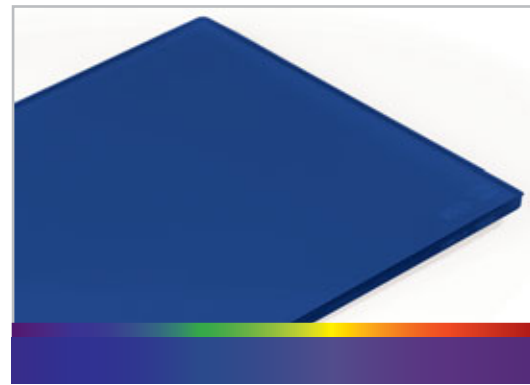
Filter 0175

Filter specification

Application: HeNe, Diodes, Ruby, Alexandrite, Ti:Sa
 Material: mineral glass
 Filter colour: blue
 VLT: appr. 18%
 Maximum size: 210 x 297 mm (DIN A4)

Optical density filter 0175	
610-645	OD 2+
>645-685	OD 3+
>685-755	OD 4+
>755-810	OD 5+
>810-910	OD 4+

Protection levels filter 0175 – total thickness: appr. 2,0 mm		
Order No.	FGE10-0175-100x200	FGE10-0175-210x297
Dimensions	100 x 200 mm	210 x 297 mm
610-645 DIR	LB2	LB2
>645-685 DIR	LB3	LB3
>685-755 DIR	LB4	LB4
>755-810 DIR	LB5	LB5
>810-910 DIR	LB4	LB4
Certification according to EN 207:2009	PF CE	PF CE



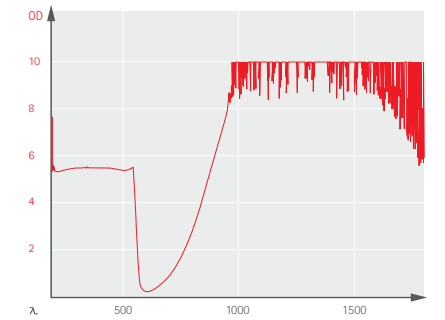
Filter 0193

Filter specification

Application: Excimer, UV, harmonic Nd:YAG (266 nm + 355 nm + 532 nm + 1064 nm), Argon, KTP, Diodes, Disc, Nd:YAG, Fibre
 Material: mineral glass laminated
 Filter colour: orange
 VLT: appr. 25%
 Maximum size: 210 x 297 mm

Optical density filter 0193	
180-315	OD 10+
>315-532	OD 8+
900-1000	OD 5+
>1000-1030	OD 7+
>1030-1400	OD 8+

Protection levels filter 0193 – total thickness: appr. 10,4 mm		
Order No.	FGE10-0193-100x200	FGE10-0193-210x297
Dimensions	100 x 200 mm	210 x 297 mm
180-315 D	LB10*	LB10*
180-315 IR	LB5*	LB5*
>315-532 D	LB6*	LB6*
>315-532 I	LB8*	LB8*
>315-532 R	LB7*	LB7*
900-1000 DIR	LB5*	LB5*
>1000-1030 D	LB7*	LB7*
>1000-1030 IR	LB7*	LB7*
>1030-1400 D	LB7*	LB7*
>1030-1400 IR	LB8*	LB8*
Certification according to EN 207:2009	PF CE *	PF CE *



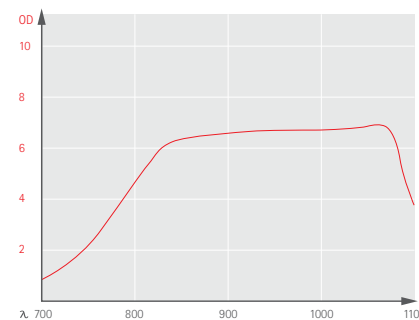
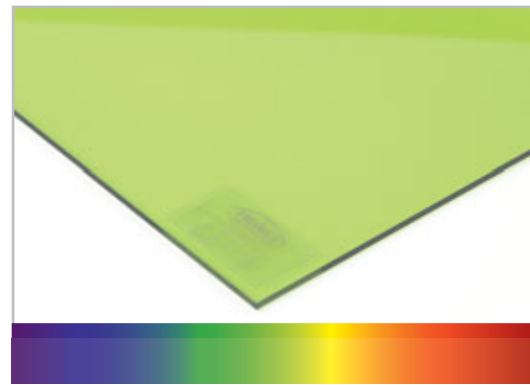
Filter 0176

Filter specification

Application: Alexandrite, Ti:Sa, Diodes, Disc, Nd:YAG, Fibre
 Material: special plastics
 Filter colour: yellow-greenish
 VLT: appr. 57%
 Maximum size: 640 x 1400 mm

Optical density filter 0176	
750-785	OD 2+
>785-805	OD 3+
>805-825	OD 4+
>825-855	OD 5+
>855-1070	OD 6+
>1070-1080	OD 5+
>1080-1090	OD 4+
>1090-1100	OD 3+

Protection levels filter 0176 – total thickness: appr. 3,1 mm		
Order No.	FKE10-0176-100x200	FKE10-0176-210x297
Dimensions	100 x 200 mm	210 x 297 mm
750-785 DIR	LB2	LB2
>785-805 DIR	LB3	LB3
>805-825 DIR	LB4	LB4
>825-855 DIR	LB5	LB5
>855-1070 D	LB5	LB5
>855-1070 IR	LB6	LB6
>1070-1080 DIR	LB5	LB5
>1080-1090 DIR	LB4	LB4
>1090-1100 DIR	LB3	LB3
Certification according to EN 207:2009	PF CE	PF CE



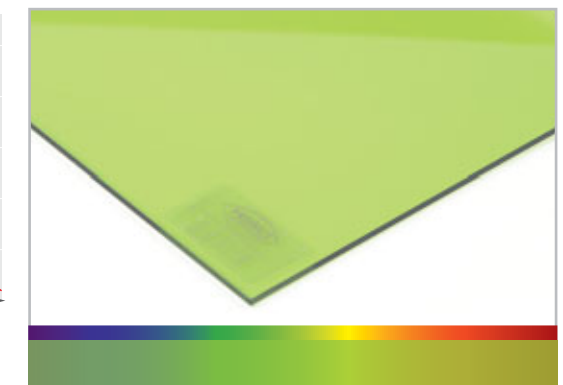
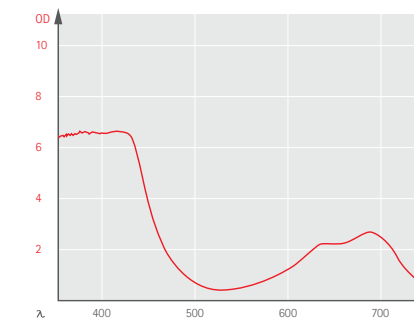
Filter 0195

Filter specification

Application: Alignment VIS
 Material: special plastics
 Filter colour: light green
 VLT: appr. 21%
 Maximum size: 1500 x 1000 mm

Optical density filter 0195	
630-700	OD 2-3

Protection levels filter 0195 – total thickness: appr. 7,4 mm		
Order No.	FKE10-0195-100x200	FKE10-0195-210x297
Dimensions	100 x 200 mm	210 x 297 mm
630-700*	RB2*	RB2*
Certification according to EN 208:2009	PF CE*	PF CE*



Filter 0199

Filter specification

Application: IPL
 Material: special plastics
 Filter colour: green
 Maximum size: 640 x 1400 mm

Protection levels filter 0199 – total thickness: appr. 3,1 mm		
Order No.	FKE10-0199-100x200	FKE10-0199-210x297
Dimensions	100 x 200 mm	210 x 297 mm
Shade	5	5

Laser safety curtain isoPROTECT-standard

The Laser safety curtain isoPROTECT-standard provides a double-sided laser protection and can be randomly placed.

Laser safety curtain isoPROTECT-standard		Optical density	
1064 D	AB4*	190-11000	OD 4+
Certification according to EN 12254:2010	KTK CE		

Laser safety curtain isoPROTECT-one

The Laser safety curtain isoPROTECT-one provides a laser side and an eyeside. Please take care to place the curtain accurate to side. Above mentioned protection levels are based on internal laser tests.

Laser safety curtain isoPROTECT-one	
180-315 D	AB8*
180-315 IR	AB3*
>315-1050 D	AB7
>1050-1400 D	AB6
>315-1400 I	AB8
>315-1400 R	AB7
>1400-11000 D	AB3
>1400-11000 I	AB4
Certification according to EN 12254:2010	PF CE

Optical density	
180-315	OD 8+
>315-1400	OD 8+
>1400-11000	OD 4+

Laser safety curtain isoPROTECT-two

The Laser safety curtain isoPROTECT-two provides a double-sided laser protection and can be randomly placed.

Laser safety curtain isoPROTECT-two	
180-315 D	AB8
180-315 IR	AB3
>315-1050 D	AB7
>1050-1400 D	AB6
>315-1400 I	AB8
>315-1400 R	AB7
>1400-11000 D	AB3
>1400-11000 I	AB4
Certification according to EN 12254:2010	PF ECS CE

Optical density	
180-315	OD 8+
>315-1400	OD 8+
>1400-11000	OD 4+

Mobile laser safety screen Aluminium

Mobile laser safety screen Aluminium Specification:	
180-315 D	AB9
180-315 IR	AB4
>315-1050 D	AB7
>315-1050 I	AB8
>315-1050 R	AB7
>1050-1400 DR	AB6
>1050-1400 I	AB8
>1400-11000 DI	AB4
Certification according to EN 12254:2010	PF CE

Optical density	
180-315	OD 9+
>315-1050	OD 8+
>1050-1400	OD 8+
>1400-11000	OD 4+

Laser safety screen ROLL-UP

Laser safety screen ROLL-UP Specification:	
1064 D	AB4*
Certification according to EN 12254:2010	KTK CE

Optical density	
190-11000	OD 4+

Children's eyewear JUNIOR

Children's eyewear „JUNIOR“, available with all filters

Application	Diodes/Nd:YAG	Diodes/Nd:YAG/CO2	Diodes/Nd:YAG/Holmium/Erbium	CO2	Erbium
Filter No.	0176	0155	014039H	0145	0182
Order No.	BKB10-0176-K-xx xx = 03 yellow/ 04 blue/ 05 pink	BKB10-0155-K-xx xx = 03 yellow/ 04 blue/ 05 pink	BKB10-0140-3,9-K-xx xx = 03 yellow/ 04 blue/ 05 pink	BKB10-0145-K-xx xx = 03 yellow/ 04 blue/ 05 pink	BKB10-0182-K-xx xx = 03 yellow/ 04 blue/ 05 pink
Wavelengths/ Protection levels	>800-805 DIR LB3	800-1200 DR LB5 800-1200 I LB7	900-1000 DIR LB5 >1000-1400 DR LB5 >1000-1400 I LB7 >1400-3000 DI LB3	9000-11000 DI* LB3*	2710-3000 DI LB3
Certification according to EN 207:2009	PF CE	PF CE	PF CE	PF CE*	PF CE

Note
Our children's eyewear is available with all filters (here is only a selection shown). Please inquire.

Patient's eyewear SOFT-CAPS

Protection levels Patient's eyewear Soft-Caps				
Size	Soft-Caps large		Soft-Caps small	
Order No.	MBPK03-0209-109		MBPK03-0208-108	
Wavelengths	560-<830 DI 830-880 DI	LB3 LB2	580-<780 DI 780-810 DI	LB3 LB2
Certification according to EN 207:2009	PROTEC CE		PROTEC CE	

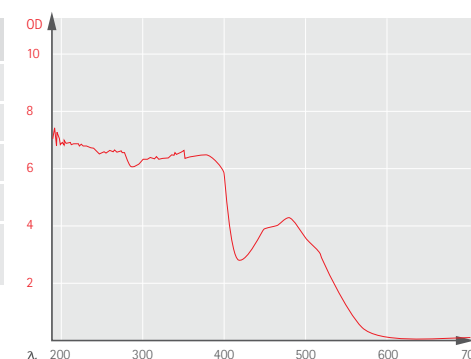
Patient's eyewear High-Power Aluminium

Protection levels Patient's eyewear High-Power Aluminium	
Order No.	MBPM10-58A
315-<1064 D	LB7*
1064 DR	LB8*
1064 I	LB9*
>1064-1400 D	LB7*
>1064-1400 IR	LB8*
>1400-<10600 DI	LB4*
10600 DI	LB5*
>10600-11000 DI	LB4*
Certification according to EN 207:2009	PF CE*

Optical density	
315-<1064	OD 7+
1064	OD 9+
>1064-1400	OD 8+
>1400-<10600	OD 4+
10600	OD 5+
>10600-11000	OD 4+

UV-Protection spectacles orange

Optical density	
Order No.	MBDB04-0251-155
190-400	OD 6+
> 400-532	OD 2+
> 532-550	OD 1+
Certification according to EN 166 und EN 170	2-1.7 GA 1 F K CE



Face Shield

Specification				
Application	Diodes/Nd:YAG		UV/Argon/KTP/ harmonic Nd:YAG	
Filter No.	0176		0149	
Order No.	GS04-0176-003		GS04-0149-002	
Wavelengths/ Protection levels	750-785 DIR	LB2	180-315 D	LB7
	>785-805 DIR	LB3	180-315 IR	LB3
	>805-825 DIR	LB4	>315-532 DIR	LB5
	>825-855 DIR	LB5		
	>855-1070 D	LB5		
	>855-1070 IR	LB6		
	>1070-1080 DIR	LB5		
	>1080-1090 DIR	LB4		
	>1090-1100 DIR	LB3		
Certification according to EN 207:2009	PF CE		PF CE	

IR-Viewers

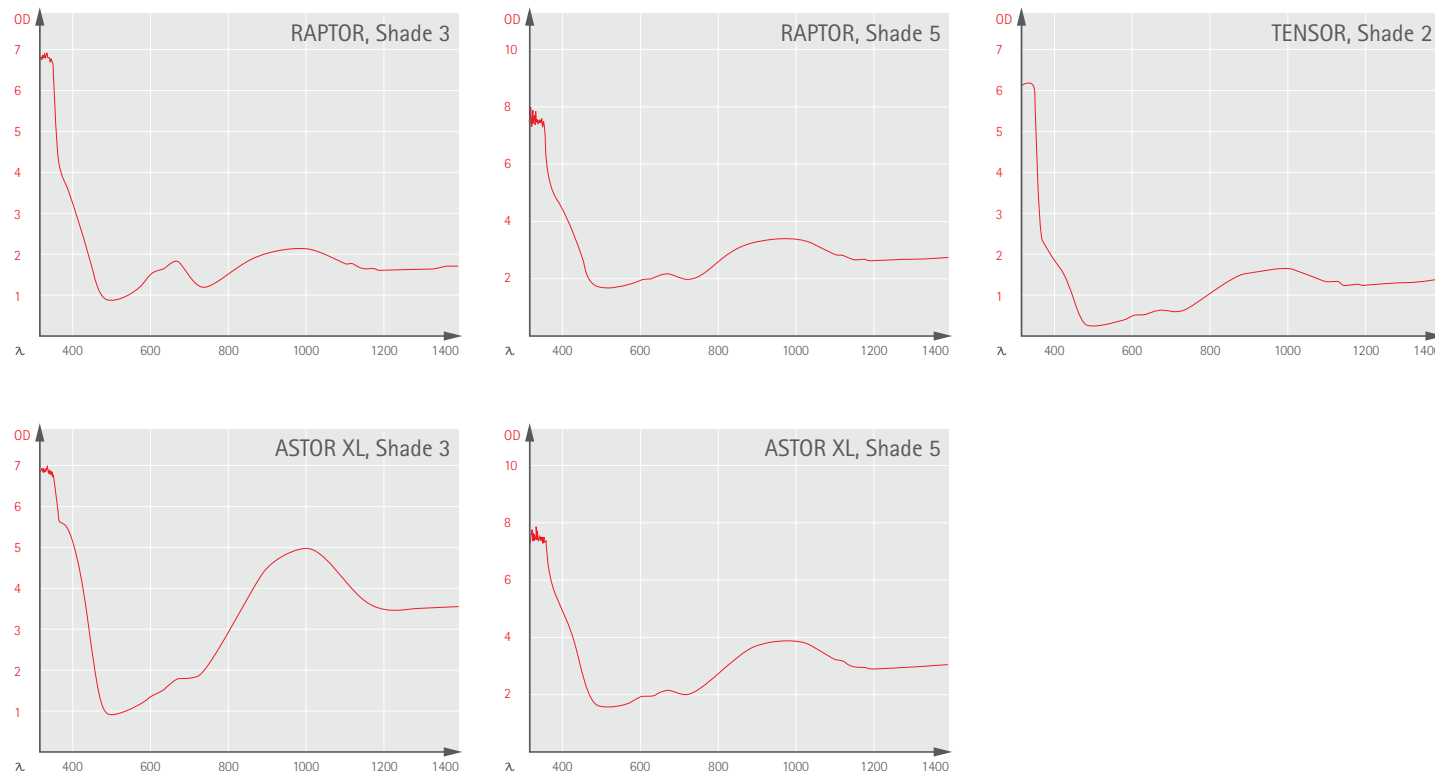
Technical Data					
Model / Order No.	ZIRV36-SM-3R-1700	ZIRV36-SM-3R-2000	ZIRV36-ABRIS-1300	ZIRV36-ABRIS-1700	ZIRV36-ABRIS-2000
Photocathode	S-1, diameter 18 mm		S-1, diameter 40 mm		
Objective	F 1,4 / 26 mm		F 1,4 / 26 mm		
Magnification	1,0 x		1,0 x		
Field of vision	25°		35°		
Resolution	50 lines/mm		60 lines/mm		
Min. working distance	10 cm		20 cm		
Spectral sensitivity	350...1700 nm	350...2000 nm	350...1300 nm	350...1700 nm	350...2000 nm
Power supply	3 V (2x Typ LR 44)		1,5 V (1x Typ AAA) and external input 3Vdc		
Dimensions	43 mm x (length) 115 mm		78 mm x 55 mm x (length) 155 mm		
Weight	260 g		380 g		

IPL-products

IPL-eyewear

IPL-eyewear made from special plastics - Specification					
Frame	RAPTOR		TENSOR	ASTOR XL	
Order No.	MBIKB04-0220-86S3	MBIKB04-0221-86S5	MBIKB04-022287S2	MBIKB04-0217-84S3	MBIKB04-0218-84S5
Shade	3	5	2	3	5
Certification according to EN 166	3. GA 1FK 166 F CE	3. GA 1FK 166 F CE	2.GA 1 F° CE	GA 166-F CE	GA 166-F CE

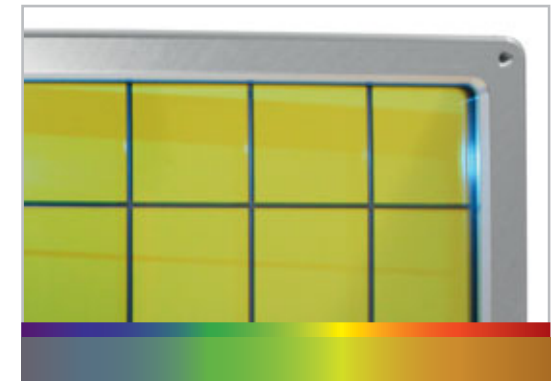
Frame styles RAPTOR und ASTOR XL are also available with shade 2. Please inquire separately.



Active laser safety window

Filter specification

Window material: special plastics
 Filter colour: light green
 VLT: appr. 57%
 Order No.: 70323-21503167



Passive protection filter 0176	
750-785 DIR	LB2
>785-805 DIR	LB3
>805-825 DIR	LB4
>825-855 DIR	LB5
>855-1070 D	LB5
>855-1070 IR	LB6
>1070-1080 DIR	LB5
>1080-1090 DIR	LB4
>1090-1100 DIR	LB3

Certification according to	
DIN EN 13849-1	*
DIN EN 62061	*
DIN EN 61326-3-1	*
DIN EN 207:2009	PF CE
DIN EN 60825-4	*

Optical density	
750-785	OD 2+
>785-805	OD 3+
>805-825	OD 4+
>825-855	OD 5+
>855-1070	OD 6+
>1070-1080	OD 5+
>1080-1090	OD 4+
>1090-1100	OD 3+

(*) The product is currently in the EC-type certification procedure, respectively in certification procedure in accordance with the relevant standards and guidelines. The technical information is based on the knowledge of printing this catalog. These are non-binding and subject to the certification.



Your

Safety

is our concern!



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