UNIVET®
OPTICAL TECHNOLOGIES

CLEAN ROOM

Innovation applied to sterilizable devices


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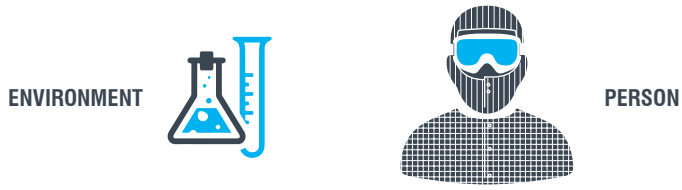
Innovation applied to sterilizable devices

A clean room is an environment subject to a contamination control, commonly used in the pharmaceutical, biotechnology and electronics industries or in scientific research.
This area has to possess the minimum level of contamination, defined by the maximum number of particles per cubic meter with specific grain size: this can be achieved and maintained only by controlling the environment, the workforce, the products and the processes within these rooms.
In the same way a specific risk assessment program must define which features the PPE should have to ensure the operator the proper protection from potential contact with hazardous substances.

DOUBLE PROTECTION



Univet: specialization and evolution

In the early 2000s Univet introduced the first sterilizable goggles specifically developed for clean rooms.
Over the years the continuous drive towards innovation led the R&D internal department to create a full range of products with technical solutions able to meet the particular requirements of the clean room market.

FOCUS

Since its establishment Univet has been specializing in eye protection, constantly monitoring the market in order to catch any special requirement even in complex or not explored environments. Thanks to this receptivity, the company was the first to create products focused on the real needs of the customers.

INNOVATION IN MATERIALS

The **AR**Lab laboratory developed innovative materials able to withstand the extreme conditions to which they are subject during multiple sterilization cycles. The reusability combined with high-performance materials ensures savings and respects the environment.

COMPLETE RANGE

The product range is able to satisfy all current needs of the market: goggles sterilizable with autoclave or beta or gamma rays, frames equipped with direct or indirect ventilation, lenses made of βγoxene® or polycarbonate with or without anti-fog treatment and appropriate solutions for those suffering from visual defects are available.

CONSOLIDATED TECHNOLOGY

DIRECTLY & INDIRECTLY VENTILATION

To ensure air circulation within the goggle in order to prevent the formation of condensation on the lens, two technical solutions are available.
A directly ventilated goggle has openings on its frame which allow the directly flow of air between the outside and the inside of the goggle. The openings on the frame ensure maximum air circulation in order to minimize the fogging.
The other option is a goggle with indirectly ventilation which has openings on its structure that are protected by technical solutions able to guarantee protection against drops and splashes of liquids.

OVER THE GLASSES AND RX INSERT

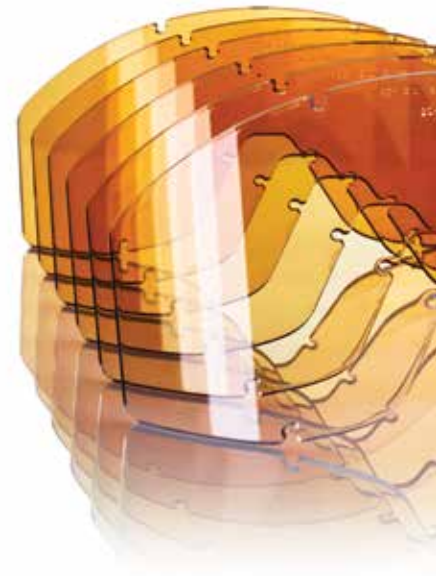
Univet supports a specific market demand by offering solutions for those who wear corrective lenses. A removable additional insert with corrective lenses produced according to medical prescription is available for the 611 model.
The geometry of the model 619 is designed to comfortably allow the housing of common prescription spectacles.

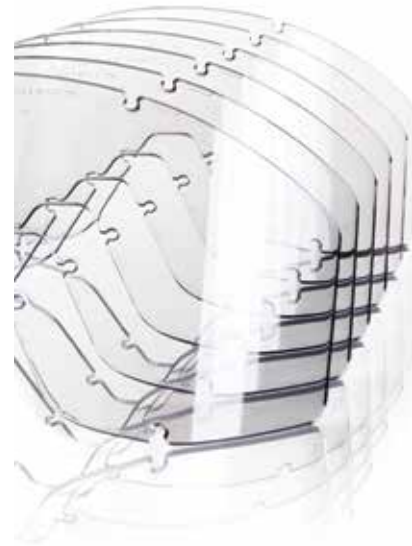
INNOVATIVE TECHNOLOGY

NEW MATERIAL

Univet has developed βγoxene®, a material with unique chemical-physical characteristics, able to maintain its original transparency even after multiple cycles of sterilization according to the usual techniques by beta or gamma rays.
Tests confirm that after twenty sterilization processes βγoxene® lens suffers a reduction in luminous transmittance of less than 1%. This is less than polycarbonate loses after only one cycle.

βγoxene®





121

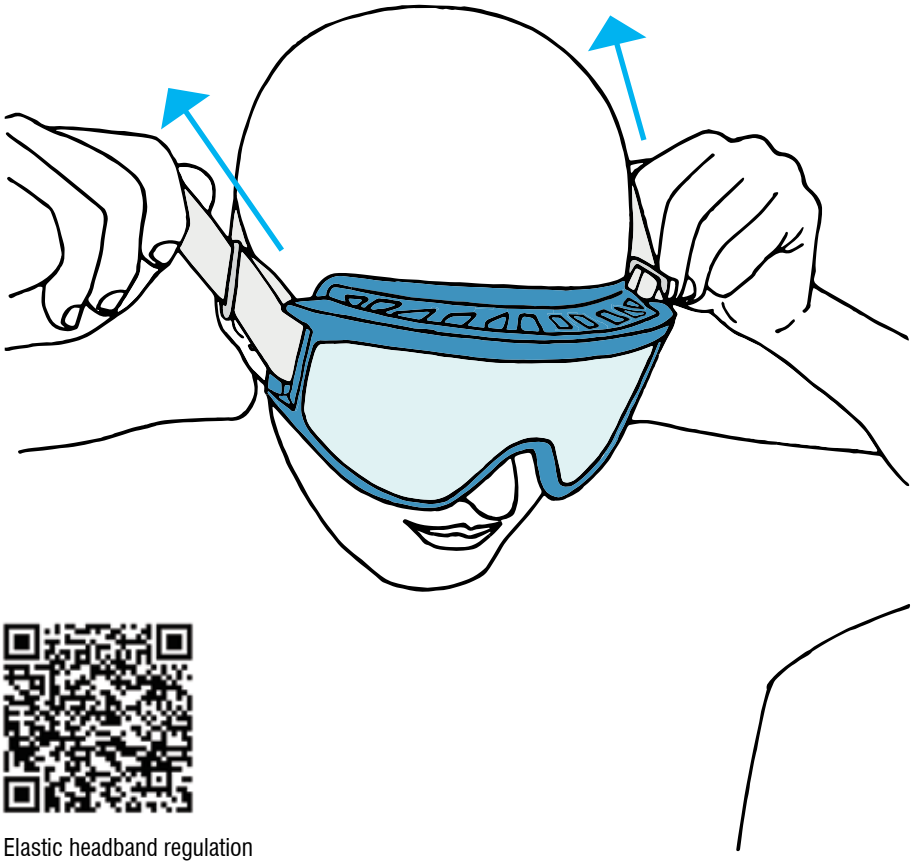
AF[121] COATING

The usual treatments applied to the lenses to prevent fogging and scratches increase the protection performance, but are not able to withstand the extreme conditions that occur in steam sterilization processes. Univet special coating Anti-Fog[121] is a film with a thickness of a few μm deposited both inside and outside of the lens able to protect from fogging and scratches according to the parameters required by EN166 standard (KN marking) enduring more than 10 steam sterilization cycles.

QUICK&SMOOTH ELASTIC BAND

The new elastic band ensures maximum stability thanks to a special superficial micro texture while the use of a special anti-static silicone provides greater elasticity for optimal comfort. The design has been developed to enable a rapid adjustment of the length in order to speed up the operations of dressing before entering the clean room. The stopper is shaped into the band and avoids the use of additional components that may fall in the working area contaminating it.

PATENT PENDING



Elastic headband regulation

NO ADDITIONAL COMPONENTS
EASY HANDLING, EVEN WITH GLOVES
STABILITY OF THE SLIDER
TIGHTNESS OF THE ELASTIC HEADBAND
SMOOTH REGULATION
ANTISTATIC MATERIAL

611 POLYCARBONATE Lens

VERSATILITY

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autoclave sterilization

611.S0.00.00
Frame: directly vented
Lens: clear

611.S1.00.00
Frame: indirectly vented
Lens: clear

042.060
Spare lens

601.OP.00.99
RX insert

611.S0.00.01
Frame: directly vented
Lens: clear AF[121]

611.S1.00.01
Frame: indirectly vented
Lens: clear AF[121]

042.120M
Spare lens

601.OP.00.99
RX insert

STERILIZATION CYCLES

40

Goggles with polycarbonate lens reusable up to 40 autoclave sterilization cycles with steam at 121° C, 1 atm for 30 minutes.

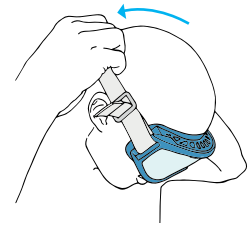
10 121

The treatment AF[121] applied to the lens prevents at the same time from scratches and from fogging, bearing up to 10 steam sterilization cycles.

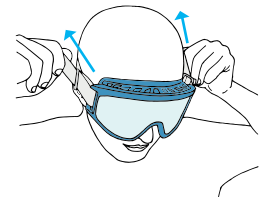
TECHNICAL FEATURES

- Available with polycarbonate lenses or with Anti-Fog[121]/Antiscratch coating
- Available with directly or indirectly ventilation
- Elastic band in silicone with Quick&Smooth system
- RX Insert

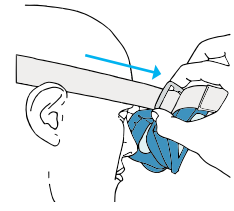
ELASTIC BAND QS



Pic.1 - Wear the goggles



Pic.2 - Set the length of the elastic band by gently pulling back the ends



Pic.3 - To remove the goggles, loosen the elastic band by letting the cursors to slide forth

611 βγoxene® Lens

INNOVATION

UNIVET® OPTICAL TECHNOLOGIES

β and γ ray sterilization

611.S0.00.02
Frame: directly vented
Lens: clear

611.S1.00.02
Frame: indirectly vented
Lens: clear

042.118
Spare lens

601.OP.00.99
RX insert

STERILIZATION CYCLES

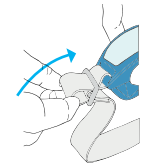
20 βγoxene®

Goggles with βγoxene® lenses keep the transparency unaltered up to 20 cycles of sterilization.

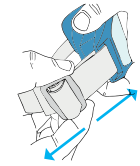
TECHNICAL FEATURES

- βγoxene® Lenses
- Available with directly or indirectly ventilation
- Elastic band in anti-static silicone
- RX insert

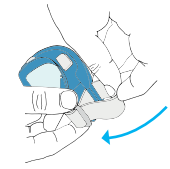
ANTI-STATIC ELASTIC BAND



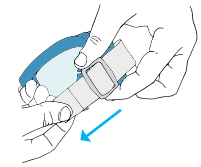
Pic.1 - To extend the elastic band, loosen the loose end



Pic.2 - Set the adjustment by letting the loose end to slide forth



Pic.3 - To shorten the band, let the elastic to slide back



Pic.4 - Set the adjustment by letting slide back the loose end

619 POLYCARBONATE Lens

OVER THE GLASSES

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autoclave sterilization

619.05.23.10
Frame: directly vented
Lens: clear

619.04.23.10
Frame: indirectly vented
Lens: clear

042.085
Spare lens

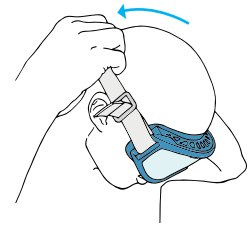
STERILIZATION CYCLES

Goggles with polycarbonate lens reusable up to 30 autoclave sterilization cycles with steam at 121° C, 1 atm for 30 minutes.

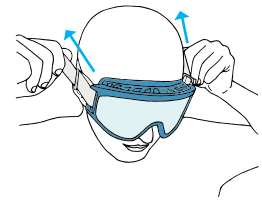
TECHNICAL FEATURES

- Polycarbonate Lenses
- Available with directly or indirectly ventilation
- Elastic band in silicone with Quick&Smooth system
- Over the glasses

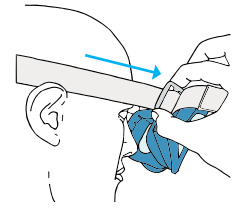
ELASTIC BAND QS



Pic.1 - Wear the goggles



Pic.2 - Set the length of the elastic band by gently pulling back the ends



Pic.3 - To remove the goggles, loosen the elastic band by letting the cursors to slide forth

VALIDATED TECHNOLOGY

611 POLYCARBONATE Lens

128 g

autoclave sterilization

40

Sterilization with STEAM 121°C for 30min in 1 ATM

LIFE CYCLE

0 5 10 15 20 25 30 35 40 45

number of cycles

suggested action **Change the lens**

suggested action **Replace the goggles**

REFERENCE PARAMETERS

Lens	VLT = 85.8%
Elastic Band	ΔI = 73.3%

VLT= visible light trasmittance
ΔI = elongation%

Mask elements	Number of cycles		
	0÷20	20÷30	30÷40
Frame	No alteration	No alteration	No alteration
Lens	VLT = 82.6%	VLT = 82.3%	VLT = 81.4%
Elastic band	ΔI = 63.3%	ΔI = 61.2%	ΔI = 58.3%
Buckle	No alteration	No alteration	No alteration

10 121

Resistance to fogging of oculars
EN166:2001 Clause 7.3.2

SAMPLE	TIME TO FOGGING [s]	'N' MARKING REQUIREMENT [s]
AF121	>30	>8

Resistance to surface damage by fine particles
EN166:2001 Clause 7.3.1

SAMPLE	REDUCED LUMINANCE FACTOR [cd/lx·m²]	'K' MARKING REQUIREMENT [cd/lx·m²]
AF121	1.2	<5

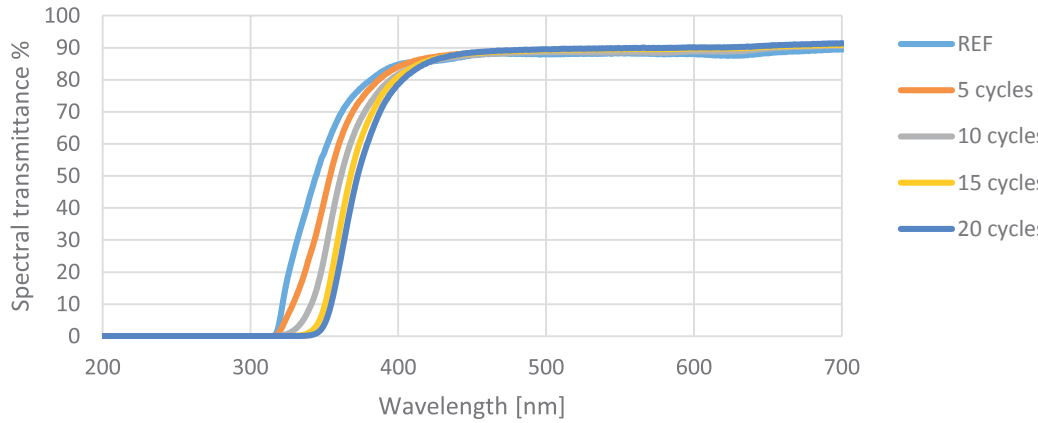
611 βγoxene® Lens

128 g

β and **γ** ray sterilization

20 βγoxene®

	Reference	1 cycle	5 cycles	10 cycles	15 cycles	20 cycles
Visible light trasmittance (VLT) βγoxene® Lens	89.1%	88.9%	88.7%	89.1%	88.5%	88.3%
	Variation	-0.2%	-0.4%	-0.4%	-0.6%	-0.8%
Visible light trasmittance (VLT) POLYCARBONATE Lens	87.2%	85.6%	78.2%	73.1%	66.4%	63.6%
	Variation	-1.8%	-10%	-16%	-24%	-27%



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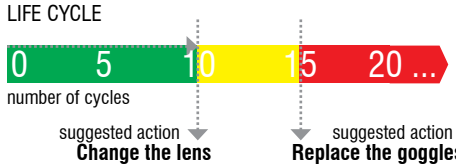
619 POLYCARBONATE Lens

92 g

autoclave sterilization, **β** and **γ** ray sterilization

GAMMA RAY radiation with 25 kGy



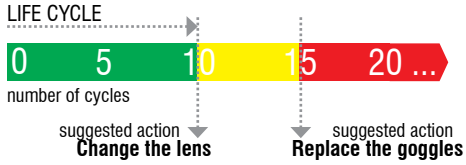
REFERENCE PARAMETERS

Lens	VLT = 87.4%
Elastic Band	ΔI = 60.0%

VLT= visible light trasmittance
ΔI = elongation%

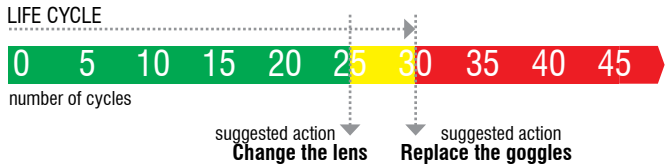
Mask elements	Number of cycles		
	0÷5	5÷10	10÷15
Frame	No alteration	No alteration	No alteration
Lens	VLT = 74.9% The lens becomes light yellow	VLT = 68.8% The lens becomes yellow	VLT = 62.8% The lens becomes yellow
Elastic band	ΔI = 40.0%	ΔI = 18.3%	ΔI = 13.3%
Buckle	No alteration	No alteration	No alteration

BETA RAY radiation with 25 kGy



Mask elements	Number of cycles		
	0÷5	5÷10	10÷15
Frame	No alteration	No alteration	No alteration
Lens	VLT = 82.7% The lens becomes light yellow	VLT = 68.8% The lens becomes yellow	VLT = 65.9% The lens becomes yellow
Elastic band	ΔI = 46.6%	ΔI = 21.6%	ΔI = 16.6%
Buckle	No alteration	No alteration	No alteration

Sterilization with STEAM 121°C for 30min in 1 ATM



Mask elements	Number of cycles		
	0÷5	5÷10	10÷15
Frame	No alteration	No alteration	No alterationd
Lens	VLT = 86.2%	VLT = 85.8%	VLT = 84.3%
Elastic band	ΔI = 54.8%	ΔI = 50.2%	ΔI = 42.7%
Buckle	No alteration	No alteration	No alteration

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