














Honeywell Safety Products

Laser Safety Products Catalog

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WARNING!

Honeywell Laser products should be used only in accordance with the manufacturer's instructions. Failure to follow such instructions and warnings may result in serious personal injury or serious illness, including blindness.

Providing safety products and solutions for your light management needs. Eyewear, Barriers, Windows, Specialty Products

Honeywell is the new brand name for the earlier Sperian/Glendale products. Since 1968, we have been the worldwide leader in serving the laser industry with laser protective eyewear, patient eye shield products and specialty filters for every industry where lasers are used. Our motto in product design is "Protection You Can Trust." Key factors considered in every design are: protection, visibility, comfort, and style.



Let us help you find your light management solution. Please visit us at:

WWW.HONEYWELLSAFETY.COM/AMERICAS/LASER

for detailed information on our current and new products.

Our chemists and optical engineers design every laser protective filter not only to meet or exceed current US and European standards; but to provide an advanced level of protection in every product. Some examples include:

- Our patent pending Laser-Gard Barrier System for use with optical tables
- Our HT™ (High Transmission) polymer filters that offer improved visibility for the same protection
- Crystal Clarity™ glass filters that provide unsurpassed visual acuity
- Polymer windows with expanded wavelength coverage
- Our new Honeywell Rio laser-resistant spectacle

Our frames are designed with fashion in mind and to incorporate features for a personalized fit that help make the eyewear comfortable to wear.

We manufacture our products in an ISO 9001 certified facility in Smithfield, Rhode Island in the USA. In addition, many of our products carry the CE

Honeywell Laser Products is a part of Honeywell Safety Products a worldwide leader in personal protective equipment.

sign, which involves extra third party product testing and reviews of our quality control. Honeywell Laser offers a large range of products manufactured to ANSI, EN 207 and EN 208 standards.

We also have a sales office in Mainz, Germany. Our international sales team consists of Certified Laser and Medical Safety Officers with nearly 90 years of combined experience in the laser field.



PRODUCT WARRANTY

The following Honeywell Laser Eyewear have a Lifetime Warranty on parts and labor for the frame and the lens. Scratches are not covered by the warranty. Frames: Honeywell Rio, Honeywell Rome, Honeywell New York, Honeywell Milan, Honeywell XC, Honeywell LGF, Honeywell Encore, Honeywell Flex Seal, Honeywell LS6.

The following products have a Limited Warranty on parts and labor of 2 years for the frame and the lens. Scratches are not covered by the warranty. Frames: Honeywell LOTG, Honeywell LGM, Honeywell LSK, Honeywell LS9, Honeywell Horizon, US 2001, I-Block II, SpectraShield, SpectraView

The following products have a Limited Warranty on parts and labor of 1 year. Scratches are not covered by the warranty. Products: LightSpeed II, Laser-Gard Barrier System

KEY TO COATINGS & SYMBOLS INDICATED IN THE CATALOG

COATINGS (Polymer Filters)

Anti-Fog Coating

This is a dual action coating to maximize visibility.

- Hydrophilic (water-loving) properties absorb and release moisture as needed in moist environments
- Hydrophobic (water-repelling) properties cause moisture to spread evenly across the lens surface in case of extreme humidity

Anti-Scratch Coating

Resistant to scratches and many chemicals.

- Permanently bonded to lenses, will not rub or wear off
- Highly scratch-resistant and ultra-resistant to many chemicals

SYMBOLS

Symbol	Description
Filters	
	Eyewear has polymer filters
	Eyewear has glass filters
	Eyewear has Crystal Clarity™ filter, a glass filter with dielectric coatings
Coatings	
	See description in above section
	See description in above section

Filter Technology

Our major focus is providing light management solutions to customers using any type of lasers or light sources. Light management is the science of absorbing or reflecting discreet bands of light while allowing other wavelengths to pass through. For example, we block blue and green colors while allowing you to see the rest of the color spectrum.

How do we do this? We start with selective laser-absorbing dyes. We then extrude this substance into pellets and then mould them into different shapes and sizes. We call this our “polymer filter.” Our most popular products include laser eyewear, laser windows, film and patient eye protection. We also produce specialty products – one such example being the diffusers used in sensors that automatically turn your car lights on and off.

The “filter” provides the necessary laser protection and may be made of polymer or glass. Honeywell has the largest line of polymer and glass filters for virtually any application in the industrial, military, communications, medical and specialty filter markets. Wavelength and power specific alignment filters (in Europe covered by the EN 208 standard) allow the user to see the termination point of the visible laser while still being protected.



POLYMER FILTERS

Polymer filters are designed to maximize visibility while providing unsurpassed attenuation by narrowing the absorption band to the specific laser wavelengths. These feather-weight, impact-resistant, polymer lenses are available for all of today’s lasers, and custom designs are available upon request.

Polymer High Transmission (HT™) Filters

Honeywell’s HT filters help maximize productivity by providing superior vision, coupled with all the advantages that polymer filters offer. This technology paves the way for a new generation of laser safety eyewear offering unparalleled protection, extra comfort and optimal wearability.

These lenses incorporate a patented notch dye technology that maximizes visible light transmission by limiting the wavelength band covered while providing the required protection level (or optical density) for your application. Combining a series of notch dyes together, these filters cover broad wavelength ranges yet still manage to offer superior visible light transmission and, more importantly, excellent overall vision!

GLASS FILTERS

Glass Filters can absorb higher heat densities than Polymer filters, thus they can offer higher protection levels. These mineral glass filters have properties that protect against a specific laser by absorbing the light passing through the filter, hence providing maximum visibility and protection. These filters are by nature heavier than polymer filters.

Crystal Clarity™ Filters

The lightest-weight coated glass filter in the industry! This technology protects against a laser light by reflecting it. These dielectrically-coated filters provide protection over a 30-degree angle of incidence in accordance with domestic and international laser eyewear standards (ANSI Z136.1 and EN 207). Many of our lenses offer a combination of reflective and absorptive technologies to provide a product with unsurpassed visual acuity while covering a wide range of wavelengths. As a result, often only one filter is necessary to cover the majority of lasers.

MOST POPULAR HONEYWELL LASER FILTERS

Listed in increasing order of wavelength – from UV to IR. This list is indicative of the variety of filters we manufacture, but is not exhaustive. We are continuously developing new filters and making improvements to our current filters. Please visit our website at www.honeywellsafety.com/americas/laser for the latest list of filters.

	Wavelength (in nm)	Laser Type	Filter #	VLT	Color	Material	CE
UV	200-380	Excimer	113	70%	Pink	Polymer	CE
	190-532	UV, Argon, 532nm	13	42%	Orange	Glass	-
VISIBLE	405 NEW!	Alignment (OD 2-3)	179	88%	Light Yellow	Polymer	CE
	440 NEW!	Alignment (OD 3)	180	80%	Yellow	Polymer	-
	488	Alignment: 488nm	150	72%	Yellow	Polymer	-
	488-514	Alignment: Argon	154	70%	Amber	Polymer	-
	532	Alignment: 532nm	151	65%	Amber	Polymer	CE
	200-532	Argon / KTP	103	50%	Orange	Polymer	CE
	488-676	Alignment: Argon / Krypton	156	22%	Light Blue-Green	Polymer	-
	515	Alignment: Argon	66	60%	Orange	Glass	-
	532 NEW!	Laser pointer: Green	166	43%	Salmon	Polymer	CE
	580-590	585nm Ophthalmic	130	25%	Pink	Polymer	-
	567-582	Yellow Diode	147	27%	Blue	Polymer	-
	582-589	Dye	10	35%	Violet	Glass	-
	591-597	Dye laser	124	25%	Light Blue	Polymer	CE
	592-600	Dye	105	24%	Blue	Polymer	-
	532, 630-670 NEW!	Laser Pointers: Green, Red	168	18%	Bronze	Polymer	CE
	614-666	Red Diode	118	21%	Light Blue	Polymer	-
	610-695	PDT	116	18%	Blue	Polymer	CE
	630-670 NEW	Alignment (OD 2-3)	178	23%	Green	Polymer	CE
	630-650	Alignment: HeNe (OD 1-2)	152	40%	Light Blue	Polymer	-
	670	Alignment: 670nm Diode (OD 1-2)	153	62%	Light Blue	Polymer	-
	625-680	Alignment: Red Diodes	135	52%	Aqua	Polymer	CE
	681-789	Ruby Plus	115	16%	Violet	Polymer	CE
	645-950 NEW	Low Level Lasers	181	22%	Green	Polymer	CE
	655-905	Low Level Lasers	160	28%	Green	Polymer	CE
	600-1064	Low Level Lasers	128	12%	Blue	Polymer	CE
	705-810	Alexandrite	106	35%	Dark Pink	Polymer	CE
	745-765	Alexandrite	129	60%	Yellow-Green	Polymer	CE
	755-855	Alexandrite, Diode Lasers	104	45%	Light Magenta	Polymer	CE
	750-860	Alexandrite, Diode Lasers	119	24%	Magenta	Polymer	-
	800-830 & 2700-3000	Diode 800nm, Erbium, HT Filter	131	72%	Yellow	Polymer	CE
755-3000	Alexandrite, Diode, YAG, Ho, Er	40	72%	Light Gray	Coated Glass	CE	
755 & 800-1064	Alexandrite, Diode & YAG	132	37%	Green	Polymer	-	
800-1064 NEW!	YAG, Diodes	162	57%	Green	Polymer	CE	
800-1800	Telecom, Diode	107	16%	Green	Polymer	CE	
810-1080	YAG, Diodes, HT Filter	137	68%	Lime	Polymer	CE	
875-1080 NEW!	YAG, Diodes, OD 8	170	45%	Green	Polymer	CE	
925-1064	YAG, Diodes	42	80%	Clear	Coated Glass	CE	
755-1064	GaAs, Ti, YAG, CO ₂	108	32%	Green	Polymer	CE	
800-1064 & 630-650	YAG, HeNe	157	37%	Blue	Polymer	-	
750-1350	Alexandrite, Ti, YAG, CO ₂	70	50%	Aqua	Glass	CE	
694-1320	Ruby, Alexandrite, YAG, CO ₂	45	36%	Green	Glass	-	
950-10600 NEW!	YAG, Ho, Er (expanded range)	96	75%	Light Gray	Glass	CE	
980-10600	High powered Nd:YAG lasers	16	72%	Light Gray	Glass	CE	
1050-1064	YAG & Harmonics	33	40%	Orange	Glass	-	
532 & 1050-164	Alignment: 532nm, YAG/Harmonics	55	32%	Orange	Glass	-	
200-532, 900-1070 NEW!	YAG & Harmonics, OD 8	171	22%	Brown	Polymer	CE	
200-532, 800-1070	YAG & Harmonics, OD 7	102	40%	Light Brown	Polymer	CE	
200-532, 850-1070	YAG & Harmonics, Alignment: 532nm	155	40%	Amber	Polymer	CE	
532 & 1064	YAG & Double Harmonic	200	50%	Clear	Coated Glass	CE	
200-532, 735-810, 1064	YAG, Alex, Diode, KTP	159	20%	Brown	Polymer	-	
750-1050	Broadband	29	9%	Brown/Orange	Glass	-	
200-532, 700-1064	Argon, Ti, Diodes, YAG, CO ₂	111	8%	Brown	Polymer	CE	
200-532, 770-1070	Diode 800nm, YAG, Alignment: 532nm	136	23%	Brown	Polymer	-	
FAR IR	2700-3000	Erbium	109	90%	Clear	Polymer	CE
	5000-11100	CO ₂	100	89%	Clear	Polymer	CE
	10600 NEW!	CO₂, High Power	09	90%	Clear	Glass	CE

Honeywell Laser Eyewear

Our frames are designed with fashion in mind and incorporate features that make the eyewear comfortable to wear. When combined with our extensive line of Laser Filters, Honeywell protective laser eyewear provides you with a product that you can trust, incorporating protection, visibility, comfort and style. **When selecting a suitable frame style, consider requirements for adjustability, comfort, the need to wear prescription frames, etc.** Consider the weight, but most importantly the style, since this will have a great impact on the weight distribution and comfort, as well as ensuring that you look and feel good. On the following pages, please review our various frame styles, grouped together based on *Spectacle*, *Fit-over* and *Goggles*.



SPECTACLES

The following frame styles are typically used as a spectacle.

Honeywell New York™ Series



Glass

Crystal Clarity

An innovative step in laser eyewear...like no other.

The Honeywell New York is a landmark design for combining the aspects of high level protection, comfort and style. It brings the world of fashion to laser eyewear.

- High protection you can trust in an eyewear designed for all-day wearability
- High quality OBE brand spring hinges provide the ultimate in comfort and durability
- Temples can be conformed for an improved face-form fit
- High level protection and style are built into the design of the eyewear, by adding stylish anodized metal pieces as accents in strategic locations
- Meets Standards: ANSI Z136.1, CE EN207
- Lifetime warranty on frame and lens (scratches not covered)

Created to protect. Designed to make you look good.

The Honeywell Milan takes into account the complicated factors of laser protection while still providing contemporary styling, fashion and adaptability. Built with YOU in mind – this eyewear has form-fitting lenses with multiple frame adjustments that allow you to create a personalized comfortable fit.

- Adjustable nose bridge to fit a majority of facial profiles
- Spring hinges provide the ultimate in comfort
- Flexible, multi-material temples allow you to personalize the fit
- Featherweight frame makes Sperian Milan a pleasure to wear
- Available with our HT™ filters.
- Meets Standards: ANSI Z136.1, CE EN207, CE EN208
- Lifetime warranty on frame and lens (scratches not covered)

Honeywell Milan™ Series



Polymer

Anti-Fog

Anti-Scratch

Extra coverage, style and protection.

The industry's first wrap-around laser eyewear encompasses the eye while the patented MMT – Multi-Material Technology® cushions every point of contact with your face for unparalleled comfort and all-day usage.

- Soft elastomeric brow guard and flexible “nose bridge fingers” cushion every point of contact with the face
- Adjustable temple length and inclination
- Wrap-around lens for uninterrupted peripheral vision and superior coverage
- Available with our HT filters
- *Detachable prescription insert available upon request: fits up to 6 diopters; your optician can easily mount lenses with your prescription into it*
- Meets Standards: ANSI Z136.1, CE EN207, CE EN208
- Lifetime warranty on frame and lens (scratches not covered)

Honeywell XC® Series



Polymer

Anti-Fog

Anti-Scratch



Wrap-around protection and adjustability.

This wrap-around spectacle design conforms closely to the face.

- Increased face form for that popular “wrapped” look and enhanced coverage
- Unique strap/headband for a versatile fit
- Removable closed-cell foam insert reduces dust exposure and soft nose pads for a comfortable fit
- New frame material that has excellent chemical resistance
- Meets Standards: ANSI Z136.1
- Lifetime warranty on frame and lens (scratches not covered)
- Available only in USA

Honeywell Rome™ Series



Glass

Crystal Clarity



OVER-THE-GLASS (OTG)

Fit-over or OTG frame styles are typically used over prescription eyewear. These can also be worn as a stand-alone Spectacle. Ideal for multiple users.

Honeywell Rio™ Series



Polymer Glass Crystal Clarity Anti-Scratch

Unmatched Protection, Comfort and Style



The frame with the highest protection level in our portfolio. Combines the best features of the Honeywell Encore in terms of coverage and the Honeywell New York in terms of style and laser protective features.

- Metal accents both on the outside and inside of the frame ensure high level of protection and user acceptance
- Detachable nose and flexible nose bridge: customize fit to multiple facial profiles
- Wire core temples: adjustable to your individual preferences
- Fits over a majority of prescription eyewear
- Polymer filters only: Anti-scratch coating
- Meets Standards: ANSI Z136.1, CE EN207, CE EN208
- Lifetime warranty on frame and lens (scratches not covered)

Honeywell LGF Series



Polymer Anti-Scratch

Uninterrupted vision.

Provides an excellent fit around the entire eye area and successfully combines laser safety with an attractive design and optimal comfort.

- One-piece, impact-resistant polymer lens with integral molded side-shield offers a large protective area with unrestricted wide-angle viewing
- Contoured frame conforms to the forehead providing excellent orbital coverage
- Fits over many prescription frames
- Adjustable temples
- Available with select HT™ filters.
- Meets Standards: ANSI Z136.1, CE EN207, CE EN208
- Lifetime warranty on frame and lens (scratches not covered)

Coverage and comfort.

The over-the-glass (OTG) Encore features a strong yet lightweight adjustable frame made of durable polymer material, making it comfortable to wear over long periods of time. The Encore Large is the standard size for Polymer Filters, although some popular polymer filters are also available in the Encore Small for petite faces. For Glass and Crystal Clarity™ Filters, the Encore Small is the standard size.

- Stylish, comfortable
- Adjustable and flexible temples
- Fits over a majority of prescription eyewear
- Available in 2 sizes, Encore Large (Polymer Filter) and Encore Small (Glass Filter)
- Polymer filters only: Anti-scratch coating
- Meets Standards: ANSI Z136.1, CE EN207, CE EN208
- Lifetime warranty on frame and lens (scratches not covered).

Honeywell Encore™ Series



Polymer

Glass

Crystal Clarity

Anti-Scratch

Universal design.

The Laser-Over-The-Glass (LOTG) eyewear provides excellent protection and will fit comfortably over many different prescription eyewear styles due to its larger size.

- Ratcheting hinge (not available in Europe) and temple length adjustments
- Duoflex® comfort-cushion temples
- Meets Standards: ANSI Z136.1, CE EN207
- Limited 2-year warranty on frame and lens (scratches not covered)
- *Limited availability*

Honeywell LOTG Series*



Polymer

Anti-Scratch





GOGGLES

The following frame styles are typically used as a Goggle fitting over prescription eyewear, encasing the eye.

Honeywell Flex Seal® Goggle



Ultimate in coverage and comfort.

The Flex Seal goggle has an indirect ventilation system that enhances comfort and minimizes fogging.

- Fits comfortably over prescription eyewear
- Silicon flange for long lasting comfort and customized fit
- Adjustable headband provides a secure fit
- Meets Standards: ANSI Z136.1, CE EN207
- Lifetime warranty on frame and lens (scratches not covered)

Polymer

Anti-Fog

Anti-Scratch

Honeywell LS6 Goggle



Designed for high protection.

The LS6 goggle with its aluminum insert is designed for high protection against laser radiation. Foam pads cushion the goggle at the facial contact points – replaceable foam pads are available.

- Fits comfortably over prescription eyewear
- Removable pads for personalized fit and hygiene
- Anti-fog design provides a free flow of air from bottom to top ensuring a cool comfortable fit
- Meets Standards: ANSI Z136.1, CE EN207
- Lifetime warranty on frame and lens (scratches not covered)

Glass

European Collection

KB goggles and BM spectacles are manufactured to stringent European standards. They are particularly designed for circumstances requiring high protection levels, and to protect against lasers commonly used in an industrial or scientific environment.



BM Light Spectacle

Universal design.

Frame made of metal with a special coating.

- Offers a high level of protection against laser radiation
- Has a very good fit around the entire eye area
- Packed in a soft pouch
- Meets Standards: CE EN 207
- Available only in Europe



Glass

BM Low Spectacle

Frame made of high quality polymer and is very robust.

- Offers the user an excellent field of view
- Can be worn comfortably for long periods of time
- Packed in a soft pouch
- Meets Standards: CE EN 207, CE EN 208
- Available only in Europe



Glass

KB AL Goggle



Glass

Frame made of aluminum.

- Provides significant resistance to laser radiation
- A wide field of view is achieved by the large lens shape
- The blue polymer material in contact with the face is free of natural and synthetic latex
- Fits over corrective spectacles
- Packed in a soft pouch
- Meets Standards: CE EN 207
- *Available only in Europe*

KB Low Goggle



Glass

Polymer frame is robust and lightweight.

- The large lenses offer an optimal field of view
- KB Low also fits over corrective spectacles
- Packed in a soft pouch
- Meets Standards: CE EN 207, CE EN208
- *Available only in Europe*



IPL Eyewear

Honeywell is the worldwide leader in Laser, IPL (Intense Pulsed Light) and Eye Shields. Our range of products for this market includes our patented Light Speed® safety eyewear: clear, electronic eyewear for IPL applications, and our stylish spectacles for IPL procedures.

ACTIVE IPL EYEWEAR

Light Speed eyewear provides an innovative solution for IPL applications.



New design based on customer feedback.

The patented technology reacts instantly to the IPL flash, darkening in less than half a millisecond (0.5 ms). Light Speed II eyewear offers excellent vision in the light state, allowing you to see pigmented and vascular lesions, while providing high protection during the IPL flash. It is battery operated – replacement batteries can be easily purchased worldwide.

- Protects eyes by darkening automatically in response to IPL flash
- Glare reduction factor 2 to 9, with permanent UV and IR protection
- Clarity in the non-dark state allows for good visibility
- Minimizes headache and other adverse effects associated with IPL glare
- Duoflex® comfort cushion temples for long lasting, all-day comfort
- Allows you to work safely and efficiently while providing good color acuity
- Increased viewing area (37%) and lighter weight (27%) compared to earlier Light Speed
- Meets Standards: CE

Light Speed® II





PASSIVE IPL EYEWEAR

IPL lens shades grant sufficient visibility to assist during treatments and are available in three levels of protection: light, medium and dark. You can choose between three contemporary frame designs: Honeywell XC[®], Honeywell LGF and Honeywell Milan[™].

Honeywell Milan[™] Series



Polymer

Anti-Fog

Anti-Scratch

Created to protect. Designed to make you look good.

The Honeywell Milan takes into account the complicated factors of IPL protection while still providing contemporary styling, fashion and adaptability. Built with you in mind – this eyewear has form-fitting lenses with multiple frame adjustments that allow you to create a personalized comfort fit.

- Featherweight frame makes Honeywell Milan a pleasure to wear
- Spring hinges provide the ultimate in comfort
- Flexible, multi-material temples allow you to personalize the fit
- Adjustable nose bridge to fit a majority of facial profiles
- Available in a tint that protects against the bright IPL flash

Honeywell XC[®] Series



Polymer

Anti-Fog

Anti-Scratch

Extra coverage, style and protection.

The industry's first wrap-around laser eyewear encompasses the eye while the patented MMT – Multi-Material Technology[®] cushions every point of contact with your face for unparalleled comfort and all day usage.

- Soft elastomeric brow guard and flexible “nose bridge fingers” cushion every point of contact with the face
- Adjustable temple length and inclination
- Wrap-around lens for uninterrupted peripheral vision and superior coverage
- Available in 3 different tints that protect against the bright IPL flash
- Meets Standards: CE
- Optional detachable prescription insert available: your optician can easily mount lenses with your prescription into it

Honeywell LGF Series*

Uninterrupted vision.

Provides an excellent fit around the entire eye area and successfully combines laser safety with an attractive design and optimal comfort.

- One-piece, impact-resistant polymer lens with integral molded side-shields offer a large protective area with unrestricted wide-angle viewing
- Contoured frame conforms to the forehead providing excellent orbital coverage
- Fits over many prescription frames
- Adjustable temples
- Available in 3 different tints that protect against the bright IPL flash
- Meets Standards: CE



Polymer

Anti-Scratch



Eyeshields for Your Clients

Honeywell is the worldwide leader in Laser, IPL (Intense Pulsed Light) and Eye Shields. Our range of products for this market includes our patented disposable and reusable Client Eye Shields for Laser, IPL, Microdermabrasion and Chemical Peel procedures.



DISPOSABLE EYESHIELDS FOR YOUR CLIENTS

We offer a range of patented disposable eye patches for use with Lasers, IPL (Intense Pulsed Light), LEDs (Light Emitting Diodes), Low-level Laser Therapy treatments and Microdermabrasion.

Thanks to these innovative products, cleaning and disinfecting patient or client eyewear is a thing of the past! They are simple and quick to use, latex free and hypoallergenic. They remain securely in place during the procedure. The convenient tabs make them easy and painless to remove or reposition. These Honeywell eye shields enable full access to temples, eyebrows and nose-bridge and are designed to protect most orbital sizes.

LASER-Aid® Disposable Laser Eye Shields



- Laser-safe for use with lasers of wavelengths between 190nm-11,000nm
- Protection level: OD 7@ 190-11,000nm
- EN 207: 315-1400 D LB6 + IR LB7, >1400-11000 DI LB4
- Glue around periphery of eye shield to prevent damage to eyelashes when removed
- Allows access to nose bridge, brow and temples
- Easy to apply and comfortable to wear
- Tab for easy removal or repositioning
- Latex-free and hypoallergenic
- Meets Standards: ANSI Z136.1, CE EN 207

LED-Aid™ Disposable Laser Eye Shields

- For use with LEDs, low-powered lasers (<1watt), IPL and microdermabrasion devices
- Protection level: OD 4@315-1400nm
- EN 207: 315-1400nm DIR LB4
- Glue around periphery of eye shield to prevent damage to eyelashes when removed
- Allows access to nose bridge, brow and temples
- Easy to apply and comfortable to wear
- Tab for easy removal or repositioning
- Latex-free and hypoallergenic
- Meets Standards: ANSI Z136.1, CE EN 207



IPL-Aid™ Non-Laser Disposable Eye Shields

- For use with IPL devices and microdermabrasion
- Glue around periphery of eye shield to prevent damage to eyelashes when removed
- Allows access to nose bridge, brow and temples
- Easy to apply and comfortable to wear
- Tab for easy removal or repositioning
- Easy-peel adhesive
- Latex-free and hypoallergenic
- Meets Standards: CE



DERM-Aid® Non-Laser Disposable Eye Shields

- For use with microdermabrasion, chemical peels and facials
- Allows access to nose bridge, brow and temples
- Glue around periphery of eye shield to prevent damage to eyelashes when removed
- Easy to apply and comfortable to wear
- Tab for easy removal or repositioning
- Easy-peel adhesive
- Latex-free and hypoallergenic
- Meets Standards: CE



Anesthesia-AID™ Non-Laser Disposable Eye Shields



For use as an eye cover during surgery

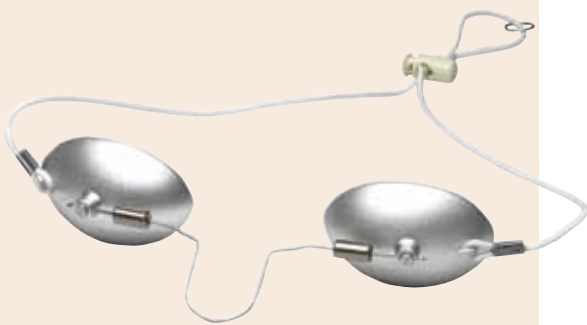
- Tab for easy application and repositioning
- Adhesive around edge provides secure fit and prevents removing eyelashes
- No sticky residue
- Latex-free, hypoallergenic and non sterile
- Keeps eye moist during surgery
- Keeps foreign particles out of the eye during surgery
- Meets Standards: CE



REUSABLE EYESHIELDS FOR YOUR CLIENTS

We engineer several products to ensure comprehensive protection for your clients receiving a wide variety of facial and cosmetic procedures. In many procedures, they replace the need for intraocular shields. At the same time, they are specially designed to allow unobstructed access for treatment of the nose bridge, temples and all other areas near the eye. I-Block® II, SpectraShield® and SpectraView™ are re-usable products and easy to clean.

I-Block® II



This ultra lightweight laser-resistant eye shield for clients allows easy access to all areas around the eye during treatment while covering the orbital area. I-Block II is designed with rounded edges to provide a firm yet comfortable fit, which can be quickly achieved due to the adjustability of the eye cups, nose piece and headband.

- New, improved swivel adjustment
- Holds eye cups in place while allowing you to adjust the “eyewire” for nasal area
- Increases patient comfort while providing easy access to facial area
- Ultra-light weight, laser-resistant patient shield
- Covers orbital area of the eye while allowing access to bridge, brow and temples
- Storage case and adjustable straps included
- Protection level: OD 7 @ 190nm-11,100nm
EN 207: >315-1400 D LB7 + IR LB8, 1400-11000 DI LB4
- Meets Standards: ANSI Z136.1, CE EN 207

SpectraShield is comfortable for your client, compact and fits securely, thanks to the adjustable nose piece and headband.

- Made of lightweight alloy
- Protects against all lasers
- Adjustable to different facial sizes
- Adjustable nosepiece and safety strap ensure a secure fit
- EN 207 certified against direct laser radiation
- Protection level: OD 7 @ 190nm-11,100nm
EN 207:
400 - 900 D LB6 + IR LB7 + M LB8
>900 - 1400 D LB7 + IRM LB8
>1400 - 11000 DIR LB4
- Meets Standards: ANSI Z136.1, CE EN 207

SpectraShield®



SpectraView has lenses inserted into the eye cups, so that the patient or client can see during the procedure resulting in extra comfort. SpectraView is wavelength specific and uses the same lens material as our laser eyewear.

- Generally used with patients who prefer visibility during the procedure
- Suitable for working with children
- Made of lightweight alloy
- Viewing window made of same materials as polymer or glass filters
- Adjustable to different facial sizes, including children
- Adjustable nose piece and safety strap ensure a secure fit
- Meets standards: ANSI Z136.1, CE EN207

SpectraView™



Polymer

Glass



Polymer and Glass Windows

Our key to success is enhancing visibility and protection with practical features that maximize your productivity. Our product line of windows takes that philosophy a step further by providing practical tools to help you reach your goals – efficiently and safely. We offer a range of polymer and glass windows for today’s most common wavelengths and they are available in a variety of sizes.

- 2' x 3' (60cm x 90cm) or 3' x 4' (90cm x 120cm) acrylic windows use the same absorbing dyes as our polymer lens products
- Nd:YAG window offers the highest VLT on the market
- Available for YAG/CO₂, YAG/KTP, Argon/KTP, Excimer/CO₂, other lasers
- Custom wavelengths and sizes available upon request
- May be used as windows in the housing around laser machines, as screens for laser workplaces or as display panels
- Meets standards: ANSI Z136.1. Select polymer/glass windows are certified to EN 207



Laser-Gard Barrier System

The patent-pending Laser-Gard Barrier System offers a unique, customizable way to securely enclose a laser set-up on an optical table, thereby enhancing experimental conditions while safeguarding personnel from exposure to laser radiation.

- conditions while safeguarding personnel from exposure to laser radiation.
- Significantly reduces direct and indirect laser hazard exposure
- Cable access around the entire perimeter of the optical table
- Unique adjustable panel
- Reduces interference from air turbulence, ambient light and dust
- Flexible, modular design
- Locking mechanism for each panel
- Provides cost-effective solution versus traditional curtains



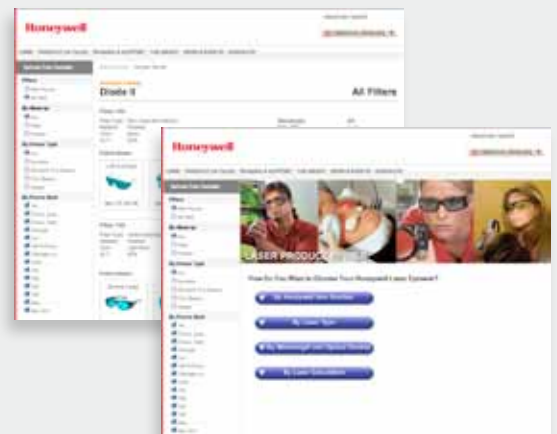
Laser Eyewear Selector Tool

Laser eyewear selection made easy

Visit www.honeywellsafety.com/americas/laser and click on “Eyewear Selector Tool” to get started. Developed exclusively for our customers to quickly determine the eyewear best suited for your laser protection requirements. Choose your Honeywell Laser Eyewear by -

- Honeywell Item Number
- Laser Type
- Wavelength and Optical Density
- Calculation of OD or EN207 protection level

Suggests appropriate Honeywell Laser Eyewear for the application. Fine tune your results based on frame style, frame type (Spectacle or fit-over), filter technology and sort by VLT (Visible Light Transmission)



Specialty Filters and Custom Solutions

Specialty filters enhance the performance of an unlimited world of products. In any application where you need to control the light, our specialty filters offer virtually unlimited potential. Laser absorbers can be processed in various polymers to meet special design needs. Our chemists and engineers work as consultants for you to develop the dye that accommodates your application. From research and development through testing, design, molding and manufacturing, Honeywell offers the services and expertise you need for a finished product. With our turnkey approach, you get 100% usable parts. We've been working with laser absorbers for the military since 1968, and we continue to develop enhanced filters to meet sophisticated market needs.

Specialty filters make light work for you.

Take advantage of our experience to meet your special design needs. Some examples of filters we have developed:

- Special filters for vehicles to improve the response of automatic light control systems and in automatic garage door openers
- Special filters for manufacturing processes and for the pharmaceutical industry
- Special avionics filters for military night vision goggles to suppress infrared light from cockpit and computer displays



Protection Against Laser Pointers

By combining narrow band notch laser dyes and proprietary know-how, we have produced the ultimate in safety eyewear designed specifically for personnel exposed to **RED** and **GREEN** laser pointers.

Laser-Gard Eyewear significantly reduces the threat posed by powerful green and red lasers and laser pointers, while simultaneously providing the UV and glare protection offered by high quality sunglasses.

- Soothing bronze colored sunglass tint for the day
- Unique salmon colored lens that provides excellent night time vision



Lens Color	Type of Laser	Light Transmitted Through Lens
Bronze	Red	<10%
	Green	<4%
Salmon	Green	<1%

All Honeywell Laser Eyewear includes a cleaning cloth or a micro-fiber cloth bag (which doubles as a cleaning cloth), a hard-case for storage and a safety hang cord to carry the eyewear around your neck.

Laser Eyewear Selection Guide

CONTENTS

1. Basics
2. Scientific terminology used in lasers
3. Laser Classification and Standards
4. Why do you require laser protection?
5. How to protect against lasers
6. How is protection for eyewear defined?
7. How to read protective eyewear markings
8. How to choose protective eyewear for lasers

1. Basics

LASER – Light **A**mplification by **S**timulated **E**mission of **R**adiation

A LASER is a device that generates a coherent beam of light – in simple words, light of a specific wavelength (or a small number of wavelengths). Natural daylight consists of a spectrum of many wavelengths of light.

“Visible light” is a part of the spectrum of electromagnetic radiation. Electromagnetic radiation is classified into types according to the wavelength (in order of increasing wavelength): gamma rays, X-rays, ultraviolet radiation, visible light, infrared radiation, microwaves and radio waves.

Most lasers available are typically in the ultraviolet, visible or infrared portion of the spectrum.



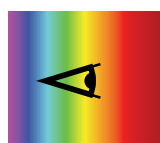
100nm



1nm

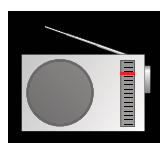


0.01nm

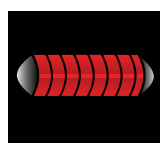


400nm

Visible



1m 1km



1mm 1cm

700nm

Infrared

Ultraviolet	UVC	100-280 nm
	UVB	280-315 nm
	UVA	315-400 nm
Visible	Violet	400-450 nm
	Blue	450-495 nm
	Green	495-570 nm
	Yellow	570-590 nm
	Orange	590-620 nm
	Red	620-700 nm
	Infrared	IRA
IRB		1400-3000 nm
IRC		3000-1,000,000 nm (1mm)

2. Scientific Terminology Used in Lasers

WAVELENGTH

Typically measured in *Nanometers* (nm) or *Microns* (μm)

1 nm = 10⁻⁹ m, 1 billionth (US) part of a meter

1 μm = 10⁻⁶ m, 1 millionth part of a meter

POWER

For Continuous Wave (CW) lasers, measured in W (watts) or mW (milliwatt). 1 W = 1000 mW.

ENERGY

For Pulsed Lasers, measured in J (joules) or mJ (millijoules). 1 J = 1000 mJ

PULSE DURATION (for Pulsed Lasers)

The pulse duration is expressed in short periods of time such as ms (milliseconds), μs (microseconds), ns (nanoseconds), ps (picoseconds) or fs (femtoseconds).

The pulse repetition rate or number of pulses per second is expressed in Hz (hertz).

Laser Types:

Continuous wave lasers

Pulsed lasers

Q-switched lasers

3. Laser Classification and Standards

Lasers are usually labeled with a safety class number.

This identifies the hazard associated with the laser. The higher the class, the more dangerous the laser. The classes as per the new system are Class 1, 1M, 2, 2M, 3R, 3B and 4. Please refer to the following standards for details and exact definitions:

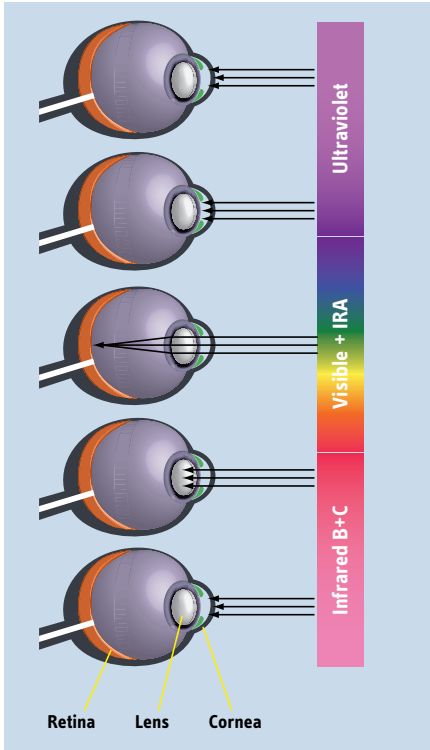
USA

ANSI Z136.1 American National Standard for Safe Use of Lasers

EUROPE

IEC 60825-1 Safety of laser products – Part 1: Equipment classification, requirements and user's guide

Laser Classification:			
New system (2002)	Old system	Eyewear required Description of damage to eye	by Standards
Class 1	Class I	Generally safe, usually because the light is completely enclosed. Example: lasers in CD players.	
Class 1M		Same as Class 1, but not safe when viewed with optical aids such as microscopes, telescopes, etc.	
Class 2	Class II	Safe during normal use. Damage prevented by blinking the eye or moving the head. Up to 1 mW power. Example: laser pointers.	
	Class IIa	Safe during normal use. A region in the low-power range of Class II where the laser requires in excess of 1000 seconds of continuous viewing to cause damage. Example: Supermarket laser scanners.	
Class 2M		Same as Class 2, but not safe when viewed with optical aids such as microscopes, telescopes, etc.	
Class 3R	Class IIIa	Involve a small risk of eye damage within the time that an eye blinks. Staring into such a beam for several seconds is likely to cause (minor) eye damage. Up to 5 mW power. Example: Alignment lasers.	
Class 3B	Class IIIb	Exposure to these lasers directly or from specular reflections can cause immediate severe eye damage. Up to 500 mW, such as lasers used in CD / DVD burners.	Should use protective eyewear
Class 4	Class IV	Lasers can cause serious damage to skin and eyes with both direct exposure and reflected light. These lasers may cause fires. Many medical, industrial and scientific lasers are in this class.	Shall use protective eyewear



4. Why Do You Require Laser Protection?

Per the ANSI Standard, MPE (maximum permissible exposure) is the level of laser radiation to which an unprotected person may be exposed without adverse biological changes in the eye or skin. A laser beam exposure can result in organ or tissue damage, but the severity of the injury is related to the wavelength and power of the laser beam. The eye is 100,000 times more sensitive to a laser than the skin due to the focusing characteristics of the eye.

The eye is not only affected by direct laser light, but by diffused or reflected laser light as well. A laser with a low power can cause serious damage. A person exposed to laser radiation (especially invisible radiation) may be unaware that damage is occurring. In addition, there are no pain sensing nerve endings in the retina.

Different wavelengths damage different portions of the eye, depending on how far the wavelength penetrates the eye (see table below).

Wavelength	Type	Damage To Eye
Ultraviolet	UVA, UVB, UVC	Affects cornea, lens and front of the eye
Visible	All visible colors	Affects retina
Infrared	IRA	Affects retina
Infrared	IRB, IRC	Affects cornea, lens and front of the eye

5. How to Protect Against LASERS.

As with any hazard evaluation, there is a 3-step process, done sequentially.

- A. Engineering Controls
- B. Administrative Controls
- C. Personal Protective Equipment

Engineering Controls

Safety provided by engineering the hazard out, example – interlocking switches that shut off the laser, if anyone enters an area of laser risk.

Administrative Controls

Safety provided by warning signs, notices and training personnel working with lasers.

Personal Protective Equipment (PPE)

Safety provided by PPE such as gloves, respirators, clothing and laser eyewear that protects against accidental exposure to laser. The eyewear is selected based on the laser wavelength and power density or energy density of the laser.

6. How Is Protection for Eyewear Defined?

The lens of the eyewear is a filter designed to reduce light transmittance of a specific wavelength region or band of wavelengths while allowing other wavelengths to pass through the lens. This filtering or absorptive capability of the lens can be defined by Optical Density (OD). The required OD is the minimum OD necessary to reduce the beam to a non-hazardous level.

Rating (USA)	Max. spectral transmittance	Transmittance of light reduced by
OD 1	10^{-1}	Reduced by factor of 10
OD 2	10^{-2}	Reduced by factor of 100
OD 3	10^{-3}	Reduced by factor of 1,000
OD 4	10^{-4}	Reduced by factor of 10,000
OD 5	10^{-5}	Reduced by factor of 100,000
OD 6	10^{-6}	Reduced by factor of 1,000,000
OD 7	10^{-7}	Reduced by factor of 10,000,000
OD 8	10^{-8}	Reduced by factor of 100,000,000

When choosing appropriate eyewear, exposure time is also a consideration. How long will the eyewear protect your eye before the beam passes through? How long will you have to react if you are hit with a direct or reflected beam? The protective eyewear shall exhibit a damage threshold for the following period based on the standard:

ANSI Z136.1	Period of 10 seconds
EN 207: 2009	Period of 5 seconds or 50 pulses, depending on the laser type

In Europe, the EN 207 LB-ratings incorporate not only the OD but also the laser stability. The LB-rating (on a scale from LB1 to LB10) signifies the power density or energy density up to which the eyewear will withstand the laser radiation for at least 5 seconds or 50 pulses. These values are defined in the EN 207 Standard. Per the European standard, the protection is for both the frame and lens.

Note that the LB-rating is only meaningful in conjunction with the relevant wavelength (or wavelength range) and the laser mode (D, I, R or M):

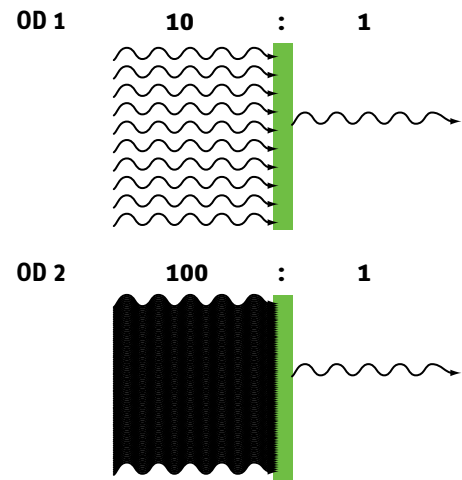
Test Conditions for Laser Type	Typical Laser Type	Pulse Length (s)	Minimum Number of Pulses
D	Continuous Wave Laser	5	1
I	Pulsed Laser	$> 10^{-6}$ to 0.25	50
R	Q switched Pulsed Laser	$> 10^{-9}$ to 10^{-6}	50
M	Mode-coupled Pulsed Laser	$< 10^{-9}$	50

Further, both the filter and the frame must be tested and certified by an independent notified body – the lower LB-rating at each wavelength is valid for the whole product. EN 207 contains details on how to calculate the required protection level and general guidance.

A separate standard, EN 208, defines protection levels (RB1 to RB5) for alignment filters. If you have a visible laser in the range 400nm-700nm, and you must be able to see the beam for your application, then you need an alignment filter in accordance with EN 208. In all other cases, EN 207 applies.

Consider an OD 6. In simple words, this would mean: *IF 1,000,000 waves of light are approaching the filter, THEN only 1 wave of light passes through to the eye.* This explanation is only to provide an idea about how much light transmission is reduced by the laser eyewear.

Therefore, the higher the OD, the lower the transmittance – hence, in the visible light range, the higher the OD, the darker the filter.



Example: OD 7 @ 1064nm
1064 D LB5 + IR LB7 GPT CE
VLT 68%
LOT # 1234567
31-80137



7. How to Read Protective Eyewear Markings.

OD 7 @ 1064nm:

This means light transmission reduced by factor of 10,000,000 (or 10⁻⁷) from the laser source, at the wavelength of 1064nm.

1064 D LB5 + IR LB7 GPT CE:

1064 Wavelength protected
D LB5 EN 207 protection level for laser mode D (Continuous Wave) at 1064nm,
IR LB7 EN 207 protection level for laser modes I (Pulsed) and R (Giant Pulsed) at 1064nm
GPT Manufacturer
CE Signifies conformity to the European Directive 89/686/EEC

VLT 68%:

Visible Light Transmission (VLT) is the amount of light that can be seen in the visible portion of the spectrum through the filter. In the above case, this is 68% of the ambient light. The higher the VLT, the lighter the lens appears and vice versa.

LOT #:

Indicates the manufacturing batch for quality and tracking purposes

31-80137:

Honeywell part number, use for reordering.

8. How to Choose Protective Eyewear for Lasers.

If You Know The Eyewear Specifications

STEP 1 Define specifications for eyewear - wavelength & OD or EN 207/EN 208 protection level.

STEP 2 Select a filter according to the required protection. If more than one filter is available for the same protection, base your selection on the following criteria—

- a. Weight – a lightweight product will generally be more comfortable to wear. Polymer filters are much lighter than glass filters.
- b. Select the highest possible VLT (Visible Light Transmission). The higher the VLT, the better you will be able to see.
- c. Do you need protection for multiple wavelengths? Bear in mind that filters which combine protection against several different wavelengths will often have a lower VLT (i.e. be darker) than a filter designed for a single wavelength.
- d. Do you need to see specific colors such as warning lights, colored wires, etc? Assess what impact the filter color and VLT may have on your ability to perform tasks while wearing the eyewear.
- e. Does the eyewear filter have anti-scratch and anti-fog capabilities?
- f. Note that the protection offered by all dielectrically-coated filters is angularly dependent. Honeywell's dielectrically-coated filters provide protection over a 30-degree angle of incidence in accordance with domestic and international laser eyewear standards (ANSI Z136.1 and EN 207). These are 100% tested for optical density and pinholes. They also happen to be the lightest weight coated filter in the industry.

STEP 3 Select a frame style. Frame style selection is critical and the following factors must be taken into account –

- a. Design – This is critical for all-day comfort, because it determines whether the weight of the product is evenly distributed, thereby avoiding unnecessary pressure on the nose bridge or temple area. To achieve a comfortable fit, check which frame styles have features to adapt or fit the eyewear to your face. Multiple adjustments will ensure an optimal, individual fit.
- b. Does the eyewear need to fit over prescription glasses?
- c. Do you wear the eyewear for long periods of time? If so, and you need prescription glasses, consider a personalized frame style with an RX insert such as Honeywell XC®.
- d. Flexible nose bridge fingers and spring hinges at the temples will significantly minimize pressure in the temple area.
- e. Does the eyewear provide good peripheral vision and side protection?

IMPORTANT: Note that just because the side shield is opaque, it does not mean that it has the same protection level as the filter. Ask the manufacturer to provide documentation as to OD / LB rating for the frame.

STEP 4 Provide the filter number and frame style to your Honeywell representative or distributor.

References:

ANSI Z136.1-2007, American National Standard for Safe Use of Lasers
 EN 207:2009, Personal Eye Protection – Filters and eye-protectors against laser radiation
 EN 208:2009, Personal Eye Protection – Eye-protectors for adjustment work on lasers and laser systems
 EN 60825-1, Safety of laser products – Part 1: Equipment classification, requirements and user's guide
 EN 12254, Screens for laser working places – safety requirements and testing
 Radiation at Work – Lasers at Work, Health Protection Agency, London, UK
 Ada Polla Tray: Laser Physics 101, Dermascope, July 2007, pp. 85-91.
 www.wikipedia.org, English version, sections "Laser" and "Laser Safety".

IF YOU DO NOT KNOW THE EYEWEAR SPECIFICATIONS

Our expert salespeople and customer service representatives can help you to find the appropriate information. Please refer to your laser device manufacturer for the specifications or look at the identifying labels on your laser device. The specifications required to process the request are:

- | | |
|--|----------|
| a. What is the environment in which laser is used – medical, industrial, R&D, university, etc. | a. _____ |
| b. Laser type (ex. CO ₂ , Nd:YAG, HeNe, etc.) | b. _____ |
| c. Wavelength in nanometers (nm) | c. _____ |
| d. Mode of operation – Continuous Wave, Pulsed Laser, Q-switched Laser, etc. | d. _____ |
| e. Is there an alignment wavelength for the Laser? | e. _____ |
| f. In case of CW Lasers, Power in Watts or milli-Watts (W, mW) | f. _____ |
| g. In case of Pulsed Lasers,
Energy in Joules or milli-Joules (J, mJ)
Pulse length in seconds (or milli-, micro-, nano-, pico- or femto-seconds)
Pulse frequency or repetition rate in hertz (Hz) | g. _____ |
| h. Specific requirements for your application (as per step 2 and 3 above) | h. _____ |
| i. Frame style desired | i. _____ |
| j. For EN 207 eyewear, also include the smallest accessible beam diameter and the beam divergence | j. _____ |

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