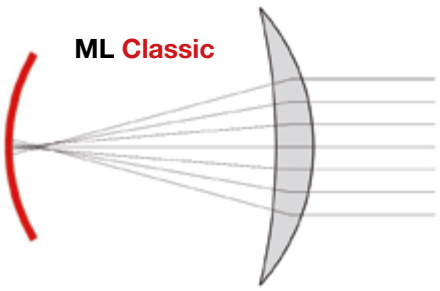
Our optical quality levels

Within our lens program, we are able to provide everything from simple optics to the most advanced individualized designs, of course always with a very generous power range. The difference between the different levels of optics is the final quality of the image. There are many factors that determines whether the wearer recognize these differences, such as powers, frame shape and what input data has been considered. Some are more sensitive to these differences than others. There is also a difference in how much we are ready to pay for quality optics.

ML Classic

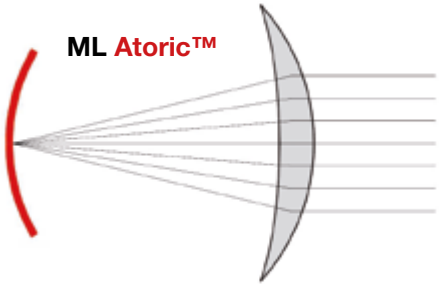
Traditional spherical optics.



Both front and back surface has spherical geometry.
ADVANTAGE: Simple technology, easy and straight forward to produce.
DISADVANTAGE: The peripheral part of the lens refracts the light too much which causes a discrepancy in the focus points between the central part and the peripheral part. The higher power, the higher spherical aberration. Same impact for plus and minus lenses.

ML Atoric™

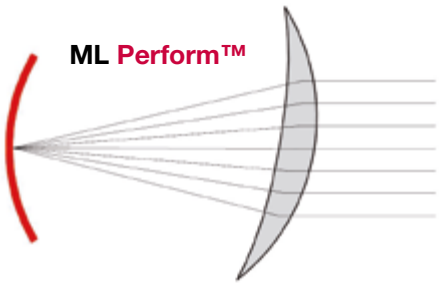
Back side atoric optics.



A traditionally aspheric lens has a generally molded front surface to compensate the spherical aberration. ML Atoric™ compensates the spherical aberration in a better way than aspheric lenses, since it compensates for the exact individual power in both meridians.
ADVANTAGE: Higher optical quality and little thinner lenses.
DISADVANTAGE: Only compensates for a visual angle straight forward through a non-tilted lens.

ML Perform™

Back side 3D fully optimized optics.



The ML Perform™ technology is a state of the art technology based on an accurate simulation of the eye-lens model. ML Perform™ technology provides the best possible optical balance considering power, visual angle, pantoscopic tilt, frame form angle, prism, frame shape etc. In summary, this calculation takes into account all the variables that may have influence on the final visual quality. Possible to include frame variables to make it even more individualized. These are: Cornea Vertex Distance (CVD), Face Form Tilt (FFT) and Pantoscopic Tilt (PT).
ADVANTAGE: A fully balanced and optimized optical solution. Highest possible optical quality and truly personalized.
DISADVANTAGE: This advanced lens needs more specific input and precise fitting for best performance.

Progressive designs

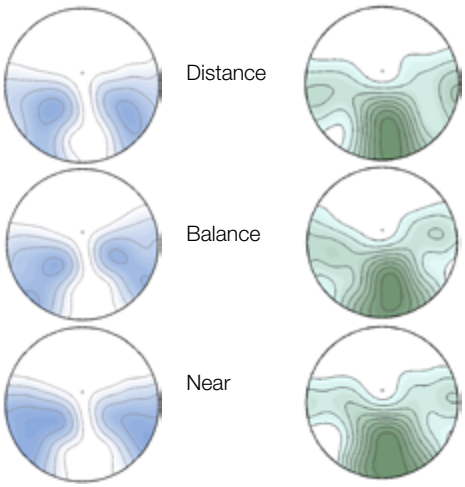
In addition to individualize the optical quality, we have a number of ways to personalize our progressive designs to meet the demands from each individual. It's hard to use only an eye exam to determine which type of progressive design a person should have. The intended use of the glasses, behavior and previous experience from progressive lenses influence to a great extent which design to chose.

Focus on distance or near

Distance:
A displacement of the distortions towards a wider field of view in the distance part of the lens and a narrower near part.

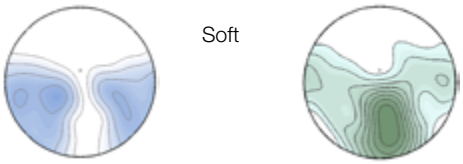
Balance:
Good compromise between distance, intermediate and near.

Near:
A displacement of the distortions towards a wider field of view in the near part and in the corridor. The distance part is slightly narrower.

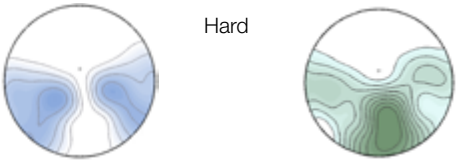


Soft or hard design

Soft design (Soft):
Smoother transition between the different parts of the lens. Easier adaption with less peripheral distortion and less sway. Decreases the optical zones. Suitable for new presbyopes with lower additions and people that are in a dynamic environment. Can also be preferred by myopes that naturally uses a smaller part of the lens.



Hard design (Clear):
Quicker transition between the different parts of the lens. Larger distortion free areas. More peripheral distortion and more sway can be experienced. Suitable for experienced presbyopes and people that has a more static environment. A harder design can also be preferred by hyperopes.



Corridor lengths

Our progressive lenses have up to four different corridor lengths to choose from. We always indicate the minimum fitting height. The most important factor that influences the choice is the frame height and pupil height but there are more factors involved. If you are used to a compact lens with short corridor and happy with that solution, you should not change that. See information to the right for more factors to take into account.

Other factors influencing corridor lenght:

Short corridor is preferred with

- Short CVD (cornea-vertex distance)
- Myopia
- Anisometropia

Long corridor is preferred with

- Long CVD (cornea-vertex distance)
- Hyperopes

Power limits - normal lenses and lenses with Myosoft

The limits you find in the price list are price limits. Below you find the actual limits of what we can produce.

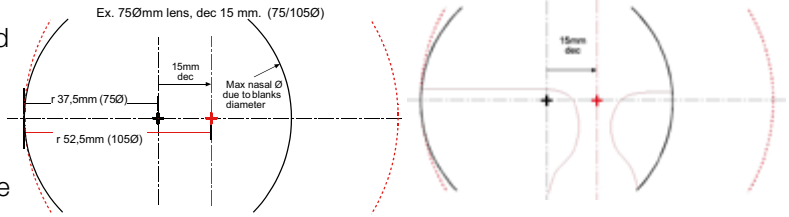
	1.50					1.60					1.67					1.74				
SV / Prog #	+ Sphere #	- Sphere	- Sphere w Myosoft	Cylinder	Prism	+ Sphere #	- Sphere	- Sphere w Myosoft	Cylinder	Prism	+ Sphere #	- Sphere	- Sphere w Myosoft	Cylinder	Prism	+ Sphere #	- Sphere	- Sphere w Myosoft	Cylinder	Prism
Ø60mm	+12	-12	-14	-6	8	+12	-13	-16	-7	8	+12	-13	-16	-7	6	+12	-15	-19	-9	6
Ø70mm	+10	-8	-14	-6	6	+10	-10	-16	-7	6	+10	-10	-16	-7	4	+8	-11	-19	-9	4
Ø75mm	+6	-6	-14	-6	6	+8	-9	-16	-7	5	+8	-9	-16	-7	4	+6	-9	-19	-9	4
Ø60mm Trans	+8	-10	-13	-6	8	+10	-13	-15	-7	8	+10	-13	-15	-7	6	-	-	-	-	-
Ø70mm Trans	+7	-8	-13	-6	6	+10	-10	-15	-7	6	+10	-10	-15	-7	4	-	-	-	-	-
Ø75mm Trans	+6	-6	-13	-6	4	+8	-9	-15	-7	5	+8	-9	-15	-7	4	-	-	-	-	-
Ø60mm Pol	+8	-10	-12	-6	8	+9	-12	-14	-7	8	+9	-12	-14	-7	6	-	-	-	-	-
Ø70mm Pol	+7	-8	-12	-6	6	+9	-9	-14	-7	6	+9	-9	-14	-7	4	-	-	-	-	-
Ø73mm Pol	+6	-6	-12	-6	4	+7	-8	-14	-7	5	+7	-8	-14	-7	4	-	-	-	-	-
Ø60mm DW	+8	-10	-12	-6	8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ø70mm DW	+7	-8	-12	-6	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

+ and - sphere means highest absolute power. All limits are approximate and depends on combination diameter, cylinder axis and prism base.
We recommend to always contact us if needed powers are close to the limits above.
= For progressive lenses, max + sphere is affected by addition. Add +2 reduces with ≈ 1 dptr. Add +3 with ≈ 2 dptr. Add +4 with ≈ 3 dptr.

These limits are approximate and for the mentioned diameters. They are valid for lenses without special grinding and for lenses with Myosoft (more information about Myosoft on the next page). We can always decrease diameter or use other grinding techniques to produce higher powers (see table on page 11). It's often possible to exceed the limits slightly depending on exact diameter, cylinder power, axis and prism base. If you are close to the limits, always contact us for consultation.

Diameter and decentration

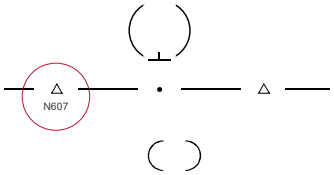
In most cases, the optical center can be displaced from the geometrical center with up to 15 mm. This gives us an opportunity to produce lenses with a radius from OC to temporal edge of more than 50 mm. This calculation is automatically done when frame shape is sent in. It is also included in lenses with Diamini.



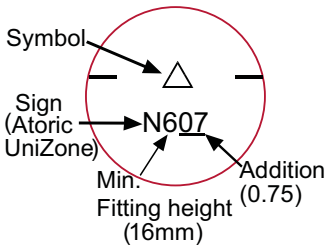
Fitting

Progressive

All our free form progressive lenses should be fitted with the fitting cross in center pupil, 4 mm above the engravings. Classic Image has the cross 2 mm above the engravings.



Temporal engraving



Single vision

Perform SV is fitted according to the image on the right. Fitting cross in center pupil, 4 mm above the engraving. Atoric SV is fitted so the optical axis of the lens goes through the rotation center of the eye.

Special grinding

Diamini

Full optimization of plus lenses. Lowest vertical diameter, optimized base curve and optimized thickness.
Available on all lenses in ML Lens program.

Hypersoft

Edge reduction for plus lenses with a soft overlap from optical zone to carrier. The optical zone will be adjusted according to power and frame shape.
Available on all lenses.

Myosoft

Edge reduction for minus lenses with a soft overlap from optical zone to carrier. The optical zone will be adjusted according to power and frame shape.
Available on all lenses.

Myolenti

Edge reduction for minus lenses with a sharp overlap from optical zone to convex carrier. The optical zone will be adjusted according to power and frame shape.
Available on all Classic lenses. Recommended for higher powers than Myosoft.

Combi cylinder

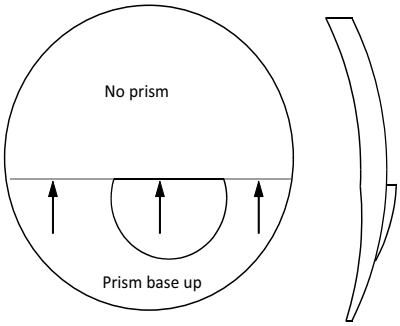
Optimization of lenses with high cylinder. The cylinder power is divided on both sides of the lens. Gives a higher optical quality and better aesthetics.
Available on all white lenses in index 1.5, 1.6 and 1.67.

ML Grand

A grinded image magnifier of 1-9 %. For balancing aniseikonia (one lens) or for achieving a small amount of magnifying effect (both lenses).
Available on all lenses.

Slab-off

Prismatic grinding used to balance anisometropia. Slab-off is applied only to half of the lens. In general, the lower part of the lens with most minus/least plus gets a base up prism.
Available on all lenses.



Formlenti

Edge thickness reduction through cutting lens material away based on the shape of the frame.
Available on all lenses.

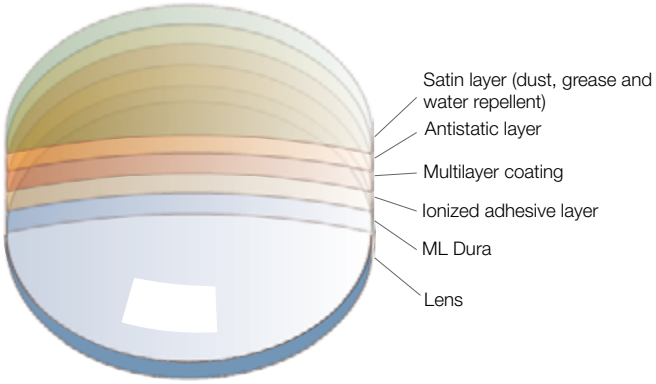
Biconvex / Biconcave

A biconvex or biconcave grinding.
Biconvex: Available on all Classic lenses.
Biconcave: Available on all white Classic lenses.

Our coatings

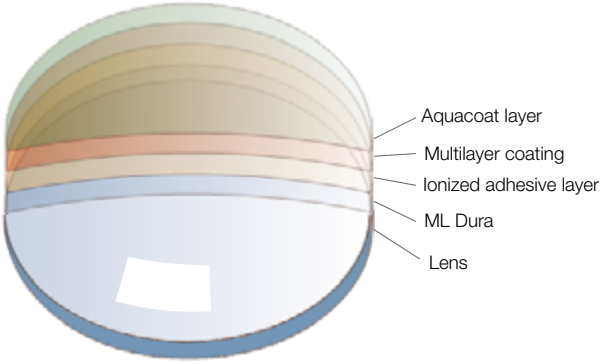
ML Prima+

Using the very latest in coating technology, where all parameters have been upgraded. Increasing transmission, more than 35% improved scratch resistance and an antistatic layer which significantly reduces dusts and spots. Finally, a satin layer that gives the lens a very slippery surface to make it really easy to clean.



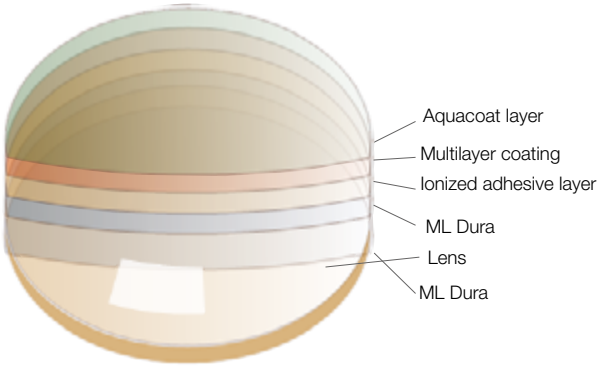
ML Prima

Our well known basic coating. A very good multilayer coat including the upgraded ML Dura, high transmission and the top layer Aquacoat that reduces the effects of dust and water.



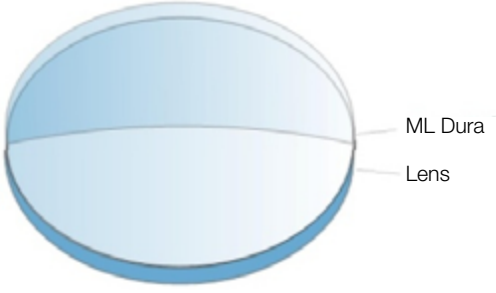
ML Prima Sun

A coating designed for sunglasses. Both front and back surface has ML Dura to provide the best scratch resistance. The back surface has an ML Prima to increase the comfort and to reduce annoying reflexes on the back side of the lens.



ML Dura

Our hard coat treatment for improved scratch resistance. Both sides of the lens are treated.



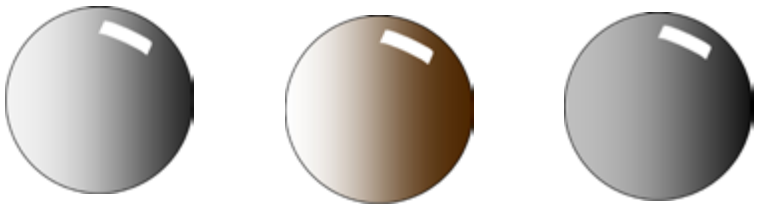
Our polarized and photochromic options

Polarized

NuPolar® polarized lenses

	Pol 1 Grey	Pol 3 Grey	Pol Green (G15)	Pol Brown
				
Index	1.5	1.5-1.67	1.5	1.5
Absorption	65 %	85 %	85 %	81 %
Polarization	99 %	99 %	99 %	99 %

Photochromic

	Transitions® Signature™ Grey	Transitions® Signature™ Brown	Transitions® XTRActive™ Grey
			
Index	1.5-1.67	1.5-1.67	1.5-1.6
Absorption	3-85 %	3-85 %	20-90 %
Polarization	-	-	-

Polarized and photochromic

DriveWear®

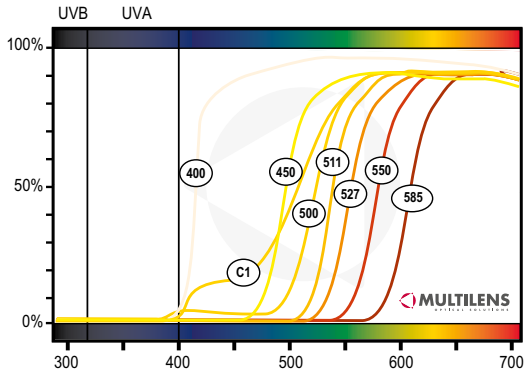
Index	1.5
Absorption	68-85 %
Polarization	95 %

ML Filter and other tints

We have a long experience of filter colors to increase contrast and comfort. They have a well proven effect to increase contrast sensitivity, especially for low vision patients. Combine filter color with a polarized layer to get enhanced contrast vision in sunglasses.

All ML Filter have 100 % blocking of UV light up to 400 nm

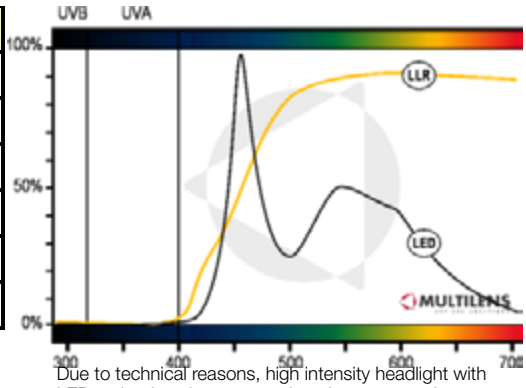
400	Absorbs some of the light up to 420 nm	Color: Face color
C1	Absorbs 80 % of all light up to 450 nm	Color: Yellow
450	Absorbs all light up to 450 nm	Color: Lemon
500	Absorbs 95 % of all light up to 500 nm	Color: Yellow
511	Absorbs all light up to 511 nm	Color: Yellow-Orange
527	Absorbs all light up to 527 nm	Color: Orange-Red
550	Absorbs all light up to 550 nm	Color: Red
585	Absorbs all light up to 585 nm	Color: Dark Red
LLR	Absorbs some of the light up to 500 nm	Color: Pale Yellow



ML FILTER	400	C1	450	500	511	527	550	585	LLR
1.50	O	O	●	O	●	●	●	●	●
1.50 Pol	O	O	●	O	●	●	●	●	●
1.50 Trans	O	O	●	O	●	●	●	-	●
1.60	O	O	●	O	●	●	-	-	-
1.60 Pol	O	O	●	O	●	●	-	-	-
1.60 Trans	O	O	-	O	●	-	-	-	-

● = Compatible Dura/Prima

O = Small color deviation might occur in combination with Dura/Prima



Due to technical reasons, high intensity headlight with LED technology have a wavelength spectrum shown above. Our LLR filter eliminates most of the top around 450 nm without compromising night vision. See more information in our filter documentation.

Other tints

We can tint almost any color, including gradient. It's possible to send us samples and we tint the lenses as close as possible. We have three colors that we see as standard color. These are grey, brown and green (see images below). You can also add a UV block that guaranteed absorbs all light up to 390 nm and 97 % of light up to 400 nm.

Our standard colors grey, brown and green:

INDEX	1.50
MATERIAL	CR-39
ABBE	59
DENSITY	1.32
UV BLOCK (390 nm)	95%*

Advantages:

- Low cost material
- Easy to tint
- Easy to edge
- Stable coating
- High abbe number

Disadvantages:

- Not suitable for nylor and rimless
- Low index

INDEX	1.60
MATERIAL	MR-8
ABBE	42
DENSITY	1.30
UV BLOCK (390 nm)	100%

Advantages:

- High tensile strength
- Best material for nylor and rimless
- Thinner than 1.5 index (≈20%)
- Tinting possible
- Stable coating

Disadvantages:

- Not possible to tint dark sun colors
- Not all filter colors can be tinted

INDEX	1.67
MATERIAL	MR-10
ABBE	32
DENSITY	1.35
UV BLOCK (390 nm)	100%

Advantages:

- High tensile strength
- Suitable for nylor and rimless
- Thinner than 1.6 index (≈10%)

Disadvantages:

- Not possible to tint
- Low abbe number
- Small thickness reduction compared to added cost

INDEX	1.74
MATERIAL	MR-174
ABBE	33
DENSITY	1.47
UV BLOCK (390 nm)	100%

Advantages:

- Thinner than 1.6 index (≈20%)
- High tensile strength
- Suitable for nylor and rimless

Disadvantages:

- Not possible to tint
- Low abbe number

* = Of all UV light. 100 % UV block up to approximately 350 nm

Overview of possible combinations

The table below shows an overview of what materials is compatible with which coatings, layers and special grindings.

	Coating					Tint/Filter							Pol/Trans/DW								Special grinding					
	Untreated	Dura	Prima	Prima+	Prima Sun	Standard tint < 50%	Standard tint > 50%	Tint as sample	Gradient	Filter	Filter gradient	Bilux/Franklin	Pol 1 Grey	Pol 3 Grey	Pol Brown	Pol Green	Trans Vl Brown	Trans Vl Grey	Trans XtrActive Grey	Drivewear ™	Diamini	Myosoft	Splendid/Minuslenti	Grand	Combi cylinder	Slab-off
1.50	●	●	●	●	●	●	●	●	●	◇	◇	●	●	●	●	●	●	●	●	●	●	●	○	●	○	○
1.60	-	■	●	●	●	●	-	-	-	◇	-	-	-	●	●	-	●	●	●	-	●	●	○	●	○	○
1.67	-	■	●	●	●	-	-	-	-	-	-	-	-	●	●	-	●	●	-	-	●	●	○	●	○	○
1.74	-	■	●	●	●	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●	●	○	●	-	○

● = Possible combination ■ = Mandatory ◇ = See chart on p. 8 ○ = See info on special grinding on p. 4-5