

Opti-Edge (Edge Blending)



What Is OptiEdge?

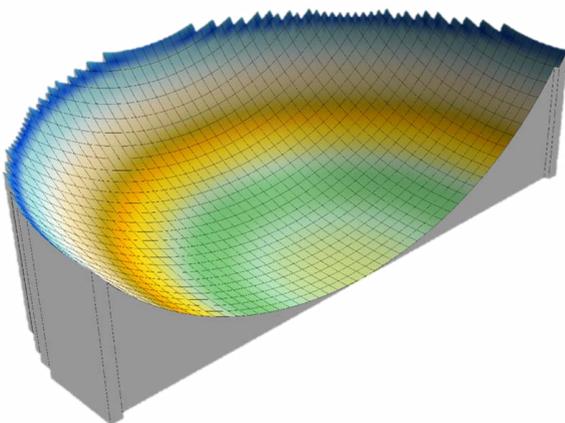
OptiEdge allows an improvement in the cosmetic appearance of higher powered lenses by making them lighter and thinner.

Where Is It Used?

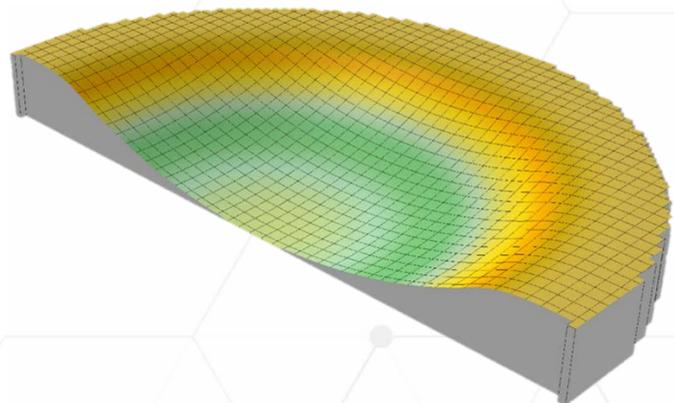
OptiEdge can be used for all freeform designs created using CrossbowsRx™, both plus and minus prescriptions.

This feature allows an improvement in the cosmetic appearance of higher powered minus lenses by flattening their outer edges and making them lighter and thinner. The best results are with high minus powers as $-10.00D$ and above.

For plus power lenses, the advantage of OptiEdge is a reduced centre thickness and therefore also a reduction in the weight of the lenses. On high power plus lenses there can be a significant reduction of thickness up to 2mm in centre thickness.



Without OptiEdge



With OptiEdge

Prescription & Front Surface

These plots show the thicknesses achieved using varying levels of edge blending within CrossbowsRx™. For edge blending levels 0-4 we present thicknesses for a spherical -15.00 D prescription in 1.498 index with a front curve of 1.00 D. Our 5th level of blending is a special case reserved for high prism prescriptions; for this we use a spherical prescription of -7.00 D, with -5.00 D of prism.

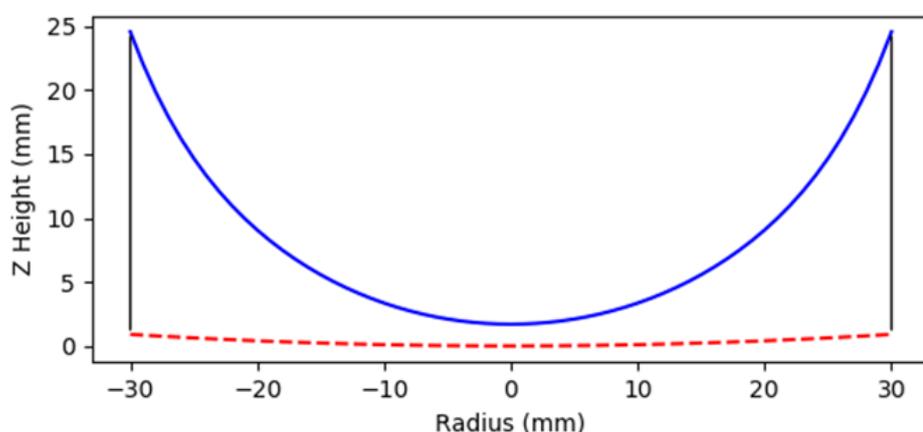
Blending Level (_LTLVL)	Maximum Edge Thickness (mm)	Weight (g)
0	23.67	39.07
1	11.99	30.29
2	9.10	26.45
3	7.33	23.47
4	2.61	19.50

Level 0

Maximum edge thickness = 23.67mm

Weight = 39.07g

NO BLENDING



With no blending the lens becomes very thick towards the edges.

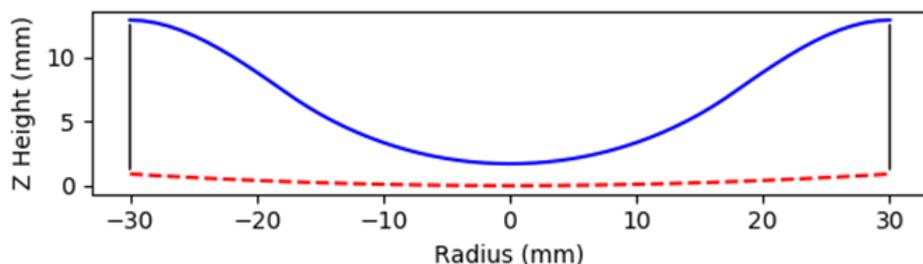
Larger lens diameters or higher prescriptions are not possible at this index as the spherical surface tends towards a vertical line at the crib diameter.

Level 1

Maximum edge thickness = 11.99mm

Weight = 30.29g

Low Blending



Low blending smooths the back surface of the lens so that it becomes flat at the crib edge.

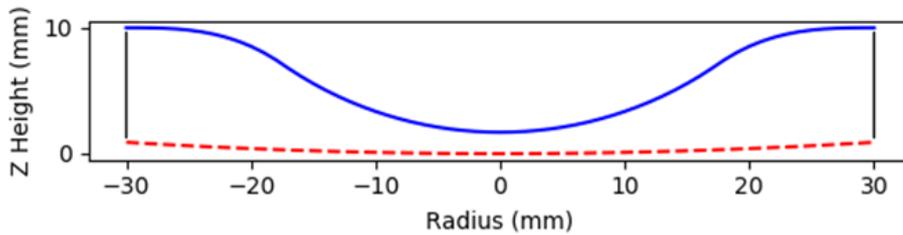
The thickness of the surface at the edge of the lens is prescription dependant.

Level 2

Maximum edge thickness = 9.10mm

Weight = 26.45g

High Blending



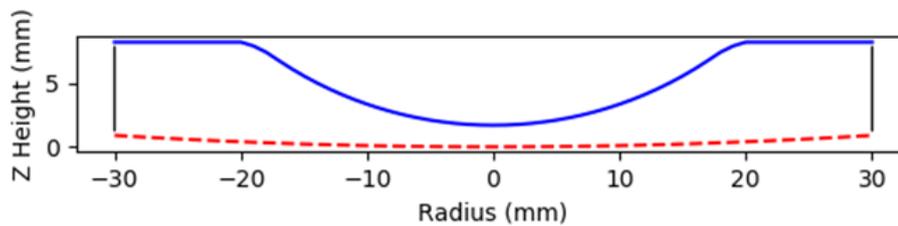
High blending works similarly to low blending, but with a more rapid change in curvature and thinner thicknesses at the edge of the lens.

Level 3

Maximum edge thickness = 7.33mm

Weight = 23.47g

Concave Flat



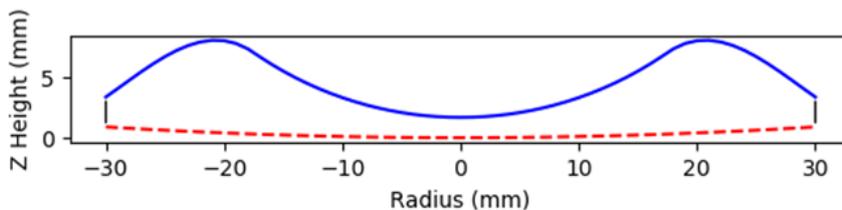
This level operates similarly to level 2 blending, but the surface becomes flat before the crib edge.

Level 4

Maximum edge thickness = 2.61mm

Weight = 19.50g

Convex

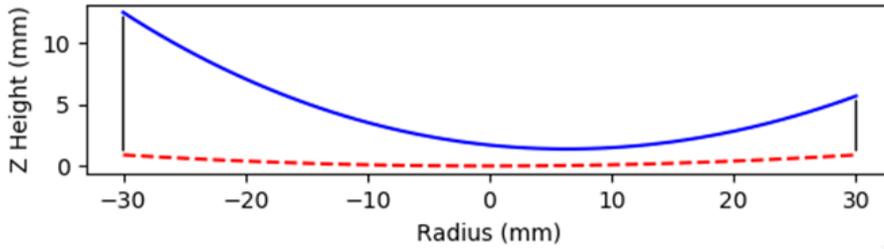


This level allows the surface to turn over, transitioning into a convex surface. By allowing the back surface to become convex, the thinnest edge thicknesses can be achieved.

To increase blending flexibility, the target thickness at the edge of the lens can be set using the MINTHKCD or MINEDG tags in the LDS file.

Maximum edge thickness = 11.58mm

Weight = 17.95g



Sample Lens

Without OptiEdge

Lenses with high prescription prism that results in a thick and thin edge.



Level 5

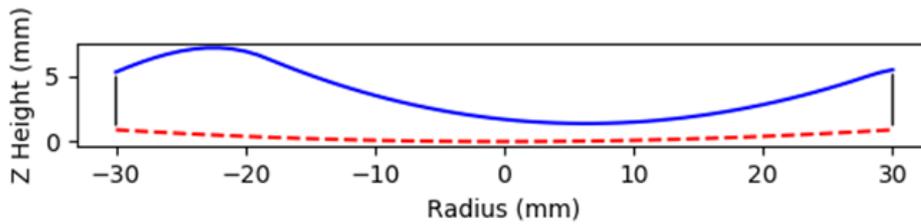
Maximum edge thickness = 4.70mm

Weight = 15.05g

Prism Convex

With OptiEdge

This level is intended for use with high prism lenses. The surface is treated similarly to level 4 blending; however the edge thickness target is set to be the thickness at the thinnest point on the edge of the finished lens.



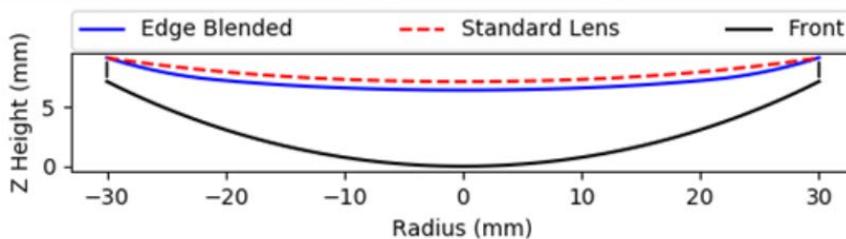
At level 5 the aperture at which blending begins is defined by the thickness at the thinnest point on the lens. This can be seen in the above plots as the (thinner) right hand side undergoes minimal blending, whereas the (thicker) left hand side is blended much more drastically. As such, the `_LTDIA` tag cannot be used with this level of edge blending.

Without OptiEdge Centre thickness = 7.15mm Weight = 16.86g

With OptiEdge Centre thickness = 6.43mm Weight = 14.69g

Plus OptiEdge

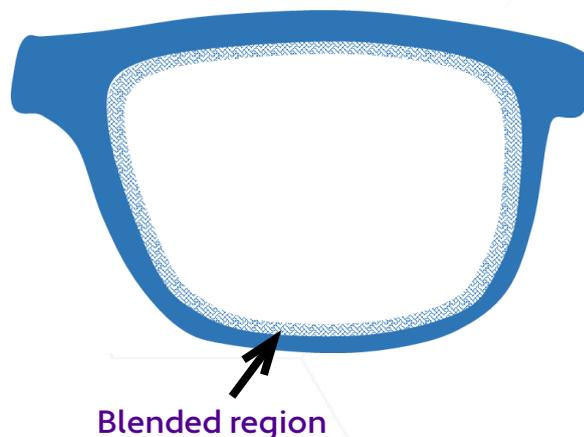
Our plus blending example uses a spherical +6.00 D prescription with a +7.50 D front curve, both in 1.498 index. For this type of blending the back surface of the lens is steepened towards the crib diameter. By steepening the lens at the edges we allow the centre of the lens to be thinner.



Frame Shape Edge Blending

CrossbowsRx™ also has the ability to perform edge blending on the complex frame shape. This ensures a greater width of optical zone, while still reducing the edge thickness of lenses. The blending is performed around the perimeter of the lens, and means that the size of the optical zone is automatically calculated for every individual job.

The width of the blended zone can be left as the default value, or altered to allow for a greater or lesser blended region.



Edge Blending Summary Table

Name	Level _LTLVL	Minus Prescriptions				Plus Prescriptions			
		Can be used	When do you apply	Max Edge Thickness (mm)***	Weight (g)***	Can be used	When do you apply	Centre Thickness (mm)****	Weight (g)****
Level 0 - Off	0	Yes	Low minus prescription	23.67	39.07	Yes	Low plus prescription	20.37	62.13
Level 1 Low Blending	1	Yes	Up to -15.00D	11.99	30.29	Yes	+6.00D and above	18.97	56.35
Level 2 High Blending	2	Yes	-15.00D and above	9.10	26.45	Yes	+6.00D and above	18.97	56.35
Level 3 Concave Flat*	3	Yes	-15.00D and above; to get flat edge	7.33	23.47	No	N/A		
Level 4 Convex*	4	Yes	To get convex edge and thinner edge	2.61	19.50	No			
Level 5 Prism Convex*	5	Yes	High prism lenses	4.70	15.05	No			

*can be hard to polish

** there is no difference between levels 1 and 2 for plus power prescription

*** 0-4 levels - SPH -15.00D, index 1.498, front curve 1.00 D

5 level - SPH -7.00 D, prism -5.00D

**** SPH +14.00 D, index 1.498



To activate
OptiEdge in your lab
contact support@
crossbowsoptical.com

crossbowsoptical.com