MiYOSMART

HOYA

A BREAKTHROUGH IN
MYOPIA CONTROL FOR YOUR CHILD

INTRODUCTION: AN AWARD-WINNING BREAKTHROUGH IN MYOPIA CONTROL

The Hong Kong Polytechnic University (PolyU) has a long history of conducting research in the field of myopia control.

Through their in-depth research[3-5] on myopic defocus theory, PolyU found that myopia progression can be controlled by providing clear vision and constant myopic defocus simultaneously.

The researchers found that the axial length of the eyeball is affected by the position of an image projected in relation to the retina. When the position of a well-defined portion of the projected image is located continuously in front of the retina, the axial length tends to become shorter and vice versa. **Thus, this indicates that projecting images in front and on the retina at the same time can control axial growth and myopia progression.**

Tapping into PolyU's expertise in myopia control, Hoya Vision Care joined forces with PolyU in 2012 and began to develop a technology to control myopia progression using ophthalmic lenses.

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THE HONG KONG POLYTECHNIC UNIVERSITY 香港理工大學

This technology is known as the Defocus Incorporated Multiple Segments (D.I.M.S.), which is the foundation of Hoya's myopia control lenses, known as MiyoSmart.

An award-winning[6] and clinically proven solution for myopia control[7]

Beyond correcting myopic refractive error, a two-year clinical trial started in 2014 involving 160 children aged 8 to 13, demonstrating that MiyoSmart lenses with D.I.M.S. (Defocus Incorporated Multiple Segments) technology works to curb myopic progression in average by **59%**.[7]

The results of the trial also showed that the children using MiyoSmart lenses had less axial elongation on average by **60%** as compared to those wearing single vision lenses. Myopia progression was completely stopped in **21.5%** of those wearing MiyoSmart lenses.[7]

In 2018, MiyoSmart lenses with D.I.M.S. technology was awarded the prestigious Grand Prize, Grand Award and Special Gold Medal at the 46th International Exhibition of Inventions of Geneva, Switzerland.[6]

D.I.M.S. Technology

Curbs myopia progression on average by **59%** and has proven to halt myopia progression in **21.5%** of children through controlling eye growth[7]

MiyoSmart with D.I.M.S. technology is a single vision corrective lens with a convex surface that is comprised of hundreds of small segments, each providing myopic defocus. When the eye sees through a pupil-sized area (shown in the illustration), which covers an area of 6-7 small segments, it creates two focus points. One in front of the retina, controlled by the light passing through the segments of the lens, making each segment form a focus point. The other focus is on the retina, focused by the light passing through the area without segments. This lens structure makes it possible to simultaneously slow the growth of the eyeball and provide clear vision. Within the 9.4 mm diameter circle area in the center of the lens, there are no defocus segments. This was designed to make it possible to measure lens power and correct refractive error to meet clear vision needs.

How D.I.M.S. technology works in MiyoSmart lenses

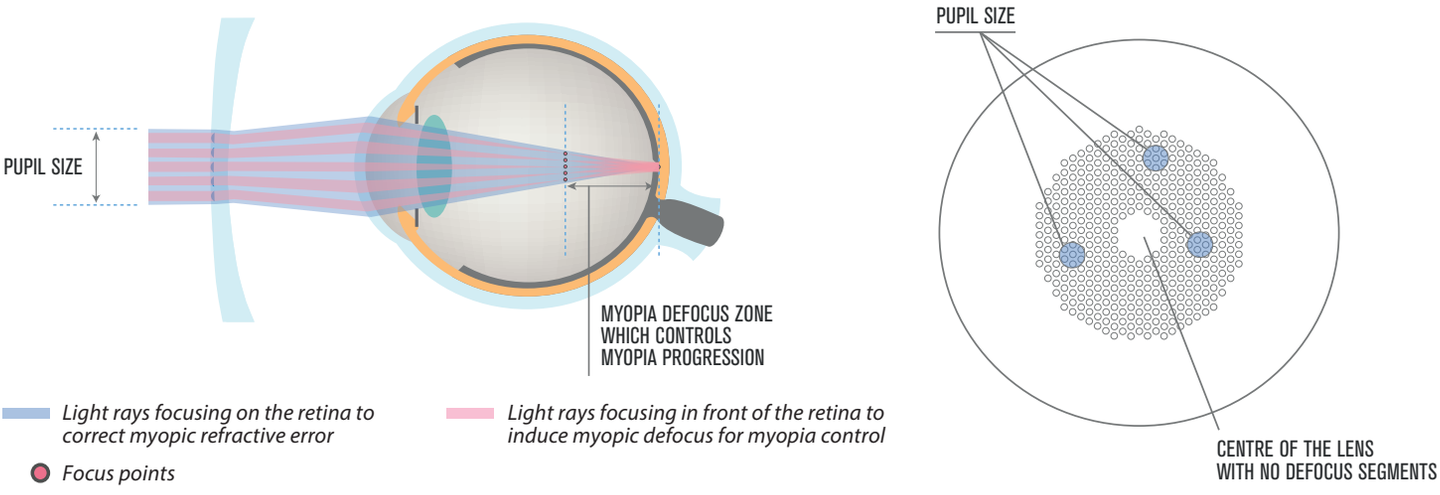
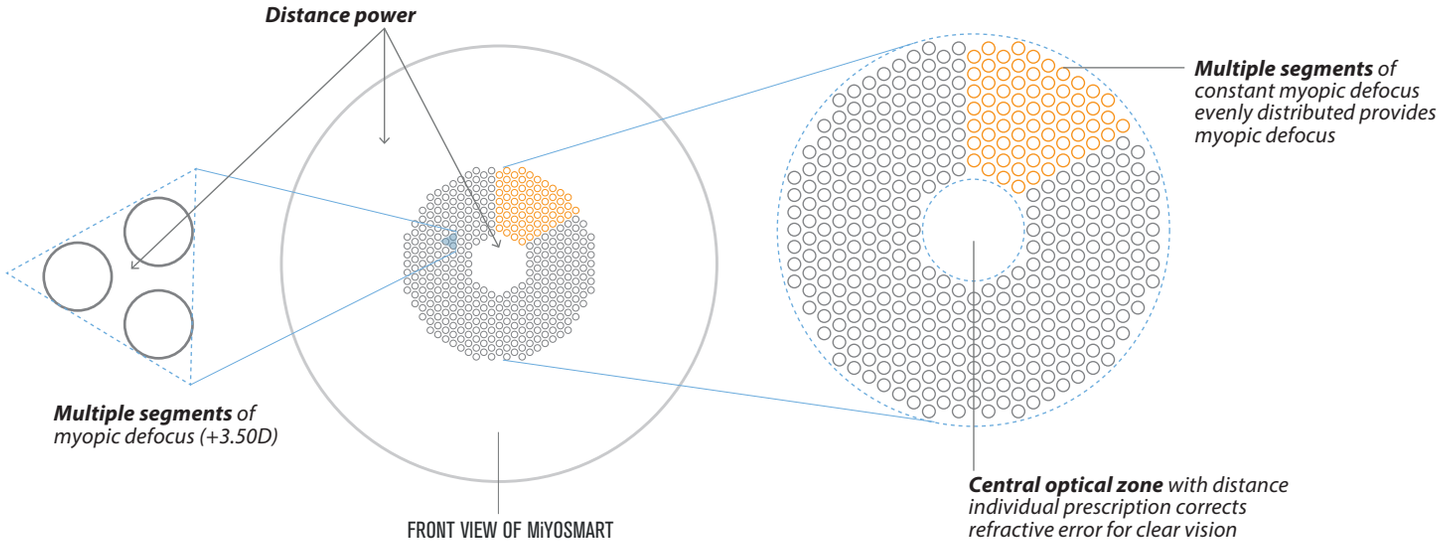


**Illustration is not representational of actual lens shape and design*

To effectively control myopia progression, myopic defocus has to be continuous, even during eye movement. This requires a significant quantity of defocus segments that are evenly distributed on the lens surface. With decades of experience in ophthalmic lens production and development, Hoya Vision Care incorporated the D.I.M.S. technology and successfully produced smooth-surfaced lenses with multiple defocus segments. This award winning concept of innovative production technology resulted in MiyoSmart's cosmetic appearance to be very similar to regular single vision lenses.



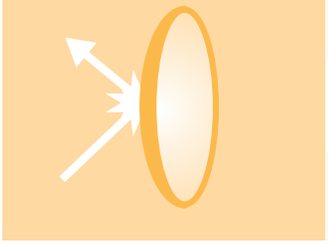
Eye Shield

Impact-resistant material with UV protection

As children are active, there is a need for the lens material to be impact-resistant to offer their eyes the protection they need. MiyoSmart uses **polycarbonate 1.59** which is a highly impact-resistant material that has passed the high velocity impact drop ball test.*

Eye shield also comes with UV protection for an all-round protective solution.

MiYOSMART'S EYE SHIELD



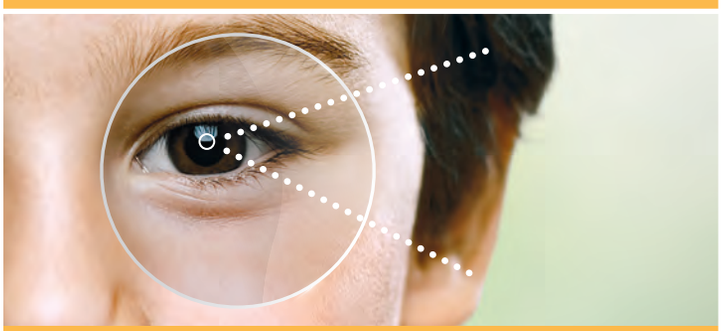
- Impact resistant
- Thin and lightweight
- UV protection

STRENGTH/DURABILITY ANSI Z87.1 HIGH-VELOCITY IMPACT TEST*

Standard plastic	★ Polycarbonate 1.59	High and ultra-high index
Fail	Pass	Fail

STRONG AND SAFE

THIN AND LIGHT



OPTICAL CLARITY

UV PROTECTION

***ANSI Z87.1 High Velocity Impact Test:** The American National Standards Institute (ANSI) has established the most stringent impact and projectile penetration standards for ophthalmic lenses. The standard specifies that high impact lenses must pass "high velocity" testing where ¼" steel pallets are "shot" at the lens at a velocity of 150 feet-per-second. Polycarbonate passes ANSI Z87.1- the industry's highest standards for high-impact resistance ensuring full protection to every child.

MiyoSmart Coating

Easy-to-clean special anti-reflective durable coating

MiyoSmart has a low-maintenance multi-coating that is easy-to-clean and durable, making it suitable for kids.

WATER-REPELLENT
Prevents water stains

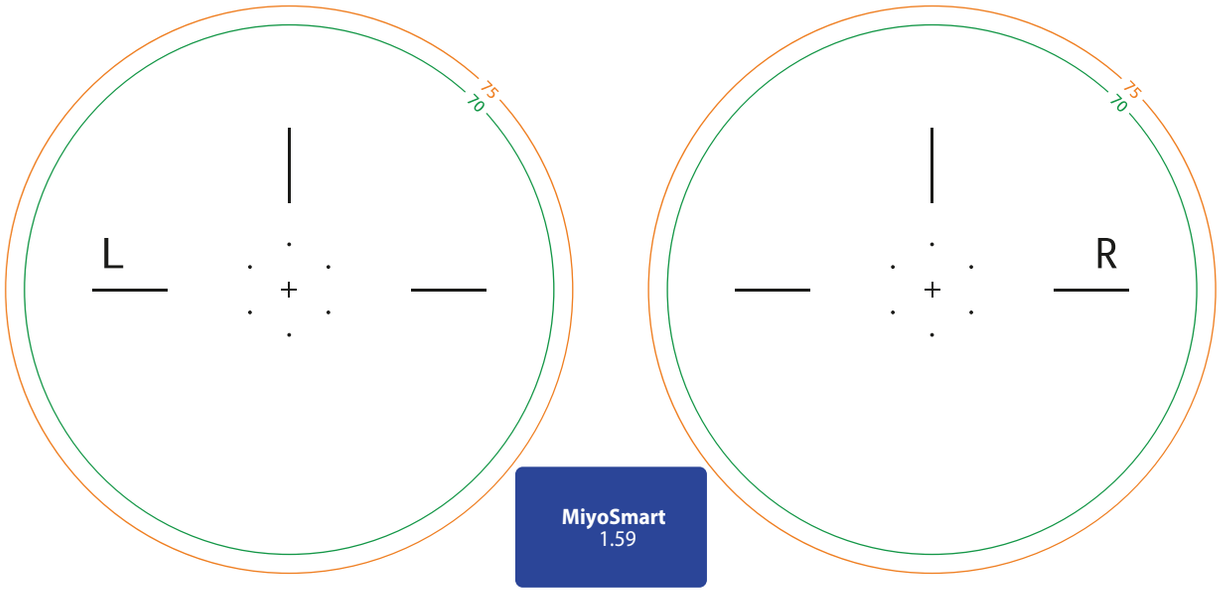
SPECIAL ANTI-REFLECTIVE DURABLE COATING
Longer lasting coating

AVAILABILITY CHART AND PRODUCT INFORMATION

MiYOSMART

INDEX	1.59
POWER	**SPH:** 0.00D to -6.00D
	CYL: -4.00D
	Combined power: -6.50D with maximum CYL of -4.00D
CENTRAL CLEAR ZONE	Around 9.4mm in diameter
TREATMENT ZONE	Around 33mm in diameter
DEFOCUS POWER	+3.50D
PRESCRIBED PRISM	3Δ Dioptre per lens
DIAMETER	75mm (from plano up to total power -6.00)

MiyoSmart Centration Chart



USER GUIDE FOR MiYOSMART

MiYOSMART

The user guide identifies what new MiyoSmart wearers should take note of during the adaptation period.

Adaption to new lenses

1. It always takes time to get used to your new lenses. The time needed really depends on the individual but wearers can expect about one to two weeks to adapt.
2. During the adaptation time, the wearer should avoid:

Intensive sport activities, e.g. playing football

Operating any kind of vehicle, e.g. cycling, scootering

Using the new lenses in physical activities or physical education lessons at school

Using them on high staircases or in other places with different height, e.g. climbing

3. The wearer should contact their eye care professional if any discomfort is experienced after two weeks of wearing their new lenses.
4. It is recommended that wearers have follow-up visits every 6 months to monitor myopia progression.

Taking care of eyesight. Wearers should:

1. Spend more time outdoors, minimum 2 hours a day.

2. Take breaks from long intensive screen time or near-work.[8]

3. Take note of ergonomics, such as proper lighting, posture, keeping the recommended working distance is very important to keep your eyes healthy while doing the near-work.

4. Get regular eye check-ups to ensure that myopia or other vision problems are detected and treated early, reducing the worsening of vision, myopia progression and potential complications of high myopia.

MiYOSMART: A SMART APPROACH TO MYOPIA

If you had a way to slow down the progression of myopia, surely you would want to know how. MiyoSmart delivers on this promise and fills a rapidly growing market need. MiyoSmart is an innovative ophthalmic lens for myopia control developed by Hoya Vision Care in cooperation with its research collaborator, The Hong Kong Polytechnic University (PolyU). Engineered specifically to correct myopic refractive error and slow down myopia progression, MiyoSmart comes to market at a time when the incidence of myopia is on the rise.[1]

An estimated **5 billion** people, or **half of the global population**, could be affected by shortsightedness by **2050**.[1]

Research shows that **more time spent on near-work activities** is associated with a **greater likelihood of myopia**.[2]

Many factors, such as pervasive near-work activities, less time spent outdoors, the high value placed on education performance, and other lifestyle considerations, indicate that the incidence of myopia in children will increase.[1]

Examples of common near-work activities: Use of digital devices, desk-work, reading

Parents concerned for their children's health and well-being, who invest heavily in their kids' futures, will be at the forefront of an already vast and growing market for myopia control lenses. As a non-invasive and effective myopia control solution, MiyoSmart lets you help parents and children to ensure future vision health while continuing to tap into the market potential that fuels your business.

OPTOMETRIC PROTOCOL FOR MiYOSMART

MiYOSMART

To ensure maximized benefits of MiyoSmart are experienced, it is recommended to follow the optometric protocol.

1ST VISIT

During the first visit, all visual functions of the child should be assessed to get a clear overview of the current status. A few factors are examined to ascertain if the wearer is suitable for MiyoSmart.

It is also essential to know the child and his/her parents' ocular and optical history.

Preliminary investigation will also have to be done, where it is compulsory to conduct the following tests and examinations:

- **VA OD/OS and OU at far and near without correction and with current prescription lenses**
- **Pupillary Examination**
- **Cover-uncover test**
- **Ocular Motility Test**

Other mandatory assessments include:

- **Refraction and VA**
- **Visual Functions Assessment (with new correction)**
- **Ocular Health Assessment**

AFTERCARE VISIT

Frequency: 2 weeks after the wearer first uses MiyoSmart

The aftercare visit is required to evaluate how the wearer is coping with MiyoSmart. The wearer will be requested to fill in an adaptation and performance questionnaire which will reveal how the wearer is coping with MiyoSmart and highlight any adaptation issues.

FOLLOW-UP VISITS

Frequency: Once every 6 months

It is recommended that the wearer has follow-up visits for the visual functions assessment and to monitor myopia progression every 6 months.

Disclaimer: MiyoSmart lenses may not be able to address individuals' conditions due to natural deficiencies, illnesses, pre-existing medical conditions and/or advanced age of consumers. The information contained herein is general information and is not intended to constitute medical advice. Please consult your eye care professional for more information prior to the use of MiyoSmart lenses. Miyosmart lenses are available to Canadian practitioners and consumers only. Not available in the United States of America.

References

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[5] Tse DY, Lam CS, Guggenheim JA, Lam C, Li KK, Liu Q, To CH. Simultaneous defocus integration during refractive development. Invest Ophthalmol Vis Sci. 2007 Dec;48(12):5352-9.

[6] Prize list of the 46th International Exhibition of Inventions of Geneva – 2018. http://www.inventions-geneva.ch/images/2018_PRIZE_LIST_English.pdf, accessed 29.08.18

[7] Lam CSY, Tang WC, Lee RPK, Chun RKM, To CH. A randomized clinical trial for myopia control – use of myopic defocus spectacle lens. 8th International Congress of Behavioral Optometry (ICBO), 26-29 of April 2018. Sydney, Australia.

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