

Lagado's ONSI-56: High Oxygen in GP CLs

Lagado's new hydrophilic-surface gas permeable contact lens offers wearers increased comfort with softer, wetter surfaces.

By Mark Cloer, ABOC, NCLE-AC, FCLSA, FNAO

FOR years polymer scientists and contact lens manufacturers have been on a quest to develop a contact lens material with the comfort of a soft lens and the improved optical performance of a gas permeable (GP) lens. The Lagado Corp. accomplished this last September when it received FDA approval for its new ONSI-56 (onsifocon A) contact lens material. Using this material, Lagado brings to the market a hydrophilic-surface gas permeable lens with the highest rate of oxygen permeability.

Hydration Is the Key

ONSI-56's distinction is its silicone hydrogel polymer formulation that allows it to absorb

Why Silicone Hydrogel Polymers?

Silicone hydrogels were developed to solve the basic problems of both soft and hard contact lenses. Standard hydrogel soft lenses cannot be made with sufficient oxygen permeability for long-term extended wear, and standard first generation fluoro-silicone acrylate hard lenses cannot be made as comfortable as hydrogel soft lenses.

Silicone-hydrogel polymers provide the answers to both problems. Whether it is the need for more oxygen permeability or greater comfort, the latest developments in contact-lens-related polymer science have opened up new territory for lens fitters.

water on the surface. In essence, lenses made with ONSI-56 are gas permeable with hydrophilic surface qualities that are like those of a soft silicone hydrogel lens. Because of this it has been labeled by some as a "rigid silicone hydrogel" lens.

The cross-linked polymer mixture was developed to improve

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oxygen permeability and wettability. Since water cannot migrate into the matrix of the hard interior of the lens, the lens will not expand like a soft hydrogel. This means that the resultant lens is hard, as well as oxygen-permeable, much like a conventional GP but with a hydrated surface similar to that of a soft silicone hydrogel lens.

More Comfortable

This lens material promises to address many problems, including wettability. Traditional gas permeable lenses are plagued by dryness, but the hydrated silicone hydrogel surface of the ONSI-56 provides added moisture and comfort. Patients will also find the comfort of this lens an



ONSI-56 is used to create hydrophilic-surface gas permeable lenses with the highest rate of oxygen permeability.

improvement over their conventional GP lenses because of the soft outer silicone hydrogel surface.

How It Works

Preparing silicone-hydrogel polymers is difficult to accomplish in the chemical laboratory. Polymerizing mixtures of hydrophilic monomers with hydrophobic silicone monomers often produce opaque polymers. Regions of compatibility can be found, however, by varying the different monomer concentrations.

In soft silicone hydrogels the monomer ratios are adjusted to produce water contents in the 20% to 50% range. These lenses are very similar to standard hydrogel lenses, with the added advantage of increased oxygen permeability.

With further formulation adjustments, silicone-hydrogel polymers can be prepared with low water contents that are rigid. The water content and expansion is constrained by decreasing the ratio of hydrophilic monomers and increasing crosslink density. Thus the polymer cannot absorb

water into the interior of the matrix, but the surface can hydrate like a soft silicone hydrogel lens.

Mixing It Up

Integrating polymers to obtain the levels of wettability and oxygen permeability has been likened to combining oil and water. Changes in polymer science have created many new and exciting options, and Lagado's new ONSI-56 lens material promises improved comfort and fewer complications for contact lens practitioners and their patients.

ONSI-56 contact lenses are available from most custom contact lens labs worldwide. ■

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WHERE TO FIND IT:

The Lagado Corp.
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