



**S**oClear contact lenses are rigid gas-permeable (RGP) lenses with a diameter of around 14mm. Because they rest on both the cornea and the scleral conjunctiva they are otherwise known as 'corneo-sclerals' (Figure 1).

The lens curves flatten rapidly towards the periphery of the lens in order to match the shape of the limbus and scleral regions. Due to this unique design they are useful in cases where an RGP is needed for good vision, but a corneal lens is not tolerated.

There are four SoClear designs:

- SoClear Standard (STD)
- SoClear Keratoconus (Kera)
- SoClear Multifocal (MF) and
- SoClear Reverse Curve (RC).

The lenses are available in the UK from No7 Laboratories.

## Applications

The large size and custom-fitted design mean SoClear lenses are extremely stable on the eye and move very little. When the peripheral curves are properly aligned with the sclera, the lids will

# Lens file: SoClear

Continuing a new series looking at recently introduced specialist contact lenses, **Sophie Taylor-West** describes a large-diameter corneo-scleral RGP lens

**Figure 1**  
A diagnostic SoClear lens



overhang the edges of the lens and there will be little/no lid interaction on blink, minimising lens awareness and making the lens remarkably comfortable.

The RGP material ensures the crisp clear vision associated with corneal RGPs, without the potential problems of non-tolerance due to comfort issues, 3+9 o'clock staining, lost lenses and foreign bodies behind the lens. These benefits make SoClear a good choice for both problem-solving in tricky cases and sometimes even as 'first choice' lenses.

● Good choice in high ametropia and particularly in cases of high corneal astigmatism, where SoClear can mask the corneal cyl without the need for toric designs

● For keratoconic/ectatic patients who are very sensitive to corneal touch, non-tolerant to other lenses, too advanced for soft lenses, or new fits, SoClears can be fit to fully vault the central cornea, taking the pressure off the cone while still often providing very good VA

● Highly oblate corneas following refractive surgery can be difficult to fit with lenses as soft lenses tend to wrinkle in the centre, and corneal RGPs often require complex curves to fit the cornea and centre properly. SoClear RC lenses are made so that the base curve matches the central corneal topography and the peripheral curves align with the sclera, providing an alignment, stable fit which can drastically reduce problems such as haloes, flare/glare and starburst distortions

● Highly irregular corneas due to grafting, Intacs or trauma can be effectively fitted with SoClear where other lenses may have failed due to poor comfort, centration or vision.

The various applications for each SoClear design are detailed in Table 1.

## Technical features

SoClear is manufactured from Boston XO or Optimum Extra, both of which have a high Dk. All designs have a spherical optic zone. Table 2 lists the lens features and parameters, though flatter/ steeper curves or higher prescriptions may be possible on request. The lenses are plasma coated to improve wettability and there is one fenestration in the mid-periphery of the lens to aid removal.

The peripheral curves can be flattened or steepened almost indefinitely in order to fit almost any corneal and scleral curvatures. The overall sagittal depth of the lens is determined by the peripheral curves.

For optimal vision and comfort SoClear should be replaced every 6-12 months.

## Fitting procedure

We need to think of the fitting process in three separate parts:

- Fitting the centre of the lens to align with the central cornea
- Fitting the periphery of the lens to align with the sclera
- Deciding appropriate lens diameter.

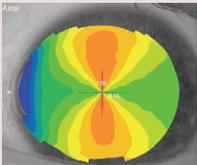
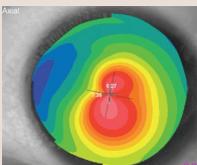
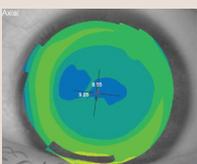
SoClear is fitted using a diagnostic set. Each base curve in the fitting set has its own associated peripheral curve; the flatter the base curve, the flatter the peripheral curve. The base curve of any lens can be manufactured with the peripheral curve of any other lens.

## Insertion and removal

To insert the lens on a healthy cornea, place a drop or two of saline into the bowl of the lens and place the lens directly onto the cornea. If there is a bubble beneath the lens (see below).

For keratoconic/irregular corneas, or if the above method results in a bubble, use the following method: Fill the lens to the brim with saline and dip a Fluoret into it. Then ask the patient to lean forward and tilt their head down. Pop the lens on to the cornea, coming up from underneath. If a bubble results, remove and start again. To remove, use the patient's top and bottom lids to lift or 'lever' the edges of the lens away from the eye, as you do to remove a corneal lens (Figures 2a and b).

**TABLE 1**  
Applications

Design	Indications
SoClear Standard 	<ul style="list-style-type: none"> <li>● Myopia, hypermetropia and regular or irregular astigmatism and patients who do not achieve good VA with soft lenses or who cannot tolerate corneal RGPs</li> <li>● Dry eye patients</li> <li>● Irregular or scarred corneas</li> <li>● Mild to severe 'low-sag' cones and ectasia</li> <li>● Post-penetrating keratoplasty</li> <li>● Post-Intacs</li> <li>● Pellucid marginal degeneration</li> </ul>
SoClear KERA 	<ul style="list-style-type: none"> <li>● Mild to severe peripheral cones</li> <li>● Mild to severe central cones</li> <li>● Post-Lasik induced ectasia</li> <li>● Pellucid marginal degeneration</li> <li>● Steep or protruding grafts</li> </ul>
SoClear RC 	<ul style="list-style-type: none"> <li>● Post-refractive surgery / post-Lasik patients</li> <li>● Post-RK</li> <li>● Post-PRK</li> <li>● Those with naturally occurring or post-traumatic keratometry readings of ~8.40mm or flatter</li> </ul>



**Figure 2a** Position lower lid under inferior edge of lens

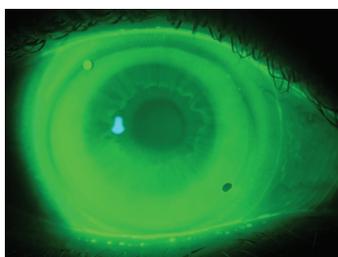


**Figure 2b** Lever out lens

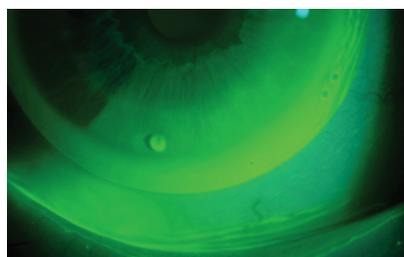
### Fitting the base curve

For non-ectasic corneas, the aim is to align the base curve of the lens with that of the average corneal k-readings. Using keratometry or ideally topography, measure the corneal curvature. For healthy corneas, insert the diagnostic lens most closely matching the flat-k reading. For irregular corneas, choose a lens most closely matching the average central corneal curvature. Insert the lens as described and assess using a slit lamp with blue light and Wratten filter. Ignoring the periphery at this point, observe the fluorescein fitting pattern, looking for alignment across as much of the central cornea as possible (Figure 3). If there is too much clearance, try a flatter base curve. If there is too much corneal touch, insert a steeper base curve.

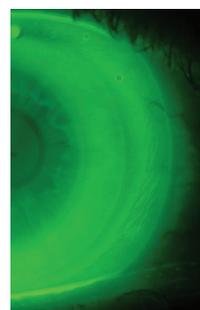
When fitting keratoconus, the sag of the lens is more important than the base curve, so it can be tricky to decide which lens to start with. Even with some quite advanced cones, a surprisingly flat base curve may be sufficient. Start with the standard set first, inserting the 7.42mm lens as your starting point. The fit of this lens will tell you which direction



**Figure 3** Look for as close a fluorescein fit as possible



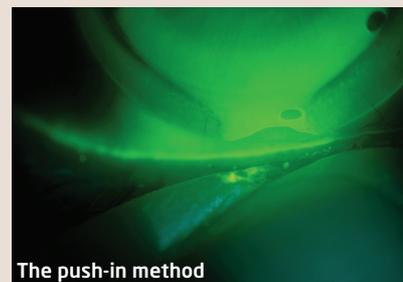
**Figure 4** Flat periphery



**Figure 5** Steeper lens

### FITTING TIPS

- Don't forget that sag is controlled by the PC. If you significantly flatten the PC in a keratoconus fitting you may drop the lens down onto the cone, altering the fit considerably
- If you are fitting a lens to vault the cornea, order without a fenestration to avoid bubbles
- Don't expect the lens to move more than around 0.25mm on blink. This is normal; tear exchange is facilitated more by a 'pump' mechanism than by lens movement
- During insertion using the 'filled lens' approach, ask the patient to hold his or her own lower lid. This leaves one hand free to concentrate on getting the lens in the eye without a bubble!
- Use the 'push-in' method to assess the PC: nudge the lower lid just below the lens edge, and indent the sclera gently to assess how much pressure is needed to cause slight stand off (see pic). A well fitting edge will need a gentle push. If a hard push is needed, a tight periphery is indicated. If very little pressure is required, the edge may be too flat



The push-in method

**TABLE 2**

### Technical features

Materials, manufacture and use	Design and parameters
Boston XO or Optimum Extra	Spherical OZ for all designs
Dk 130 (BXO) or 100 (OE)	BOZD variable for STD, MF and RC; 9.6mm for KERA design
Tints- Ice blue or clear	BOZR 5.80-10.90mm in 0.01mm steps (all designs)
Plasma coated as standard	TD 13.3 - 16mm in 0.1mm steps (all designs)
Daily wear	BVP $\pm 25.00D$ (spherical only)
Replaced every 6-12 months	Multifocal has a front surface centre-near design. Add up to +3.00 in 0.25D steps. 1.5-2.5mm seg size in 0.25mm steps
	1 fenestration as standard

to go in order to achieve your desired fit, whether that be fully vaulting, skimming the cone or even some touch.

When you are satisfied with the fit of the base curve, perform a spherical over-refraction. Then turn your attention to the periphery of the lens.

### Fitting the periphery

It is important that the peripheral curve (PC) fits properly as this will often determine the success of your fit. The lens should be aligned all the way around the edge, with no stand-off and no scleral impingement/vessel blanching. Patient comfort will tell you a great deal about the fit of the PC. An 'edgy' lens usually indicates a flat periphery (Figure 4). Insert steeper or flatter lenses until you have achieved

the desired fit (Figure 5). You can then combine the appropriate base curve with the best periphery.

### Total diameter

The lens should ideally have at least 1mm or scleral coverage all the way around. More than this is acceptable and may help stabilise the lens; a small lens will frequently be less comfortable.

### Multifocal

The multifocal design is a centre-near blended design with seg size options from 1.5mm to 2.25mm diameter. Adds are available up to +3.50D. A modified monovision approach is recommended, with a larger segment and full add power in the non-dominant eye and a smaller seg size with add reduced by -0.50D in the dominant eye.

### Conclusion

SoClear is a useful addition to the range of specialist RGP lenses available. These designs have a variety of indications and are relatively easy to fit. The lenses provide crisp vision and good comfort in cases where corneal lenses are not tolerated. ●

● Optometrist **Sophie Taylor-West** practises in London and is a consultant to No7 Laboratories