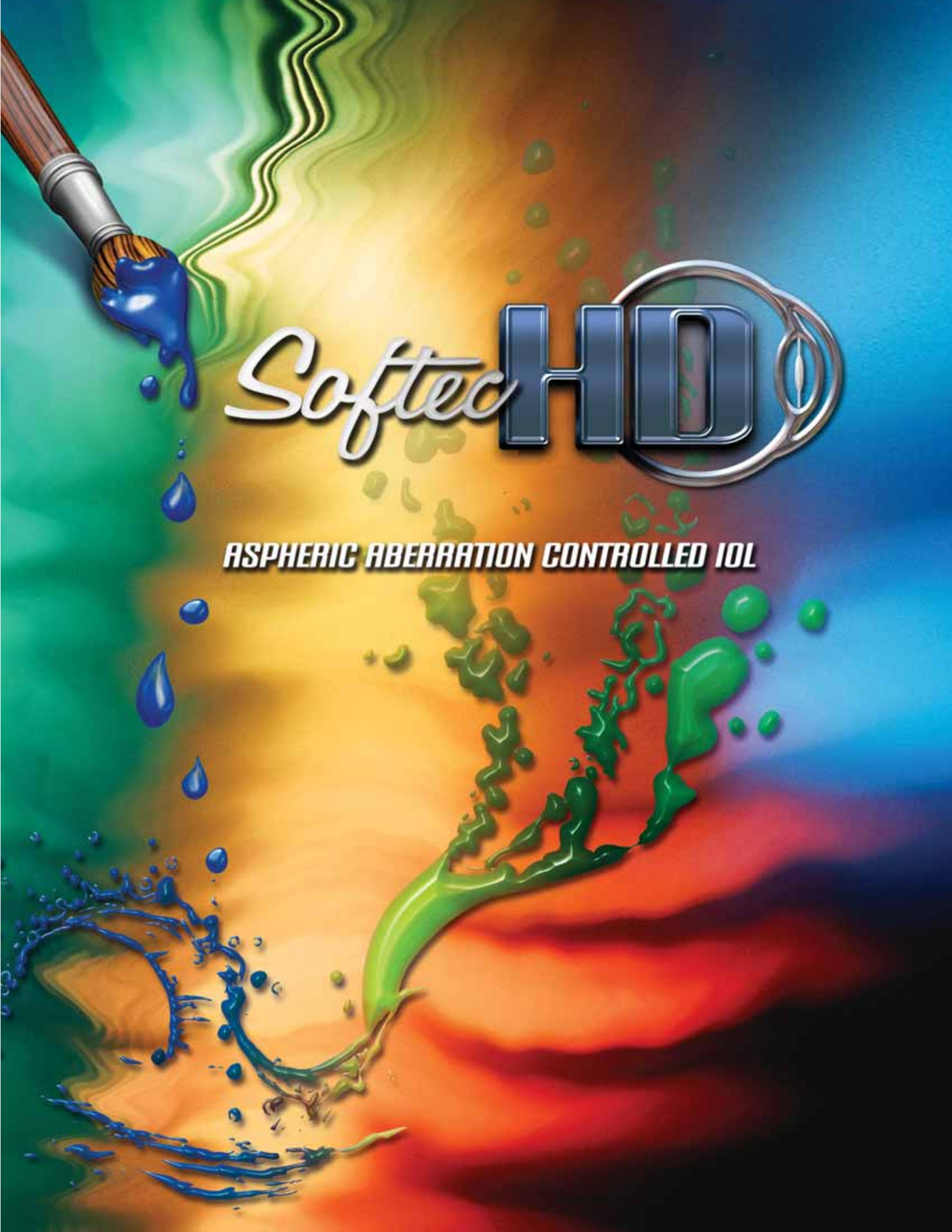
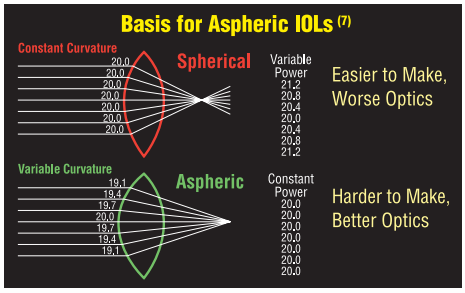

SoftecHD
ASPHERIC ABERRATION CONTROLLED IOL

Spherical Aberration and visual function



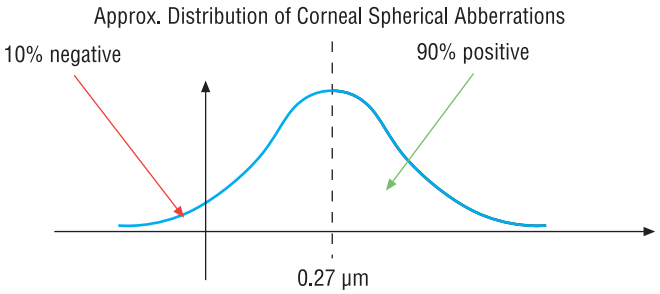
Spherical lenses do not focus light onto one focal point. This spread of focal points is termed *spherical aberration* and causes blurring of the image. Spherical aberration can be controlled by designing the lens with aspheric optics. Studies have shown that aspheric Intraocular lenses can produce enhanced visual outcomes [1-6] in both objective (point-spread function) and subjective measures (enhanced vibrancy of colours).

Aberration in the human eye

The spherical aberration profile of the natural human lens is complex, and changes with age and during accommodation[7].

In contrast, the cornea retains a stable amount of spherical aberration throughout life. Approximately 90% of the population has positive corneal spherical aberration, and 10% have negative spherical aberration[5].

For cataract patients we can improve potential visual outcomes by either counteracting inherent corneal aberration or by using a lens with no spherical aberration.



Aberration controlled IOLs produce superior visual results

Aspheric IOLs attempt to improve pseudophakic vision by controlling total spherical aberration:

- One strategy is to design a lens with ***negative spherical aberrations*** to balance the average positive corneal spherical aberration.
- Another strategy is to design a lens with ***zero spherical aberrations*** so that no additional spherical aberration is added to the corneal aberrations.

Intraocular lenses are now available with negative (NA) and neutral spherical aberration (SAN). What lenses should we choose for our patients? There are three factors to consider:

1. Compatibility with patient's corneal aberration profile [7]

Lenses with inherent positive or negative spherical aberration can worsen the patient's own corneal aberration.

IOL type	Effect on patients with negative spherical corneal aberration	Effect on patients with positive spherical corneal aberration
Traditional spherical	Improved result	Worsening of aberration
Negative aberration	Worsening of aberration	Improved result
Aberration neutral	No effect	No effect

2. Image quality if the lens is titled or decentred

Meta analysis[8-13] indicates that up to 3% of IOLs decenter and 7% of IOLs tilt following normal cataract surgery. Aberration-controlled IOLs need to take this into account and react to decentration and/or tilt. Negative aberration lenses are particularly sensitive to decentration and tilt, while IOLs with no spherical aberration are not affected by either decentration or tilt.

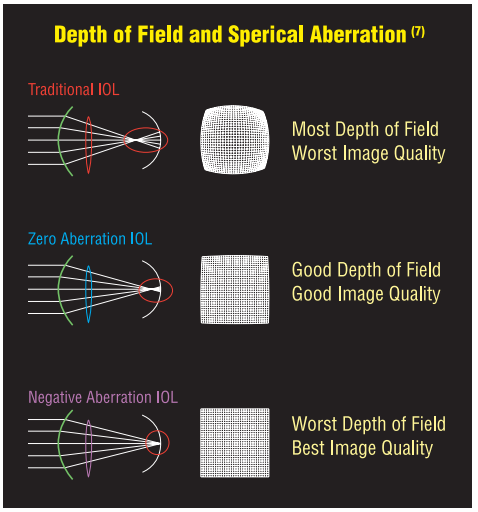
- **10%** of corneal spherical aberration patterns *will do worse with a negative aspheric IOL*.
- **3%** of patients *will do worse with a negative aspheric IOL* due to decentration.
- **7%** of patients *will do worse with a negative aspheric IOL* due to tilt.

3. Depth of field effect [7]

The concentration of light at one focal point achieved by aspheric lenses results in a sharper spherical image. However, the depth of field is reduced due to the reduction in the range of focus.

Traditional IOLs that induce positive spherical aberration produce the poorest image quality at the focal point, but the largest depth of field. Negative aberration IOLs aim to counteract the natural corneal spherical aberration, thereby giving the best image quality at the focal point, but with a narrow depth of field. Zero aberration aspheric IOLs leave the eye with a mild amount of natural corneal spherical aberration, thereby giving good image quality at the focal point, and good depth of field.

A zero aberration aspheric lens with accurate power predictability is less affected by depth of field loss.



Conclusions

1. *The best image quality is achieved in an eye with zero spherical aberration, but this comes at a price: decreased depth of field.*
2. *Aspheric IOLs generally produce better visual results than traditional IOLs.*
3. *Zero spherical aberration IOLs perform well over a wider range of corneal shapes and alignment errors than negative spherical aberrations IOLs.*
4. *Zero spherical aberration IOLs are not affected by mismatching patient's corneal aberration profile or from decentration or tilt.*
5. *Zero spherical aberration IOLs provide good image quality while retaining depth of field.*
6. *Accurate IOL power predictability is even more important with aspheric IOLs.*

Introducting Softec HD

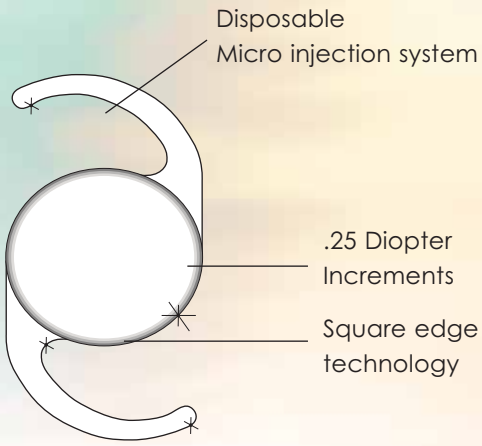
Spherical aberration neutral IOL:

- **Bi-aspheric, equiconic aspheric algorithm.**
- **Suitable for ALL patient corneal aberration profiles.**
- **Forgiving of intra-operative tilt or decentration.**
- **Square edge for low PCO rates.**
- **Moderate RI acrylic material, unlikely to cause halos, edge glare or surface vacuoles.**

Precision Series™ technology provides highly accurate power predictability:

- **Midrange lenses available in 0.25D increments making power selection easier.**
- **Power tolerance of +/- 0.125D far exceeds industry standards.**
- **Labeling tolerances are 320% to 400% tighter than the ISO standards used by other manufacturers.**
- **Tighter tolerances and 0.25D increments combine to give improved refractive control and heightened predictability.**

SoftecHD



- Available in .25 Diopter Increments from +18.0 to +25.0
- Full power range available: -5.0 to +36.0

Optic Size:	5.75mm
Optic Type:	Equiconic Bi-aspheric
Length:	12.00mm
Haptic Style:	Modified C
Angulations:	0 Degrees
Construction:	1 Piece
Optic Material:	Acrylic (26% Water Content)
A Constant:	118.0
A/C Depth:	5.10mm

- Recommended A Constant for IOL Master: 118.4
- Precision manufacture to greater than ISO standard with mid-range tolerance of 0.125D
- Square edge technology
- Long safety profile with millions of lenses of similar material implanted

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