

CONTACT LENS MANUFACTURING PROCESS

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The logo of Galgotias University is a circular emblem with a stylized 'G' shape in the center. The 'G' is composed of three curved segments in shades of yellow, orange, and light blue. The background of the emblem is a light pinkish-red color.

MANUFACTURING METHODS OF RGP LENSES

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RGP LENS MANUFACTURING ASPECTS

Care with:

- Blocking
- Cutting
- Polishing
- Solvents

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RGP LENS MANUFACTURING

- Care is required during RGP contact lens manufacture
- Especially when blocking and solvent cleaning
- Care must also be taken with cutting and polishing

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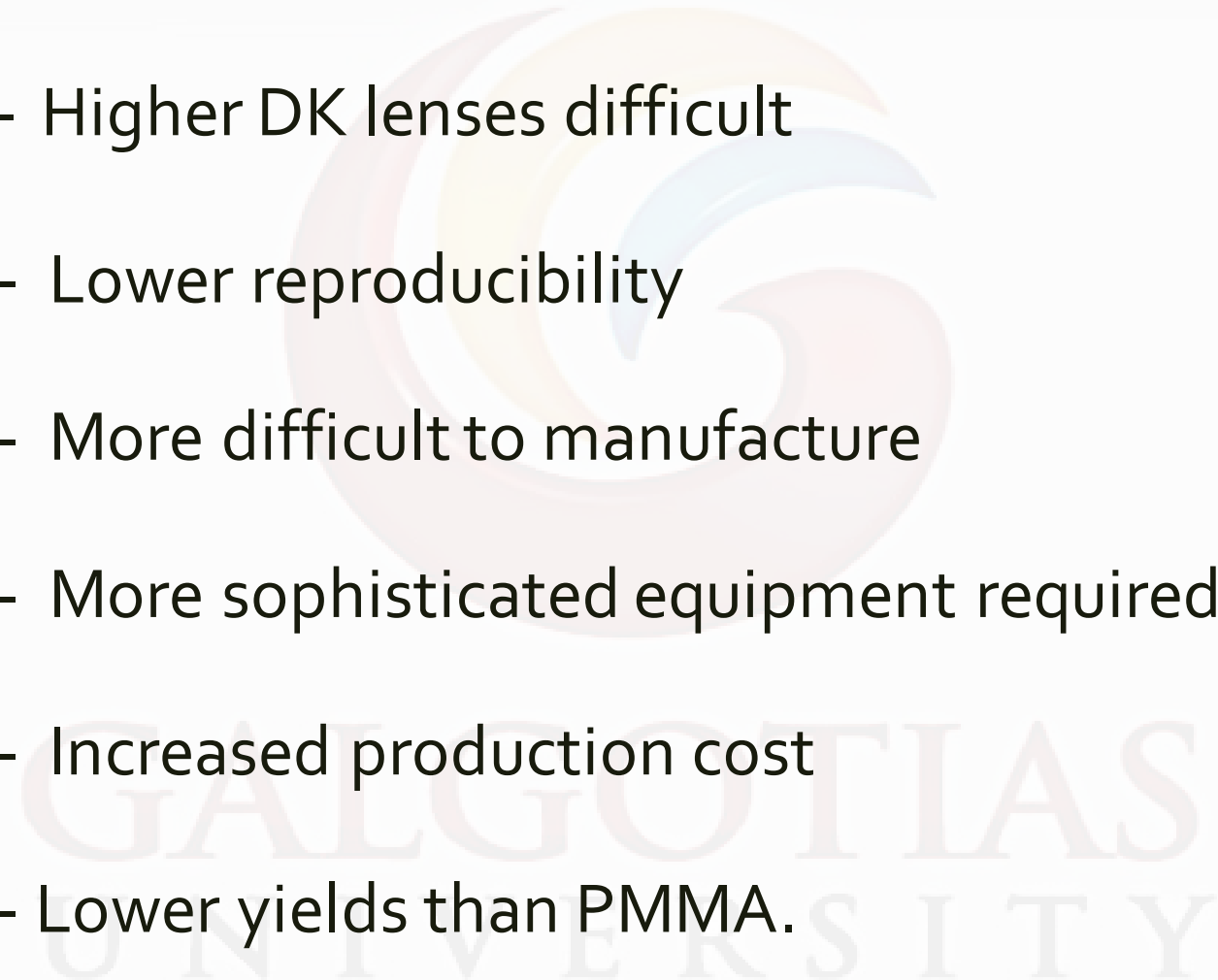
Poor wettability may be associated with:

- Over polishing which may result in localized heating of the lens blank surface
- Either alone or in combination with over polishing, the use of incorrect solvent affect the wettability of the finished product

FLURO-SILOXANE ACRYLATES AND SILOXANE ACRYLATES

Manufacturing disadvantages:

- Softer materials
- Difficult to get highly polished surface
- Susceptible to 'blurring'
- Solvents can affect the surface
- Significant flattering of BOZR

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- Higher DK lenses difficult
 - Lower reproducibility
 - More difficult to manufacture
 - More sophisticated equipment required
 - Increased production cost
 - Lower yields than PMMA.

RGP lenses: Manufacturing methods

Lens fabrication techniques

- Lathing

- Molding

Lathing:

- Original method
- Well understood and longstanding method of fabricating anything that can be made symmetrical e.g. A contact lens

Advantages:

- Established technology
- Simple
- Wide range of parameters
- Suits most material
- Relatively economic to start production

Disadvantages:

- Complex designs are difficult
- Labour intensive
- High cost per lens
- Variable surface finish
- Relatively slow
- Volume production difficult

Molding:

- Most recent adaptive method
- Lens material enters a double-sided
- mold as a liquid and solidifies in situ as a result of polymerization.

Advantages:

- Lower cost per lens
- Rapid process
- Volume production
- Good surface quality
- Good reproducibility
- Complex designs possible

Disadvantages:

- Expensive to start production
- Expense limits parameter range
- Not all material suitable
- Essentially for stock lenses only

RGP Bifocals: Manufacturing process

- Concentric and progressive bifocals are made using conventional lathing (or) molding.

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The logo of Galgotias University is a stylized circular emblem. It features a central blue swoosh that curves upwards and to the right. This is surrounded by several concentric, overlapping swooshes in shades of yellow, orange, and red, creating a sense of motion and energy.

Manufacturing of Soft contact lens

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Manufacturing methods:

- Molding –anhydrous(xerogel)
- Spin casting
- Lathing-xerogel
- Molding / Lathing combination
- Spin casting / Lathing combination
- Molding-stabilized soft

Cast molding

- Monomer in liquid form introduced into a female mold which defines the front surface shape.
- In double sided mold UV- transparent male mold is made to be clamped together.
- Process requires strict environmental control.

Lathing:

- Raw material used is an anhydrous (xerogel).
- Special contact lens lathes are used , numerically controlled by a computer.
- Requires strict control of environment , especially humidity.
- Hydration of the lens is required after lens completion.
- The lens is then sealed in normal saline prior to sterilization
- The package is then autoclaved

Spin casting:

- The raw materials are liquid monomers
- Monomers are introduced into a spinning mold in a controlled environment of CO_2 at high temperature
- The mold defines the front surface
- Produce a good surface finish
- Back surface finish depends on surface tension
- Secondary manufacturing procedure include –edge finishing

Spin casting /Lathing combination

- Starts with liquid monomers
- Front surface lathed to give BVP and design

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Stabilized soft molding:

- Developed for volume production.
- Quick hydration
- good optical property
- good reproducibility
- Better surface quality

The background features a large, faded watermark of the Galgotias University logo, which consists of a circular emblem with three curved, overlapping bands in shades of yellow, blue, and red.

Thank You

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References

- 1) IACLE Modules
- 2) CLIO modules
- 3) Clinical Refraction - Borish

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