



## Defining Digital

Digital, free-form, high definition and direct surface are a few of the terms used for today's manufacturing process that directly surfaces a lens design onto a semi-finished lens blank. There are several different processes currently being used to produce these lenses and differing opinions on which technology provides the best optics. Considering the large number of terms and manufacturing processes, it is no surprise there is still a fair amount of confusion! In this article we will discuss all manufacturing processes and list which lenses are produced from digital processing.

Digitally surfaced lenses are becoming increasingly popular and virtually every new progressive lens design is released with a digital counterpart— or only available as digitally surfaced. Originally limited to progressive designs, single vision lenses are now being released in digital technology. Especially well designed for patients with strong prescriptions, these lenses produce sharper vision throughout the lens and superior clarity in low light conditions.

Conventional lens blanks are produced from glass molds with the progressive design cast onto the front surface. These glass molds are created by a process called slumping. In slumping, the progressive design is transferred onto a ceramic former (convex progressive surface). A slab of glass is placed over the former and heated to 700 degrees, slumping the glass to the surface of the former. This concave glass mold is then used to produce the semi-finished progressive lens blanks. A generator is then used to grind the patient's Rx into the back surface of the semi-finished blank. Surface finers and polishers complete the back surface of the lens.

The most important aspect when thinking of digital is to remember it is a *manufacturing process*, not a lens. Any progressive design can be digitally processed, but it still must be a good design. Digital processing is a tool lens designers utilize to realize their designs.

The digital surfacing is a process that can produce intricate surfaces including aspheric, atoric and progressive designs. It is applied directly to the blank itself and is an "original" rather than a cast that has been copied. This is achieved by the use of a three-axis, computer numerically

controlled (or CNC) generator. A single-point cutting tool using the three possible axes of movement is able to produce virtually any surface. A CNC generator can also produce a digital mold by directly cutting the progressive design onto a concave mold. This eliminates the slumping process and produces a more precise lens blank.

Typically, the more extreme the patient's Rx the more they will benefit visually from a digitally processed lens. Below is a list of the different processes and applicable lenses:

### Digital Semi-Finished

A semi-finished progressive lens blank produced from a digital mold is surfaced with a traditional generator, finers and polishers.

- Zeiss Gradal Top, GT2, GT2 Short, Varilux Physio, Essilor Accolade, Shamir Creation and Shamir Piccolo

### Enhanced Semi-Finished

A semi-finished progressive lens blank produced from a digital mold is digitally surfaced on the back surface producing optimized optics.

- Varilux 360° designs, Essilor Accolade Freedom

### Dual Surface Add

A portion of the progressive design and add power is placed on the semi-finished front surface of the lens blank. The remaining add power and patient Rx is digitally surfaced on the back surface.

- Definity and Definity Short

### Back Surface

Back surface lenses use a factory-molded spherical single vision lens and the progressive optics are directly surfaced onto the lens blank.

- AO Easy HD, SOLAOne HD, Compact Ultra HD, SOLA HDV, GT2 3D and GT2 3D Short, Zeiss Individual, Varilux Ipeo, Essilor 360° Single Vision, Autograph II Fixed, Variable and single vision designs, Kodak Unique, Seiko Succeed, Succeed Ws, Supercede and Supercede Ws.

As Midwest Labs is independent of lens manufacturer ownership, we are in a unique position of being able to offer you most of the digitally manufactured lenses available. If you have any questions or would like additional information, please contact your Midwest Labs location.

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## What's New?

Essilor of America announces the release of Essilor 360°, a single vision digitally surfaced lens. Essilor 360° patient benefits include:

- \* Superior clarity in low light conditions
- \* Sharper vision across the entire lens
- \* Wider field of vision
- \* Includes Crizal AR of choice

	Airwear	Airwear Transitions Gray and Brown	1.67	1.67 Transitions Gray and Brown	1.74
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