



FRESNEL LENS

product catalog



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KOPP GLASS FRESNEL LENSES

If you want to create exceptional lighting products, you need to use a lens designed to create high-intensity light outputs, but with a soft-edge and uniform light distribution.

For 90 years, our optical engineers have designed glass lenses that capture, focus, and diffuse light. We specialize in custom, small-lot glass manufacturing, and can mold lenses that range from two to 24 inches in diameter.

Our Fresnel lenses are available in standard sizes as part of our stock catalog, or we can design custom lenses. If you want to create innovative lighting products, collaborate with our engineering team to design a lens that gives your product exceptional light control capabilities.

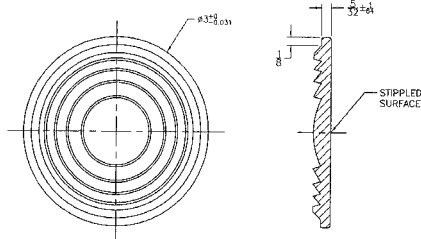
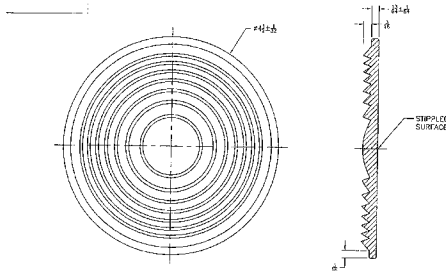
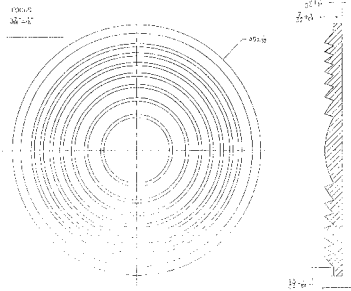
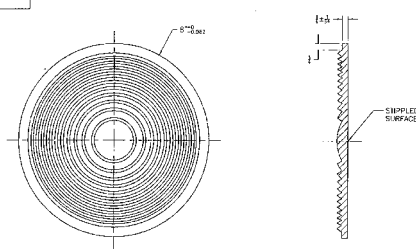
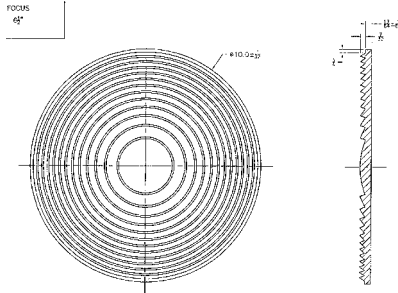
DIFFERENTIATED LIGHTING PRODUCTS

The emergence of new lighting technologies has introduced complex challenges to the general lighting industry. Lighting engineers and designers must overcome these to realize their efficiency advantages. We offer solutions to common lighting challenges:

- ▶ Tailored glass compositions that allow for greater efficiency
- ▶ Color temperature correction without a significant loss in transmission
- ▶ Retrofitting existing designs for new technologies

Leverage our lighting engineering expertise to develop a meaningful competitive advantage and ensure higher margins through lower manufacturing costs, accelerated time to market, and truly innovative new products.



| KOPP PART NUMBER | PRODUCT DESCRIPTION | DRAWING | ORDER QUANTITY |
|------------------|--|--|--------------------------|
| FF 5032 | Diameter: 3" Lens Design: Flat Focus: 2.25" |  | Minimum: 60 Base: 600 |
| FF 5046 | Diameter: 4.5" Lens Design: Flat Focus: 3.5" |  | Minimum: 50 Base: 500 |
| FF 5061 | Diameter: 6" Lens Design: Flat Focus: 3.125" |  | Minimum: 40 Base: 400 |
| FF 5080 | Diameter: 8" Lens Design: Flat Focus: 4.75" |  | Minimum: 40 Base: 400 |
| FF 5100 | Diameter: 10" Lens Design: Flat Focus: 6.5" |  | Minimum: 25 Base: 250 |



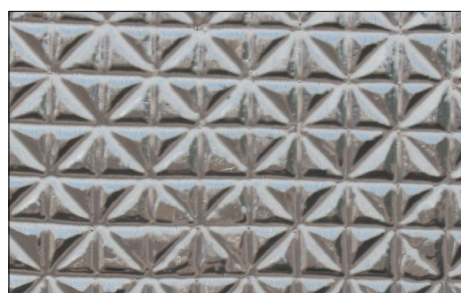
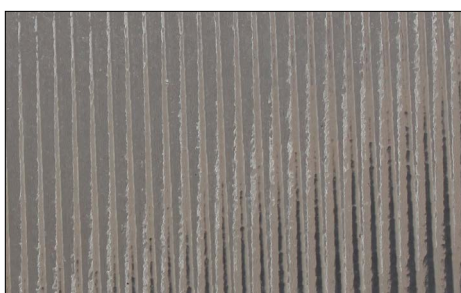
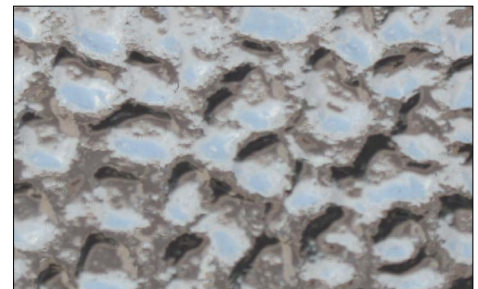
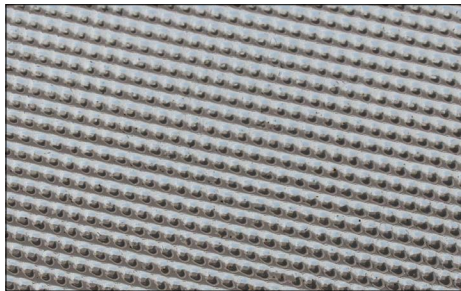
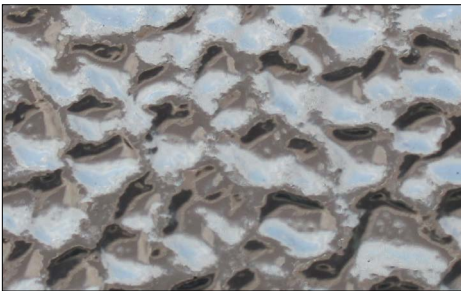
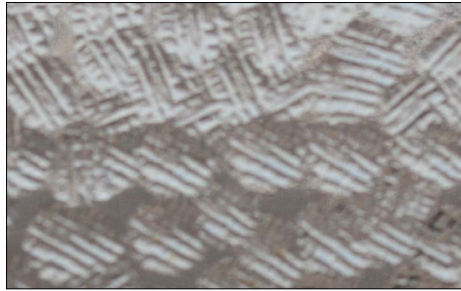
| KOPP PART NUMBER | PRODUCT DESCRIPTION | DRAWING | ORDER QUANTITY |
|---------------------|---|---------|--------------------------|
| FF 5111 | Diameter: 11.25" Lens Design: Flat Focus: 8.25" | | Minimum: 20 Base: 200 |

CUSTOM FINISHES

Custom stipple patterns and surface finishes create the high-quality light you desire, including uniform light distribution and soft edges.

- ▶ Smooth as-molded surfaces or diffuse sandblasted surfaces
- ▶ 20+ surface stipple textures

STIPPLE PATTERN OPTIONS



SAFE HANDLING INSTRUCTIONS

The following recommended practices can provide methods to maximize the capabilities and life of your glass lens. The handling of glass and brittle materials require certain practices in order to avoid fracture or failure. Limitations in material properties in regards to thermal shock and mechanical loads need to be taken into consideration and careful handling practices should be followed.

GENERAL RECOMMENDATIONS

All brittle materials are designed to endure various forms of stress introduction including thermal, mechanical, and electrical stress. Minimizing or controlling these various stress sources can prove helpful to maximize your lens lifespan.

1. Inspect all glass lenses prior to use and be certain there is no evidence of serious cracks, abrasion, etc.
2. Handle glass ware carefully when transporting or moving lenses. Wear appropriate safety PPE (safety glasses, gloves, etc.) to protect yourself in case of failure.

MECHANICAL STRESS MINIMIZATION

1. Avoid over tightening any locking rings or devices used to secure the lens in your lighting fixture.
2. Retaining rings, clasps, or bolts should apply even pressure on the glass lens. Tighten clasps evenly using a cross pattern tightening sequence.
3. Avoid direct contact of glass and metal. Use of elastic gaskets or deformable buffer materials can allow for some flexing of the lens if over tightening during the securing of the lens happens to occur.
4. Avoid any handling that allows for the lens to flex or bend. Always provide uniform support around the perimeter of the lens to avoid any lens deformation in application.

THERMAL STRESS MINIMIZATION

1. Minimize rapid temperature change of the glass lens during cooling. It is important to minimize the temperature difference between the exterior and interior of the glass lens.
2. Avoid significant temperature differences on the glass outer and inner surfaces. For example, attempt to minimize any fluid (rain, snow, sleet, etc.) on the exterior lens surface when the inner surface is hot.
3. Assure the light is focused appropriately where applicable. Incorrect focus of the reflector and/or lamp can increase the temperature in localized regions of the lens and create greater temperature differentials.

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HIGH-PERFORMANCE CUSTOM GLASS

for mission-critical applications

MATERIAL SCIENCE EXPERTISE

Founded over 90 years ago, Kopp Glass began with a deep understanding of glass chemistry and how it can be used to innovate. Today, our portfolio includes more than 200 different glasses. Depending on your need, our engineers and scientists are also able to create new compositions to meet tough design challenges.

APPLICATIONS ENGINEERING EXPERTISE

We refine product designs alongside customers to help them reduce costs and increase yields. While our solutions are crafted to perform in some of the harshest environments on Earth, they're also designed to help the performance of our customers' bottom lines.

RESPONSIVENESS

Kopp Glass is a small manufacturer, but the design and production challenges we face every working day are huge. Our customers see the difference in how we respond to them and in how our team responds to each other.

ON-TIME IN-SPEC DELIVERY

Kopp Glass works to ensure the mission-critical, molded glass components we ship meet your standards—the first time.

WORK WITH US

www.koppglass.com



Year Founded 1926

Ownership Closely Held

Location Pittsburgh, PA USA

No. of Employees 110

Mfg. Sq. Ft. 127,000

Quality System ISO: 9001:2015

