

## **GLASS DYENAMICS PRODUCT FAQ'S:**

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## Glass Dyenamics –Product FAQs

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### **1. What is Glass Dyenamics' product and how does your dynamic glass work?**

Glass Dyenamics sells dynamic glass units (DGU's). DGU's are insulated glass units made with advanced dynamic glass on the external-facing lite. The DGU transitions smoothly between visual transmission states to control heat, glare, and visibility, upon the application of an electric charge.

DGU's are integrated with standard window frames to make dynamic windows.

Glass Dyenamics' proprietary electro-active dye technology enables this change with industry-leading durability, switching speed, and color customization.

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### **2. Who do you sell to—homeowners, architects, window manufacturers, or general contractors?**

Glass Dyenamics sells its DGU's to select downstream retail door and window distributors and window manufacturers.

We can refer homeowners, architects, and GC's to one of our partners to see how we can meet your project's requirements.

Alternatively, please have your architect, GC, or window distributor call us to enquire about how we can benefit your project with dynamic glass.

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### **3. Where can I buy your glass?**

Our DGU's are available for door and window distributor reservation. Our products are also available for reservation through our website on a limited and select basis in consultation with general contractors, architects, door and window manufacturers, and distributors.

Message us at [hello@dyenamics.com](mailto:hello@dyenamics.com) or on our website contact page [here](#) to discuss your project.

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### **4. How does your technology compare to polymer-dispersed liquid crystal (PDLC) switchable privacy glass available in the residential home market?**

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PDLC options available today change from clear to hazy white and require constant power to keep the glass clear. Products with our technology differentiate from PDLC, and deliver customers with:

- No power required in the clear or “power fail” state
- Superior clarity with no visible haze in the clear and colored states
- Significant solar control (SHGC) energy efficiency improvement
- Visible light reduction, rather than light scattering
- Intermediate visual transmission states, not just ‘on’ or ‘off’
- A non-white appearance, with wider color and optical tunability
- Longer product lifetime durability and warranty

This gives homeowners, architects and manufacturers more design freedom while improving performance and reliability.

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## **5. How does your glass compare to other electrochromic “dynamic” glass available in the commercial building market?**

Our dynamic glass differs significantly with first generation dynamic glass technologies:

- First generation dynamic glass products are based on metal thin-film technologies made with a combination of tungsten and nickel oxide layers which sandwich an electrolyte layer. These technologies suffer from a combination of complex manufacturing processes, slow switching speeds, and cyclic durability problems under accelerated ASTM (UV and heat) testing. The result is an expensive product with low customer subjective value that is slow to adopt.
- Glass Dyenamics dynamic glass eliminates the need for metal thin-film layers. Our technology advancements vastly simplify manufacturing; dye colors can be customized; switching speeds are much faster; and, we have demonstrated ASTM-standard UV and heat durability.

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## **6. What sizes, shapes, and glazing configurations are available?**

Our DGU has been engineered to integrate into standard residential market dual pane insulated glass units (IGUs).

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- Maximum size: 32"x73"
- Minimum size: 9"x15"
- We currently only offer rectangular shapes.
- We have three glazing configurations:
  - (a) two ENERGY STAR products, and
  - (b) a privacy-forward product
- Our ENERGY STAR-focused products optimize maximum clear-state visual light transmission while book-ending ENERGY STAR-mandated SHGC standards. In the summertime, the dynamic windows can tint and prevent heat from entering a room and in the wintertime the dynamic windows can be in the clear state and allow heat to enter a room.
- Our privacy product is intended to reduce visible light transmission to less than 1% and result in personal privacy. While the darkness is not at 'blackout' level, it will provide daytime privacy as well as significant nighttime privacy.

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## **7. Can your glass be used for both new construction and retrofit projects?**

Yes. Our dynamic glass can be incorporated into residential home new construction, renovations, or retrofit upgrades. We can work with residential window manufacturers, distributors, architects, and general contractors to specify a solution that fits your project's requirements.

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## **8. What is your dynamic glass' visible light transmission (VLT) range?**

Exact VLT ranges depend on the product configuration, but our dynamic glass typically offers a broad tunable range from 68% to as low as less than 1% visible light transmission.

See our product technical data sheet for more information.

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## **9. What is your dynamic glass' solar heat gain coefficient (SHGC) range?**

Exact SHGC ranges depend on the product configuration and applicable ENERGY STAR region, but our dynamic glass typically offers a broad tunable SHGC range from 0.5 to as low as 0.1.

See our product technical data sheet for more information.

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**10. What is your dynamic glass' thermal efficiency (U-value) range?**

Our dynamic glass' U-value remains constant, unlike our glass' dynamic SHGC range. U-values comply with and exceed ENERGY STAR regional requirements.

See our product technical data sheet for more information.

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**11. How much energy can dynamic glass save?**

Dynamic glass reduces or increases solar heat gain, cooling and heating loads, and reliance on blinds or shades, resulting in lower HVAC energy consumption. Savings vary by a home's climate zone, window-to-wall ratio, and window orientation, but we estimate that dynamic glass systems typically reduce total home energy use by an average of ~10%.

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**12. Is your glass suitable for all climates?**

Yes. Our dynamic glass was designed for installation and performance in all climate zones.

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**13. Can your glass be used on exterior skylights or other high-sun exposure areas?**

Yes. Our technology is engineered for full exterior exposure, including skylights.

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**14. How fast does the glass switch between clear and tinted states?**

Our dynamic glass' tinting is immediately noticeable within less than three seconds after applying an electric charge. The total expected tint time is less than 200 seconds for up to 1-meter-wide windows. Total tinting time decreases with window width.

Rapid response time and fast switching is an advantage of our technology, allowing users to continuously adapt to changing sunlight.

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**15. Does the glass provide privacy? Can people see through it at night?**

We offer dynamic tinting products that offer either optimal energy efficiency or greater privacy.

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- Our energy efficiency configurations are intended for balance-of-home installations beyond the home front entryway that require light and heat control. They offer daytime privacy but are not intended for nighttime privacy.
- Our privacy configuration is intended for front entryway installations that block day and nighttime visibility through the glass, even in backlit conditions. Someone outside of a home would need to be standing very close to the glass to be able to see through it.

We can help you choose the right solution for your project.

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## **16. Is your technology compatible with standard window frames, IGU's, and low-E coatings?**

Yes. Our DGU is designed to integrate seamlessly with industry standard residential window frames, IGU designs, and low-e coatings.

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## **17. What are the power requirements and control options?**

Our dynamic glass operates on low-voltage power (<5 volts), with very low energy consumption (~0.05w/sqft).

Control options include:

- Wall switches
- Mobile apps
- Building automation systems
- Smart home platforms

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## **18. What happens to the glass in the event of power loss?**

Our dynamic glass has been engineered to default to the clear state in the event of power loss. This is also known as the “safety” state which provides for safe orientation and egress in the event of an emergency.

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## **19. How durable is the glass and how many switching cycles can it handle?**

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Our electro-active dye technology is engineered to surpass ASTM E2141 durability standards. We've demonstrated over 150,000 cycles under these ASTM conditions while meeting ASTM 2953 degradation standards.

Our materials demonstrate cyclic, UV, thermal, and mechanical stability, and are designed for multi-decade building lifespans. All units undergo rigorous environmental, thermal, and mechanical testing in partnership with our industry partners and the United States Department of Energy.

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## **20. What warranties do you offer?**

Glass Dyenamics products come with a comprehensive multi-year warranty covering dynamic layer performance (10 years), electronics (5 years), and IGU integrity (15 years).

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## **21. What certifications does your glass have?**

Glass Dyenamics' DGU's have been designed to the following certification standards:

Standard Category	Specification
Dynamic materials durability:	ASTM E2141 / E2953
IGU durability:	ASTM 2188 / 2189 / 2190
IGU safety:	ANSI Z97.1, CPSC 16 CFR 1201
Hurricane safety:	TAS 201/203
Building energy code certifications:	NFRC, ENERGY STAR®
Control box:	UL 62368-1, FCC, EN 300 328 / EN 301 893

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## **22. What building energy codes and design standards are relevant to your glass?**

Building energy codes

- 2024 IECC section R402.4.2 Glazed fenestration SHGC
- 2021 IECC section R402.3.2 Glazed fenestration SHGC

Design Standards:

- ENERGY STAR Residential Windows, Doors, and Skylights Version 7

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## **23. How does your glass comply with residential energy codes and design standards?**

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Dynamic windows with Glass Dyenamics DGU's can meet residential energy code and design standards:

2021 IECC section R402.3.2 Glazed fenestration SHGC:

**“Dynamic glazing** shall be permitted to satisfy the SHGC requirements of Table R402.1 provided that the ratio of the higher to lower SHGC is greater than or equal to 2.4, and the **dynamic glazing** is automatically controlled to modulate the amount of solar gain into the space in multiple steps. **Dynamic glazing** shall be considered separately from other fenestration, and area-weighted average with other fenestration that is not dynamic shall be prohibited.”

ENERGY STAR Residential Windows, Doors, and Skylights Version 7:

**“Energy Efficiency Requirements:** Products shall have NFRC-certified U-Factor and, where applicable, SHGC ratings at levels which meet or exceed the minimum criteria specified in Tables 1 through 3. Windows, sliding glass doors, and skylights shall meet the criteria for a given ENERGY STAR Climate Zone. Swinging doors shall meet the criteria for a given glazing level. **Dynamic Glazing** Products shall meet the criteria while in the minimum tinted state for Chromogenic Glazing products or the “fully open” position for Internal Shading Systems.”

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## 24. What is the typical product cost and order lead time?

Our product pricing is similar to other premium privacy glass and switchable glass offerings.

Lead times typically range from 8–12 weeks, depending on project scale and fabrication schedule.

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## 25. What federal subsidies or tax credits are available for your glass?

- 45L Homebuilder Tax Credit
  - To developers or homebuilders constructing qualified homes under the (a) ENERGY STAR or (b) DOE's Zero Energy Ready Home (ZERH) programs
    - Up to \$2,500 per single-family home (ENERGY STAR)
    - Up to \$5,000 per single-family home (ZERH)
  - Expires 6/30/2026
- Energy Efficient Home Improvement Credit

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- To homeowners for energy efficient upgrades
  - Up to \$600 for windows
  - Up to \$500 for exterior doors
  - Max \$1,200 per year
- Expires 12/31/2025

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## **26. How are dynamic windows installed?**

Dynamic window installation is similar to standard home window installation. Dynamic windows are delivered to your glass distributor or installer ready for 'plug and play' home integration, with an additional low-voltage connection. We provide your distributor or installer with wiring diagrams, hardware including controllers and wire, and technical support to ensure a smooth installation.

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## **27. How do I clean and maintain the glass?**

Maintenance is minimal. Clean the glass the same way you clean standard windows—using mild cleaners, soft cloths, and non-abrasive tools. There is no special surface treatment or coating that requires unique care.

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## **28. Are the dynamic materials safe if the glass breaks?**

Yes. The dynamic material is a solid and, if fractured, will adhere to the fractured glass similar to shattered laminated glass.

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## **29. Do you offer acoustic, laminated, or safety-rated versions?**

Yes. Our dynamic glazing can be combined with acoustic interlayers or security laminates, depending on your project's requirements.

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## **30. Can I customize tint colors, tint levels, or transparency?**

Not yet, but yes in the future. One of the unique benefits of our technology is the ability to tune tint colors, tint depths, and intermediate appearance states.

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We currently offer a single-transmitted color product but in the future expect to offer a range of custom transmitted colors and tint levels for architects and homeowners to develop custom profiles for design-forward or brand-specific projects.

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### **31. Is your glass available in the commercial building market?**

No. Our dynamic glass is currently only available in the residential building market. However, our product is capable of commercial market standards, and we expect to expand into the commercial building market in the future.

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### **32. What other applications is your glass suitable for?**

Our dynamic glass solution is suitable for customer applications including:

1. Residential homes
2. Commercial buildings
3. Consumer electronics
4. Aerospace cabins
5. Maritime environments
6. Defense systems

We're happy to discuss our technology with potential application partners.

Message us at [hello@dyenamics.com](mailto:hello@dyenamics.com) or on our website contact page [here](#) to discuss your project.

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