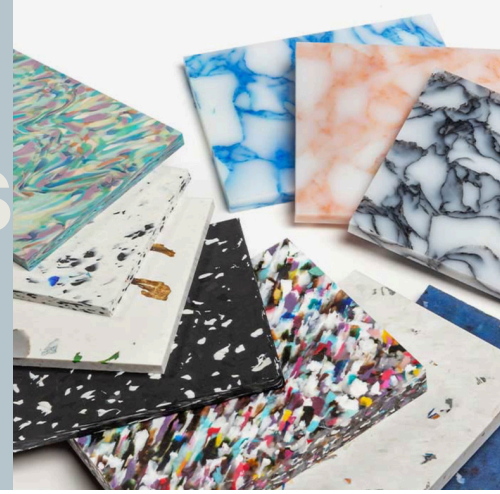




# SUSTAINABLE MATERIALS RESEARCH REPORT

## POLYGOOD CLADDING & INTERIOR SURFACE MATERIAL



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Instructors name:

Course name & number: Interior Systems and Circulations  
Circulation (221-530-CA)

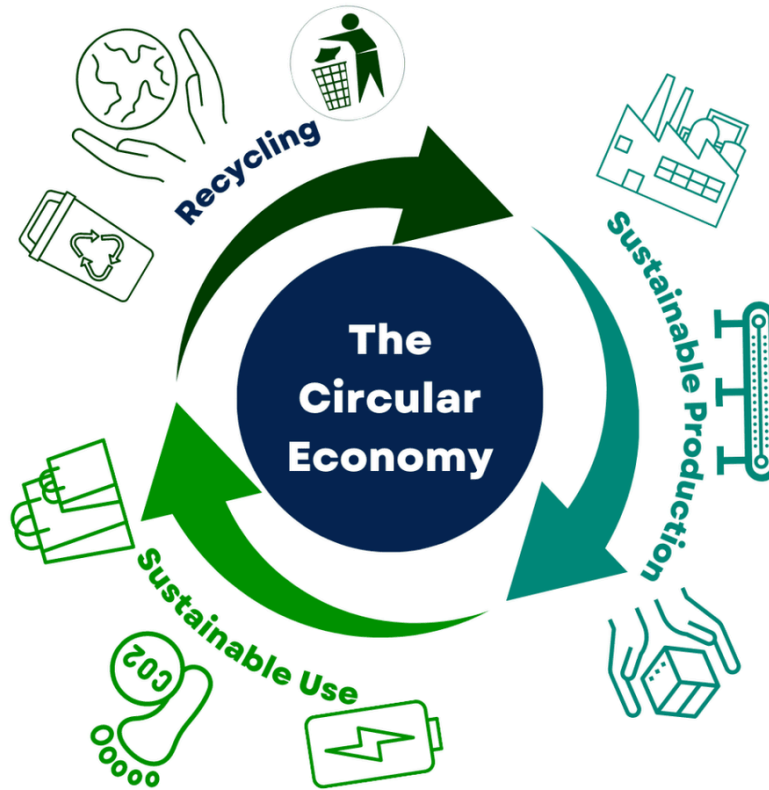
## Introduction



# polygood

by the good plastic company

Polygood® is an innovative surface and cladding material developed by The Good Plastic Company, designed to combine sustainability, aesthetics, and durability. It is made entirely from 100% recycled and 100% recyclable polystyrene plastic, giving new life to post-consumer and post-industrial waste that would otherwise end up in landfills. Each Polygood panel is unique, featuring decorative patterns that come from the colors of the recycled plastics used in its production. The result is a modern and visually striking material that supports the principles of the circular economy, promoting reuse and waste reduction in the building industry.



Polygood is waterproof, rot-proof, durable, and low in VOC emissions, which makes it ideal for use in sustainable and healthy interior environments. It is also Cradle to Cradle Certified® Bronze and has an Environmental Product Declaration (EPD), confirming its environmental transparency and performance.



## The Good Plastic Company International Limited

has successfully achieved Cradle to Cradle Certified® Bronze for the product(s) under the name:

### Polygood

Certification Number  
6161

Standard Version  
4.0

Lead Assessment Body  
Eco Intelligent Growth

Material Health Assessment Body  
Eco Intelligent Growth

Effective Date  
12 June 2023

Expiration Date  
11 June 2026

All Sheets made from assessed materials. 6 assessed materials can be combined in different proportions to client demands.

Susan Klosterhaus, Ph.D.  
Vice President, Science and Certification  
Cradle to Cradle Products Innovation Institute

See the Cradle to Cradle Certified Product Registry at [www.c2ccertified.org](http://www.c2ccertified.org) for additional details.  
Use of the certification mark is subject to the terms and conditions of the C2CPI Certification Agreement and Trademark Use Guidelines.  
Cradle to Cradle Certified is a registered trademark of the Cradle to Cradle Products Innovation Institute.

cradle to cradle  
products  
innovation  
institute



For architectural and interior use, Polygood can be applied as wall cladding, interior decorative surfaces, furniture panels, countertops, or feature walls. Its versatility allows designers and architects to achieve both functional and aesthetic goals while meeting sustainability standards. The material is particularly suited for commercial, hospitality, and retail interiors, where design quality, hygiene, and environmental responsibility are key considerations.

In summary, Polygood represents a new generation of architectural materials that merge design innovation, environmental performance, and practicality. Its combination of recycled composition, durability, and modern appearance makes it an excellent choice for interior cladding and surface applications in contemporary sustainable design.





“Polygood® panels are helping to conquer plastic pollution — proof that furniture, retail fixtures, and other high-calibre interior design elements can be made from an eco-friendly, innovative, recycled material.”

— The Good Plastic Company

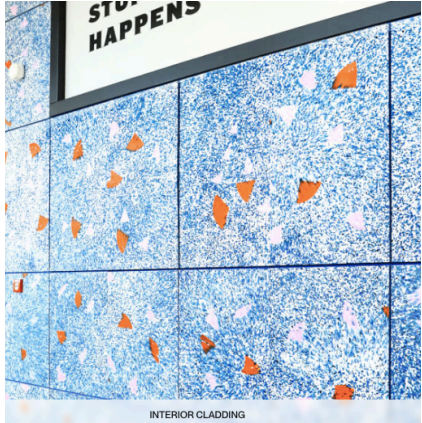
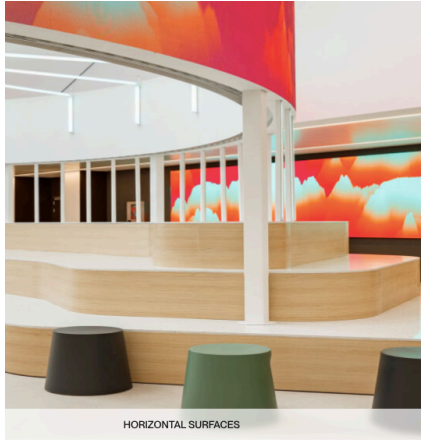

## Application

PolyGOOD is a versatile recycled-plastic surface panel (not a structural load-bearing element), and is most suited for surface, finish, and interior designs. PolyGOOD has a life expectancy of 30+ years making it suitable to be used in:


- Commercial buildings (retail stores, offices, hotels, restaurants)
- Institutional buildings (universities, libraries, educational buildings)
- Interior fit-outs (walls, partitions, furniture)
- Mixed-use and hospitality
- Installations, signage, display elements, and interior decor

### Specific Use and Application

| Application / Location | Where in Building / Use | Why It Works / Advantages |  |
|------------------------|-------------------------|---------------------------|--|
|------------------------|-------------------------|---------------------------|--|

|   |   |   |   |
|---|---|---|---|
| <p><b>Interior Wall Cladding / Partitions</b></p>   | <p><b>Feature walls, interior vertical surfaces, partition walls</b></p>          | <p><b>Aesthetic finish, waterproof,</b></p>         |  <p>STOP HAPPENS</p> <p>INTERIOR CLADDING</p> |
| <p><b>Countertops &amp; Horizontal Surfaces</b></p> | <p><b>Counters, tabletops, bench surfaces, horizontal finishes (flooring)</b></p> | <p><b>Durable surface, aesthetic appeal</b></p>     |  <p>HORIZONTAL SURFACES</p>                  |
| <p><b>Kitchens &amp; Bathrooms / Wet Areas</b></p>  | <p><b>Vanity surfaces, bathroom tile, countertops</b></p>                         | <p><b>Non-porous, water- and mold-resistant</b></p> |  <p>BATHROOMS</p>                           |

|   |   |   |   |
|---|---|---|---|
| <p><b>Retail<br/>Fixtures /<br/>Displays /<br/>Shelving</b></p>     | <p><b>Store fixtures,<br/>display cases,<br/>shelving units</b></p>               | <p><b>Light weight,<br/>customization,</b></p>              |  <p>RETAIL FIXTURES</p>   |
| <p><b>Furniture &amp;<br/>Millwork</b></p>                          | <p><b>Custom<br/>furniture,<br/>cabinets,<br/>panels in<br/>interiors</b></p>     | <p><b>Thermoformable,<br/>aesthetic<br/>versatility</b></p> |  <p>FURNITURE</p>        |
| <p><b>Signage /<br/>Window<br/>Displays /<br/>Installations</b></p> | <p><b>Signboards,<br/>display<br/>facades,<br/>artistic<br/>installations</b></p> | <p><b>Can be cut,<br/>shaped,<br/>patterned</b></p>         |  <p>WINDOW DISPLAYS</p> |

|   |   |                          |   |
|---|---|--------------------------|---|
| <p><b>Office<br/>Environment<br/>s /<br/>Workspaces</b></p> | <p><b>Reception<br/>desks, wall<br/>panels,<br/>interior<br/>surfaces in<br/>commercial<br/>offices</b></p> | <p><b>Durability</b></p> |  <p>Amelia Earhart room</p> |
|---|---|--------------------------|---|

## Interior Design & Environment Affect

PolyGOOD impacts the environment and interior applications in several ways. It is made entirely from recycled plastics, which helps reduce waste sent to landfills. This makes it a sustainable alternative to traditional plastic or wood based panels.

PolyGOOD acts as a visible finish which means it can hold moderate weight, making it suitable to support decorative items like framed pictures or signage when mounted (screwed, machined, drilled, glued). PolyGOOD, for cladding, behaves similarly in many ways to traditional rigid panels like gypsum or wood-based boards.

When used as a flooring or horizontal surface material, it performs well alongside sub floor materials like concrete or plywood since it can be mechanically fixed to stable substrates. Its chemical, water, and scratch resistance (seen below) reduces maintenance needs, preventing deterioration or staining that often occurs with other materials.

PolyGOOD's compatibility with other interior components such as metal framing, wood substrates or sealants allows for integration into modern construction systems.

Environmentally, its 100% recycled composition and many factors (seen below) extend the overall lifespan of the interior assembly, minimizing material replacement and waste.

Therefore, this makes PolyGOOD a durable, sustainable alternative to traditional wall panels, laminates, or tiles, contributing to improved indoor air quality and reduced environmental impact.



## Conditions and Project Criteria Governing the Selection

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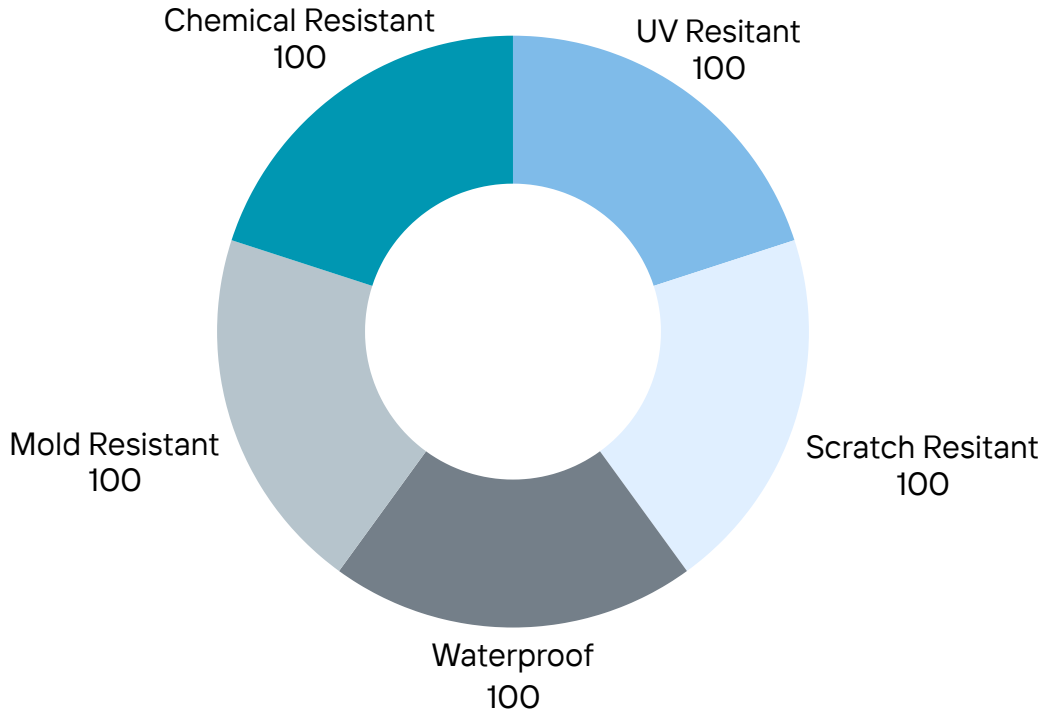
### Formats

PolyGOOD is a solid surface interior finish, that is made from 100% recycled post-consumer and post-industrial polystyrene (PS). PolyGOOD panels come in two different sizes: 2800x1400mm and 1400x1400mm. They have three finishes: glossy, satin, and matte. PolyGOOD panels are produced in two types: single-faced panel and double-faced panel.

- Single-faced panel includes a matte or gloss coating on one side, and the other side has a rough surface (recommended for furniture).
- Double-faced panel includes a matte or gloss surface on both surfaces.

### Material Properties:

- UV Resistant
- Scratch Resistant
- Waterproof
- Mold Resistant
- Chemical Resistant



What the 100 means: Indication that the material is fully resistant to the factor it is tested against (water, chemicals, UV exposure, mold, scratching).

## Panel Performance Properties:

| Property               | Typical Value / Range | Unit               | Category   |
|------------------------|-----------------------|--------------------|------------|
| Density                | 65.5                  | lb/in <sup>3</sup> | Physical   |
| Tensile Stress (Break) | 5,076 – 7,135         | psi                | Mechanical |
| Elongation (Yield)     | 60                    | %                  | Mechanical |

|                              |                   |           |                   |
|------------------------------|-------------------|-----------|-------------------|
| <b>Tensile Modulus</b>       | 239,312 – 468,327 | psi       | Mechanical        |
| <b>Flexural Modulus</b>      | 239,312 – 476,159 | psi       | Mechanical        |
| <b>Flexural Strength</b>     | 5,511 – 15,733    | psi       | Mechanical        |
| <b>Izod Impact (Notched)</b> | 0.03 – 1.12       | ft·lbf/in | Impact Resistance |
| <b>Heat Deflection Temp.</b> | 166 – 173         | °F        | Thermal           |

## Chemical Safety Measures

The material is produced by *The Good Plastic Company* and tested by TÜV Rheinland (India) Pvt. Ltd. to confirm its chemical safety and quality. Tests were conducted to verify if PolyGOOD is a safe, sustainable, and if it is a good interior choice for clients while ensuring it meets environmental and safety standards for indoor use. The following below are the test results:

| <b>Element Tested</b>                           | <b>Result</b>   | <b>Amount</b> |
|---|---|---------------|
| Heavy Metals (Lead, Cadmium, Arsenic, Chromium) | ND – Not Detected   | 0 mg/kg       |
| Halogen Content                                 | Low substance detected (very low compared to most plastics) | 100–730 mg/kg |

The chemical analysis performed by TÜV Rheinland confirms that PolyGOOD:

- Contains no heavy metals (safe for users and indoor environments).

- Shows very low halogen content, making it environmentally friendly and suitable for recycling.

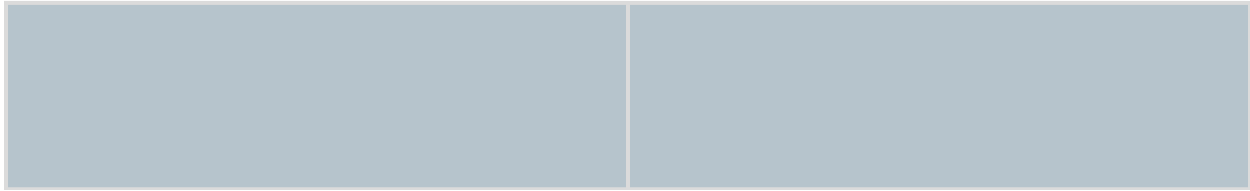
## Certifications And Approval

Due to its exceptional quality and eco-friendly production process, PolyGOOD holds the following certifications:

| Certification   | What It Means   |
|---|---|
| <b>Cradle to Cradle Certified® Bronze</b>   | Material is safe for humans and the environment, and that products are designed with clear intent                       |
| <b>Environmental Product Declaration (EPD)</b>  | Shows the product's full environmental impact.  |
| <b>Life Cycle Assessment (LCA)</b>  | Evaluates how eco-friendly the product is from start to finish.   |
| <b>Low VOC material</b>   | Has minimal volatile organic compound emissions, contributing to healthier indoor environments.                         |
| <b>Food contact safe</b>  | Certified as safe for food contact.   |
| <b>California Proposition 65 Statement</b>  | Confirms that PolyGOOD contains no hazardous chemicals or substances listed under California's Proposition 65.          |
| <b>ISO Certifications (Internationally-recognised standards)</b> <ul style="list-style-type: none"> <li>• <b>ISO 14001: Environmental Management</b></li> </ul> | <p>Ensures strong environmental management practices.</p> <p>Focuses on quality control and continuous improvement.</p> |

- **ISO 9001: Quality Management**
- **ISO 45001: Occupational Health and Safety**

Promotes safe and healthy working conditions.



#### Info

**“PolyGOOD is the first material of its kind to achieve many certifications that validate the company's leadership in sustainable materials.”**

-The Good Plastic Company

## Aesthetic, Functional and Structural Requirements

Polygood Panels can be covered with two types of coatings:

- Scratch resistant coating (making them aesthetically durable)
- Fire resistant coating (perfect for buildings requiring a higher fire safety standard)

These panels can also be translucent and opaque with single or double sided, matte, semi-gloss and high-gloss finishing. Double-sided, semi-gloss and high-gloss panels are only available upon request.

Although Polygood panels are not structural, they are sturdy enough build furniture. No reinforcement is required for any use of this material

Since Polygood panels are compliant with European food contact testing, this material is perfect for countertops and tables.

## Compatibility with other materials

Adhesive materials compatible with Polygood plastic include:

- Acrylic Adhesive (24h cure)
- Polyurethane adhesive (24h cure)
- MS-Polymer (6-12h cure)
- Silicone (6-12h cure)

- UV-curable methacrylate adhesive (1-5 min cure with UV)

As any plastics, it is not recommended for Polygood Panels to be in contact with solvents and harsh chemicals, as well as certain metals such as copper or brass which can degrade plastic.

## National Building Code Requirements and Other Certifications

According to the National Building Code, all interior wall and ceiling finishes must conform to the flame spread rating indicated in Table 3.1.13.2. The flame spread rating is based on the ASTM E84 standard test. Polygood panels treated with a fire retardant coating have been tested in accordance with the ASTM E84 - 21 "Standard Method of Test for Surface Burning Characteristics of Building Materials". The test resulted in the panels having a flame spread rating of 0 and a smoke development rating of 40, making Polygood panels a class A material.

**Table 3.1.13.2.**  
**Flame-Spread Ratings**  
Forming Part of Sentence 3.1.13.2.(1)

| Occupancy, Location or Element   | Maximum <i>Flame-Spread Rating</i> for Walls and Ceilings |                        |
|--|---|------------------------|
|  | <i>Sprinklered</i>  | <i>Not Sprinklered</i> |
| Group A, Division 1 <i>occupancies</i> , including doors, skylights, glazing and light diffusers and lenses      | 150   | 75                     |
| Group B <i>occupancies</i>   | 150   | 75                     |
| <i>Exits</i> <sup>(1)</sup>  | 25  | 25                     |
| Lobbies described in Sentence 3.4.4.2.(2)  | 25  | 25                     |
| Covered vehicular passageways, except for roof assemblies of <i>heavy timber construction</i> in the passageways | 25  | 25                     |
| <i>Vertical service spaces</i>   | 25  | 25                     |

## Pros and Cons of PolyGOOD

| Category | Advantages | Disadvantages |
|----------|------------|---------------|
|----------|------------|---------------|

|                             |   |   |
|-----------------------------|---|---|
| <b>Sustainability</b>       | <b>100% recycled &amp; recyclable material</b>      | Limited availability in some regions                |
| <b>Environmental Impact</b> | <b>Low carbon footprint (EPD, LCA certified)</b>    | Energy used in recycling still adds minor emissions |
| <b>Design Flexibility</b>   | <b>Wide color &amp; pattern range; customizable</b> | Color variation between batches possible            |
| <b>Durability</b>           | <b>Scratch, UV, and moisture resistant</b>          | Not suitable for load bearing structures            |
| <b>Maintenance</b>          | <b>Easy to clean, mold resistant</b>                | Surface can scratch under abrasive cleaning         |
| <b>Cost &amp; Supply</b>    | <b>Long term cost efficiency due to durability</b>  | Higher upfront cost vs. conventional laminates      |

## Step By Step Installation



### 1. Site Preparation

- Use shims or a flat backing board to smooth out uneven regions.
- Try not to align joint lines in the middle panel, align with corners instead.



### 2. Layout & Marking

- Allow for expansion gaps: 3–5 mm around the perimeter, 2–4 mm between panels.
- Make sure to mark fixing points on the subframe, and ensure that there are no screw lines visible.
- To verify alignment and appearance, dry-fit one or two panels.



### 3. Cutting and Edge Preparation

- Cut Poly panels to size (CNC router would be a great tool for this)
- Make sure to avoid overheating while cutting, since it can cause melting and deterioration of the material.

#### **4 . Adhesive Application**



- Adhesive beads (8–10 mm wide) should be applied in continuous lines or in a S pattern.
- It is relevant to use temporary clamps or bracing to hold the panel in place for 12 to 24 hours after aligning the edges.

#### **5 . Finishing Touches**



- Find a color matching sealant to fill in visible gaps (neutral cure silicone)
- Use L-shaped edge profiles (made of PVC or metal) for external corners.
- For a seamless transition, use concave silicone beads on interior corners.
- Remove protective film only after complete installation, or you might risk damaging the PolyGOOD panels.
- Use mild soap and water to clean the surfaces, avoid using abrasives and solvents.

#### **6 . Handover of The Project**



- Provide the client with instructions to take proper care of the product (cleaning and contacts for replacements)
- Leave the site protected with a soft cloth or temporary covering until handover.

## **Cost Factors**

| <b>Category</b>  | <b>Description</b>  |
|------------------|---|
| Material Cost    | Polygood is a premium product that cost more than standard laminates and MDF panels                               |
| Thickness        | 19 mm panels and double faced finishes cost more that 12 mm panels  |
| Customization    | Custom colors or special patterns may increase costs due to lower volume production                               |
| Installation     | Skilled workers are required with adhesive and sealant materials. Initial costs are high, but maintenance is low. |
| Life-Cycle Value | However high quality and low maintenance costs reduce long term costs.  |

## **Delivery and Availability**

| <b>Category</b> | <b>Description</b>   |
|-----------------|--|
| Standard Panels | Common color panels are stocked and readily available for delivery       |
| Custom Orders   | Made-to-order patterns can take 2–4 weeks production time.               |
| Delivery Delays | Depending on the delivery distance, customs, and supply of raw materials |

|              |                                    |
|--------------|------------------------------------|
|              | there might be delays.             |
| Risk Factors | Possible delays due to high demand |

## Servicing Requirements

| Category   | Description   |
|------------|---|
| Inspection | Regularity checks, make sure adhesive joints are in tact.                         |
| Repairs    | Minor scratches might be polished, deeper damage might require panel replacement. |

## Conclusion

Polygood® is more than just a decorative surface, it is a symbol of sustainable innovation in modern construction and interior design. By transforming discarded plastics into durable, functional, and aesthetically refined panels, it demonstrates how waste can be turned into long-lasting value. Its large panel sizes, waterproof nature, and customizable patterns make it highly adaptable for a variety of uses such as interior cladding, furniture, and wall finishes.

In addition to its beauty and versatility, Polygood contributes to environmental goals by promoting circularity, reducing carbon emissions, and supporting low-VOC indoor environments. Fun fact Polygood has a take back program: a system where off-cuts and old panels can be returned and recycled into new ones.



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**1. INITIATE THE RETURN** Start the take back process by providing information about the products you wish to return, including type, quantity, and condition, through our website, by email, or by phone.

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**2. ASSESSMENT AND APPROVAL** Our team evaluates the provided product details to determine eligibility for the take-back program. We'll notify you if the products are eligible for return and provide further instructions. (More on eligibility below.)

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**3. PACKAGING AND SHIPPING** Package the products and return the packaged products to our facility.

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**4. PRODUCT INSPECTION** Upon arrival, our team inspects the returned products to evaluate their condition and potential for reuse or recycling.

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**5. RECYCLING AND REUSE** Our recycling partners shred Polygood® remnants into smaller components and recycle them before they are reborn into new Polygood® panels.

Overall, Polygood embodies the future of design materials: eco-responsible, functional, and visually unique, offering architects and designers a sustainable alternative to traditional plastics and composite surfaces without compromising aesthetics or performance.

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