



*The Future of Surfacing:
Green • Custom • On-Demand • Formable*

Decorative Surfacing

Google, Kaiser Permanente, and many universities have adopted BioSurf® products for both aesthetic appeal and environmental sustainability.

APPLICATIONS

BioSurf can revolutionize surfacing solutions for horizontal and light-duty vertical applications:

- ▶ Direct to Sheet Rock for Walls
- ▶ Curved Laminates
- ▶ Office and Home Furniture
- ▶ Store Fixtures
- ▶ Ceiling and Wall Panels
- ▶ Signage and Digital Print Media
- ▶ Post Formed Composites
- ▶ Thermofoils



Today's decorative surfacing market (\$7B and \$24B in annual sales in the U.S. and worldwide, respectively) faces a host of formidable, multi-front challenges:

- Manufacturers are pressured to remove red-list materials like formaldehyde and PVC that are present in traditional laminates. Green alternatives exist, but not a “substrate + surfacing system” that meets both performance and cost specifications.
- Customers are increasingly demanding about the custom look and aesthetic appeal of decorative laminate surfaces. Traditional suppliers only provide a few, standard patterns that limit the creativity of architectural and product designers.
- Customers also want rapid, on-demand access to these “custom-look” surfacing solutions in small order quantities. This “mass customization” trend is inconsistent with the “large-order + limited-pattern” mentality of traditional suppliers.
- Product designers and installers want surfacing solutions that are formable around contours and edges. Standard laminates are not formable, requiring edge-banding steps that create manufacturing inefficiencies and color-pattern-matching headaches.

Biovation's BioSurf technology combines biobased polylactic acid films with digital printing and tailored wear-layer innovations to create cost-competitive, next-generation laminates that solve all of the aforementioned problems—taking decorative surfacing to a new level.



Montgomery, MN | Broadway, NC
Wilmington, DE

BENEFITS

- ▶ **Red-list free:** **BioSurf** provides a decorative surfacing solution that is 100% free of harmful red-list materials like formaldehyde and PVC.
- ▶ **Custom look:** With **BioSurf**, the look of a surface is limited only by your imagination. Teddy Bears and stethoscopes for a pediatric hospital mural, Brazilian rosewood for a conference table, your team's logo throughout a sports stadium—whether based upon scanned originals or computer generated images, **BioSurf** is unrivaled in bringing surface aesthetics to the 21st century.
- ▶ **On-demand, any-quantity orders:** Want a slightly (or vividly) different look across your new or renovated property, or product lines that rely on surface appeal? **BioSurf** enables fast, reliable, and custom printing for virtually any order quantity.
- ▶ **Rigid (2D) and formable (3D) versions—with color matching:** **BioSurf** 2D can be bonded to rigid boards or drywall while **BioSurf** 3D can be easily thermofoiled around any contour. Combined, both product lines provide the ultimate flexibility in matching colors and patterns for optimal interior design.
- ▶ **Distributed, decentralized, and mass customization:** Compared to competing products, **BioSurf** can be manufactured locally and with low labor and CapEx to reduce environmental impact and decrease customer lead times and costs.

IP PROTECTION STATUS

BioSurf and related technologies are protected by patents, pending applications, and trade secrets.

HOW IT WORKS

Today's decorative surfaces often contain harmful materials. High Pressure Laminates (HPL) utilize formaldehyde-saturated papers while Low Pressure Laminates (LPL) use melamine layers or PVC skins. Using **BioSurf**, such harmful materials never enter the process. All **BioSurf** products use three core materials—biobased polylactic acid (PLA), a high-definition print layer, and a transparent wear-resistant layer. PLA is extruded to a thickness of 5-50 mils. Any custom pattern (scanned or computer generated) is digitally printed on the PLA surface using custom UV-curable inks. Image scratch protection is provided by a transparent, mineral-loaded top coating. The resultant structure yields a high-definition, custom, scratch-resistant image on the surface of a structure void of harmful materials and far more formable than alternative surfacing solutions.

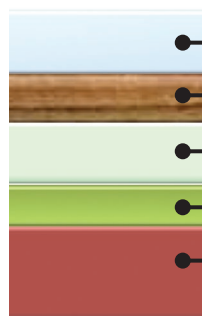
BioSurf 3D can be thermofoiled directly onto tabletops, cabinet doors, and other surfaces using the same vacuum or

membrane press technology used for PVC laminating. The technology integrates stretchable inks, highly extrudable PLA, and optimized wear-layer design to ensure the product can withstand thermofoiling while retaining image quality. **BioSurf** 3D offers a green and more formable alternative to standard PVC or PET thermofoiling.

By comparison, **BioSurf** 2D simply adds a Kraft-paper backer to facilitate bonding to any millwork substrate (e.g., fiberboard, MDF, plywood, etc.) using industry-standard glues. Such substrates are milled using traditional processes to make furniture, cabinets, store fixtures, door skins, and many other applications, or can be direct bonded to drywall. The backside structure can be replaced by direct bonding of non-woven backer materials during the PLA extrusion process. **BioSurf** 2D offers a green and more formable alternative to HPL surfacing.

BIO SURF 2D

Bonds to boards or drywall



Transparent, Wear-Resistant Layer

Digital, High-Definition Layer

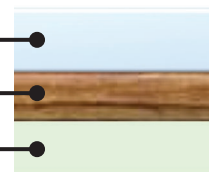
Poly-lactic Acid (PLA) Layer

Adhesive (green or traditional)

Kraft Paper (or other backers)

BIO SURF 3D

Thermofoil to curved or flat surfaces



BIO SURF IN ACTION

Selected "Best in Show" out of 700 Globalshop 2014 exhibitors, **BioSurf** is a green solution that gives surface designers unrivaled creative opportunities. **BioSurf**

2D (4'x8' sheets) and 3D (5-ft-wide rolls) product lines are manufactured at Biovation's 19,000 sq. ft. production facility in Montgomery MN.

To purchase **BioSurf** products, visit www.biosurfsolutions.com

FIND OUT MORE

jholmes@biovation.net | www.biovation.net