

The formulae $\frac{\partial \rho U_i}{\partial t} + \frac{\partial}{\partial x_j} (\rho U_j U_i) - \frac{\partial \tau_{ij}}{\partial x_j} + \frac{\partial}{\partial x_j} \left(\mu \frac{\partial U_i}{\partial x_j} \right) + g_i (\rho - \rho_0)$ for building $\frac{\partial}{\partial x_j} (\rho U_j U_i) - \frac{\partial \tau_{ij}}{\partial x_j} + \frac{\partial}{\partial x_j} \left(\mu \frac{\partial U_i}{\partial x_j} - \rho U_i U_j \right) + g_i (\rho - \rho_0)$ state of the art $\frac{\partial}{\partial x_j} (\rho U_j U_i) - \frac{\partial \tau_{ij}}{\partial x_j} + \frac{\partial}{\partial x_j} \left(\mu \frac{\partial U_i}{\partial x_j} - \rho U_i U_j \right)$ biomedical research facilities.

Postformed Plastic Laminate

A series of News to Use articles in 2015 provided a review of benchtop material options in laboratories¹. They noted the drawbacks and limitations of plastic laminate benchtops, due to issues of delamination and durability. For this reason the DRM prohibits the use of plastic laminate tops in critical NIH facilities:

- Section 4.5.3.1, *Laboratory Casework*, prohibits the use of plastic laminate benchtops at sinks or other wet locations.
- Section 4.5.4, *ARF Casework*, prohibits the use of plastic laminate components of any kind in animal research facilities.
- Section 4.9.8, *Casework*, prohibits the use of plastic laminate components in BSL-3 biocontainment labs.

Plastic laminate is only allowed to be used in dry areas of standard BSL-2 labs and in non-lab areas such as administrative areas, conference rooms and break rooms. During value engineering exercises the value of alternate materials, including phenolic resin in lab areas and solid surfaces in non-lab areas, should be acknowledged for their aesthetics, longer life and reduced maintenance.

When plastic laminate must be used for budgetary or other reasons it is incumbent on the designer and specifier to provide materials and details that provide the greatest durability and the best aesthetics to increase the value of the project.



Figure 1: Standard Plastic Laminate

Standard Plastic Laminate

Standard plastic laminate installation has individually applied laminate surfaces and squared-off corners, resulting in exposed seams, open joints and raw laminate edges (figure 1). Exposed seams provide a pathway for moisture to the substrate which can result in delamination. Open joints accumulate dirt and water and must be sealed and maintained, which is a particular concern in clinical spaces and areas where cleanliness is important. Raw edges expose the

unattractive dark craft paper core of the laminate, which is a particular concern in conference rooms and other public areas.

One option for eliminating many of these issues is to utilize postforming plastic laminate where possible.

Postformed Plastic Laminate

Postforming wraps an entire countertop assembly in a continuous surface of laminate (figure 2). The postforming process applies laminate to a substrate in both flat surfaces and concave or convex curves, usually to form a bullnose edge and backsplash. This results in a continuous surface which is both aesthetically appealing and functionally desirable, since it eliminates exposed seams, open joints and raw laminate edges.



Figure 2: Postformed Plastic Laminate

Postforming details with large radii can be done with most commercial laminates. Smaller radii requires the use of thinner postform-grade laminates produced by most major laminate manufacturers. The laminate is heated to a specific temperature, bent over and adhered to a radiused substrate. Postformed countertops are usually fabricated in long lengths in a shop and cut to length in the field.

Postforming is well suited for straight lengths of countertop, such as credenzas in conference rooms and countertops in break rooms and copy/print rooms. Most laminate is available in 30", 36" and 48" wide sheets, so single sheets can cover a 24" or 30" deep postformed countertop, including bullnose edge and backsplash, without a seam.

¹January, February, March 2015, News to Use articles, https://www.orf.od.nih.gov/policiesandguidelines/pages/drm_news_to_use.aspx