

# Lamination vs. Extrusion: What Is the Difference?

Lamination and extrusion are common manufacturing processes used to create a variety of building products, including bathroom partitions and lockers. These processes, although significantly different, can produce materials that look very similar to the untrained eye. The purpose of this article is to explain some of the fundamental differences between a laminated article and an extruded article.

There are three major differences between laminated materials and extruded materials.

1. Laminated products are a composite material that is made up of multiple layers of different materials. The key word is different. On the other hand, extruded products comprise a single layer of one primary material called an extrudate.
2. Since laminated products are made up of multiple layers, these layers need to be assembled into the final unit. This is accomplished by heating, compressing, welding or gluing the layers together. If the materials in the various layers are substantially different, this can complicate the assembly process. Incompatible materials may be difficult to bond together, and potentially require multiple steps to achieve a satisfactory bond. Extruded products, on the other hand, are not assembled, glued or bonded. They consist of a single layer or extrudate.
3. Some laminated materials undergo a mode of failure called delamination. This occurs when a stress or impact causes the bonds holding the different layers together to separate. Since extruded materials are a single material throughout, not layers bonded together, there is nothing to separate and therefore delamination cannot occur.

Scranton Products HINY HIDERS® bathroom partitions, TUFFTEC LOCKERS® and DURALIFE LOCKERS® are all made from extruded materials.

## Why does the finished edge of an extruded material sometimes look like it is laminated?

Sometimes, an advanced technology called co-extrusion is used. Co-extrusion can easily be mistaken as lamination because a cross-section of the material appears to have a “core” that looks different from the “skin.”

For example, Scranton Products offers an optional custom engraving on HINEY HIDERS® bathroom partitions, TUFFTEC LOCKERS®, and DURALIFE LOCKERS®. This is achieved by coextruding one color in the “core” or center of the product while simultaneously extruding a different color on the exterior surface or “skin.” Despite the color difference, the basic material in both the core and the skin is the same - high density polyethylene (HDPE). By definition, this is not a laminated material. It does not consist of separate layers of different materials that are bonded or adhered together.

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Another example of co-extrusion is Scranton Products post-consumer locker boxes. These locker boxes contain 50% or more post-consumer content that comes from difficult to recycle products such as juice boxes and drink pouches. To maximize the amount of recycled content, a pigmented “skin” is co-extruded with a non-pigmented “green core.”

Co-extrusion is often used to achieve the main advantage of laminated materials; the ability to impart different properties to the surface as compared to the core. Unlike laminated materials, co-extruded materials have the added benefit that delamination cannot occur.

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