

DID YOU KNOW

THE IMPORTANCE OF COMPRESSIVE STRENGTH IN RELATION TO RIGID INSULATION BOARDS



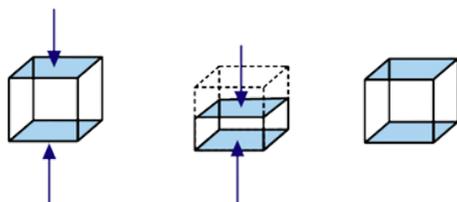
Rigid insulation is often chosen for its R-value, but in many cases, its compressive resistance is just as important!

In load-bearing applications, insulating materials need to be strong enough to support the weight of roof coverings or other materials above them, without getting crushed or losing their ability to insulate. The compressive resistance of an insulation material tells us how much weight an insulation can handle without permanently changing shape. It's usually measured in pounds per square inch (psi), which shows how much force is applied to a certain area.

When rigid foam insulations (like EPS) are subjected to a load, they go through two main stages:

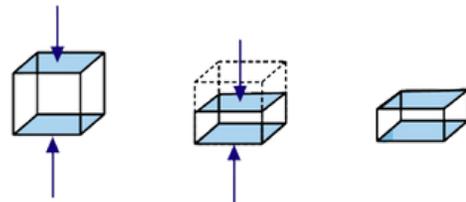
1. **Elastic Deformation:** When the insulation is under light loads, it compresses slightly but can return to its original shape once the load is removed. It's like how a spring compresses and then bounces back when you stop pushing on it.

2. **Plastic Deformation:** If the load continues to increase and exceeds a certain point, the insulation will permanently change shape. Even when the load is removed, the foam will stay deformed. The point where this shift happens is called the yield point.



ELASTIC DEFORMATION

Returns to original size when load is removed



PLASTIC DEFORMATION

Does not return to original size when load is removed

In the insulation industry, compressive resistance is typically measured at 10% strain. Atlas offers EPS insulation boards with compressive resistances ranging from 10 to 60 psi, providing various options for different needs. To avoid long-term damage, a safety factor of 3 is recommended, meaning only one-third of the listed compressive resistance should be applied for sustained loads.

Example: If an insulation board has a compressive resistance of 15 psi at 10% deformation, applying the safety factor of 3 would limit the recommended load to 5 psi. While this might sound low, it's actually quite strong—5 psi is equivalent to 720 pounds per square foot.

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