

Stave Core vs. Particleboard Core

In DHI Magazine (Door and Hardware Institute), a wood door and particleboard manufacturer announced labeling “approvals” that would allow screw attachment of surface mounted hardware on their particleboard core doors (type LD-2 core) without using solid wood for core reinforcement. The announcement also claimed “This will essentially eliminate the need for the use of stave core doors or the use of wide stiles and rails in a particleboard core door”.

Don't be misled. While particleboard core may be acceptable in some applications, stave core and wood reinforcement in particleboard core provide additional benefits that are important for doors in heavy use applications such as medical and educational facilities.

Screw Holding Strength

Solid wood holds screws better than particleboard for secure attachment of hardware.

SCREW WITHDRAWAL IN POUNDS OF PULL/SCREW*

SLC-5 stave core door (basswood) 573

PC-5 particleboard door (LD-2 core) 260

*Test conducted per ASTM D-1037-78 using #12 threaded-to-the-head screws with 11/4” screw penetration.

Door Strength

Stave core doors offer greater stiffness and resistance to breakage.

This is especially true at hardware cutouts and around glass openings. When full glass doors were subjected to torsion (twist) tests, the stave door supported 450 pounds before failure compared to 192 pounds for a particleboard door with grade LD-2 core. This highlights that stave core will be a longer lasting door.

When comparing physical properties of stave core and type LD-2 particleboard core it is obvious where stave gets its superior strength and ability to resist breakage.

Average Physical Properties

	Modulus of rupture	Modulus of elasticity
Basswood stave core	8,700 psi	1,460,000 psi
Type LD-2 Particleboard core	435 psi	148,700 psi

Wood reinforcement in particleboard core doors or stave core doors should be specified for use on projects or areas where doors may be subject to heavy usage or abuse.

Remember, it's your project, your specification, your reputation, and your choice. Be aware of the differences in features and benefits and specify doors to meet your project's requirements.

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